



THE ASPEN INSTITUTE

ECONOMIC STRATEGY GROUP

Expanding Economic Opportunity for More Americans

Bipartisan Policies to Increase
Work, Wages, and Skills

Foreword by **HENRY M. PAULSON, JR.**
and **ERSKINE BOWLES**

Edited by **MELISSA S. KEARNEY**
and **AMY GANZ**



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FEBRUARY 2019

Acknowledgements

We are grateful to the members of the Aspen Economic Strategy Group, whose questions, suggestions, and discussion were the motivation for this book.

Three working groups of Aspen Economic Strategy Group Members spent considerable time writing the discussion papers that are contained in this volume. These groups were led by Jason Furman and Phillip Swagel, Keith Hennessey and Bruce Reed, and Austan Goolsbee and Glenn Hubbard. We are indebted to these leaders for generously lending their time and intellect to this project. We also wish to acknowledge the members who spent considerable time reviewing proposals and bringing their own expertise to bear on these issues: Sylvia M. Burwell, Mitch Daniels, Melissa S. Kearney, Ruth Porat, Margaret Spellings, Penny Pritzker, Dave Cote, Brian Deese, Danielle Gray, N. Gregory Mankiw, Magne Mogstad, Wally Adeyemo, Martin Feldstein, Maya MacGuineas, and Robert K. Steel.

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Foreword

By Henry M. Paulson, Jr. and Erskine Bowles

The American economy is stronger today than it has been in many years. At the time of this writing, jobs are plentiful and the country's economic expansion is the second-longest on record. But our nation's economic performance has not been even, and prosperity is not as widespread as it once was.

Many workers today find themselves lacking the skills and training necessary to thrive in the modern economy. Millions of men and women are missing from the workforce altogether. Most low- and middle-income workers have not seen meaningful wage increases in many years.

These challenges stem from profound shifts in the American economy. Technological innovation and globalization have displaced millions of jobs, while our polarized political system has failed to help workers keep up with the pace of change. The result is rising frustration with American politics, a populist backlash, social fragmentation, and a sense that the "American Dream" is becoming more and more elusive.

What is to be done? We believe the time is ripe for new approaches to both policy and politics. Political leaders must unite around tangible, bipartisan solutions to address wage stagnation, encourage work, and upskill our workforce.

To be clear: there are no silver bullet solutions to these problems. On some issues, political polarization will preclude big solutions. Nevertheless, we see many opportunities for both sides to come together and make real progress. Evidence-based, bipartisan solutions rarely capture headlines, but they do exist, and should be embraced by those who are serious about solving our long-term economic challenges.

That's why we formed the Aspen Economic Strategy Group (AESG). Our mission is to gather a diverse range of distinguished leaders who have worked at the highest levels of policy, business, government, academia, and civil society to address these challenges head on, to exchange practical policy ideas, and to build relationships across party lines and generations of policy leaders.

This policy book is a product of discussions and debates had by members of the Aspen Economic Strategy Group over the course of the past year, which focused on the broad theme of *expanding economic opportunity for more Americans*. It features rigorous, evidence-based ideas for tackling some of the biggest barriers

to economic opportunity: declining economic migration, low productivity and wage growth, low employment in rural labor markets and among formerly incarcerated individuals, limited opportunities for work-based training and other non-collegiate pathways to economic success, and resource constraints at community colleges.

The policy proposals included in this volume do not reflect a consensus of the members of the Economic Strategy Group. They do, however, represent a bipartisan effort to produce smart and effective policies.

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Working Group Process and Members

Each of the three discussion papers contained in this volume are the product of 12 months of work by a bipartisan working group comprised of a small set of Aspen Economic Strategy Group members and co-led by a pair of two members. Working groups were charged with developing a policy response to address a specific policy challenge, and collaborated throughout the spring and summer of 2018 to discuss various options for addressing their particular challenge. Working group members drew from the policy memos that are featured in this volume, pre-existing policy proposals and research papers, and, of course, their combined years of experience and expertise.

The working group co-leads made the final determination of what was included in each discussion paper. The working groups did not strive to achieve consensus, but in each case, there is broad support amongst working group members for the general policy response advocated for in the discussion paper. Not all working group members necessarily agree with or endorse every specific recommendation made in their group's discussion paper. Each member of the working group participated in their individual capacities and the views reflected herein do not necessarily represent the views of the institutions they lead or represent.

Working Group on Developing Human Capital for the Modern, Global Economy

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Introduction

By Melissa S. Kearney and Amy Ganz

The Need to Expand Economic Opportunity

The pursuit of economic opportunity for all Americans is as important to the health of the country's economy as it is to the strength of its democracy. The promise that hard work and determination will yield economic success is a central American ideal, but it has been called into question as secular economic forces and institutional changes have reshaped the American economy and had an uneven impact on Americans' ability to prosper.

Economic prosperity is increasingly a function of an individual's education level, where they live, and the income quintile into which they were born. Expanding economic opportunity to more Americans will mean breaking down barriers to success and fostering more widespread opportunity. It will also mean investing in pathways for individuals to develop valuable skills, enhance their earning potential, and pursue meaningful work.

Large differences in economic outcomes persist among workers with and without a college education. While highly skilled workers are thriving, enjoying high wages and strong demand for their advanced skills and education, workers without a college degree have experienced stagnant or declining wages and reduced employment. Prime-age men are working at lower rates today than at any point in the post-war era, driven primarily by reductions in the rate of work among non-college educated individuals.

Geographic disparities in economic opportunity have become more pronounced. As prosperity is increasingly concentrated in certain cities and regions, other communities, particularly those in rural areas, falter. Regional differences in household incomes, along with many other economic outcomes, are no longer converging as they have historically. Artificial constraints on housing supply in the most economically productive regions have driven up housing costs, making these areas less accessible to potential in-movers and, in turn, stifling geographic mobility and economic convergence.

In light of these challenges, The Aspen Economic Strategy Group (AESG) invited leading scholars from across the country to present innovative, evidence-based, and bipartisan policy ideas to address salient barriers to economic opportunity. The discussion papers and memos presented in this volume are arranged by three policy

goals: (1) developing human capital for the modern, global economy; (2) increasing prime-age labor force participation; and (3) promoting private sector job creation and wage growth.

A cornerstone of the AESG is promoting bipartisanship in economic policymaking. To this end, each of the three discussion papers in this volume is co-authored by AESG members who have served as senior counselors to past Democratic and Republican presidential administrations. These discussion papers are the product of a bipartisan working group process explained in a preamble to this volume. Glenn Hubbard and Austan Goolsbee propose new evidence-based investments in America's community colleges, at a similar scale to the 19th century Morrill Land Grant Program. Keith Hennessey and Bruce Reed discuss the challenges of low prime-age labor force participation and potential policy responses. Phillip Swagel and Jason Furman discuss the macroeconomic policies that best promote growth and present two policy options to incite wage growth among low- and middle-income workers. The volume also includes nine commissioned policy memos from outside experts, each of which addresses a specific policy challenge related to at least one of the three policy goals.

Policy Goal 1: Building Human Capital for the Modern, Global Economy

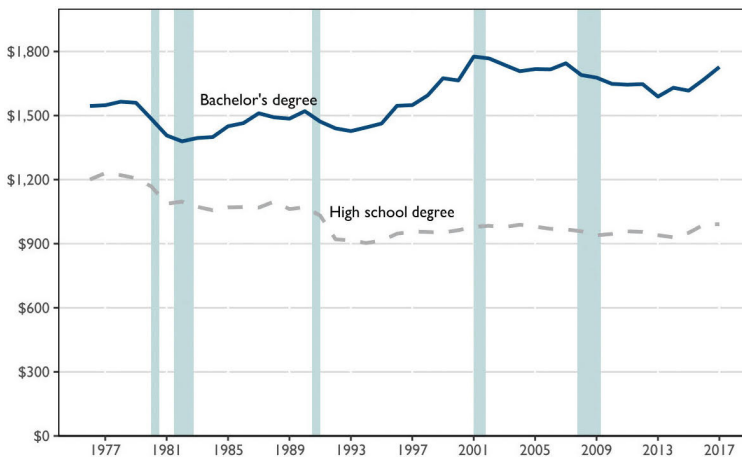
A policy agenda to build human capital for the modern, global economy would include investments in education at all levels and ages, including early-childhood, kindergarten through grade 12, post-secondary, and mid-and continuing career. Many thoughtful and careful scholars, policy advocates, and experts have weighed in elsewhere on the need for early childhood and K-12 investments and reforms. In this volume, we focus on the need for skill development beyond high school. This decision was a practical one, made to keep our volume focused, not because earlier investments aren't critically important. With that caveat in mind, we stipulate that even a post-secondary agenda to build human capital would need to be multi-faceted. There is a need to increase the number of Americans with a college degree, to provide meaningful alternatives to college, and to create opportunities for dedicated skill development throughout a worker's career.

The modern economy greatly favors college-educated workers. Employment rates among those without a college degree have fallen substantially in recent decades. Prime-age men used to participate in the labor force in roughly equal measure across education groups. That is no longer the case. A 2016 Council of Economic Advisers report notes that in 1964, 98% of prime-age men with a college degree or more participated in the workforce, compared to 97% of men with a high school degree or less. In 2015, the participation rate for college-educated men had fallen

only slightly to 94%, while the rate for men with a high school degree or less had dropped precipitously to 83%. Since the early 1990s, the labor force participation of prime-age women has also fallen by much more among those without a college degree. In 2016, the labor force participation rate among prime-age women with a bachelor's degree or higher was 87%, as compared to 62% for those with a high school degree or less.

In addition to growing gaps in employment rates, there are large earnings gaps between those with and without a college degree. In 2017, workers with a college degree earned nearly two thirds more than workers without a college degree. As Figure 1 demonstrates, the earnings gap in weekly earnings between workers with a college degree and those with a high school degree increased substantially in the latter half of the 20th century, and that gap remains large. Increasing the number of Americans with a college degree would advance both individual economic security and the productivity and competitiveness of the American economy more broadly.

Figure 1. Real Weekly Earnings by Education Level, 1975-2017



Source: Current Population Survey, 2017; 2016 constant dollars.

Note: The sample includes full-time workers between the ages of 25-64. We include workers with a high school diploma or equivalent degree in the shaded series.

In recent decades, rates of college *enrollment* in the U.S. has increased steadily. However, college *completion rates* remain low. Among young adults age 25 to 34, only about 26% have a bachelor's degree. National data on students who enrolled in college in 2010 reveal the extent of the so-called college drop-out problem. Among students who initially matriculated at a four-year institution, nearly half failed to complete their degree within six years. Among students who initially enrolled full-time at a two-year public institution, nearly 42% had not received any degree or

were no longer enrolled in school six-years later. Among students from two-year colleges who successfully transferred to a four-year institution, only 40% completed a bachelor's degree within six years. Increasing the rates of persistence and completion among college students would have a significant impact on their earnings potential, and, more broadly, would increase the skill level of the U.S. workforce.

Achieving higher rates of college completion among young adults is necessary but not sufficient. Those without college degrees cannot be relegated to low-paying jobs and limited opportunities. Alternative pathways to economic prosperity are needed such that those without college degrees can still meaningfully develop their talents and contribute productively to the modern economy.

Furthermore, the skills demanded in the modern economy constantly evolve. Workers transition jobs and industries multiple times throughout their working years and, even within an occupation, tasks change. Individuals must adapt to new technologies, learn new skills, and earn new credentials over the course of their careers. This paradigm shift necessitates new models of training and skill development that are better suited to the needs of full-time, working adults. While the education marketplace has already begun to adapt to these new realities, many public institutions are lagging behind due to resource constraints.

In their discussion paper in this volume, AESG members Glenn Hubbard and Austan Goolsbee call for new investments in America's system of community colleges at a similar scale as the 19th-century Morrill Land Grant Acts. Community colleges offer widely accessible and flexible postsecondary education and mid-career training opportunities. Yet, despite their promise and potential, community colleges suffer intense resource pressures, which constrain the educational and labor market outcomes of their students. Hubbard and Goolsbee propose a new federal grant program that provides funding to community colleges, contingent upon institutional outcomes. Additionally, they call for seven complementary proposals to further expand opportunities for mid-career skill development and training and to provide better pathways into the workforce for non-college-educated workers.

Work-based training opportunities, particularly apprenticeships, are less common in the U.S. labor market compared to other advanced economies. In a policy memo in this volume, author Robert Lerman proposes enlarging apprenticeship programs in the United States and argues that such a move would increase youth employment and wages. His proposal calls for the development of occupational standards, credible end-point assessments, and independent certifying bodies to support high-quality apprenticeship programming. Lerman also advocates for a robust marketing effort to reduce labor market stigmas that are sometimes associated with work-based training.

Career and technical education (CTE)—a combination of career-specific training and other traditional academic content—is another important pathway for individuals to gain career-ready skills outside of traditional four-year degree programs. However, not all programs are created equal, and there is an especially significant disparity between CTE program outcomes across public and for-profit institutions. The policy memo by author Ann Huff Stevens clarifies the existing evidence about “what works” in career and technical education and proposes several reforms to strengthen evidence-based programming.

There is a great deal of optimism about the potential for online learning to drastically expand access to high quality skill development due to its flexibility and cost-effectiveness. However, author Joshua Goodman’s policy memo cautions that not all students are served equally well by online educational programming. Academically at-risk students typically perform worse online than they do in traditional in-person settings. Goodman’s memo serves as an instructive primer to policymakers who are considering plans to leverage online education for economically vulnerable mid-career Americans.

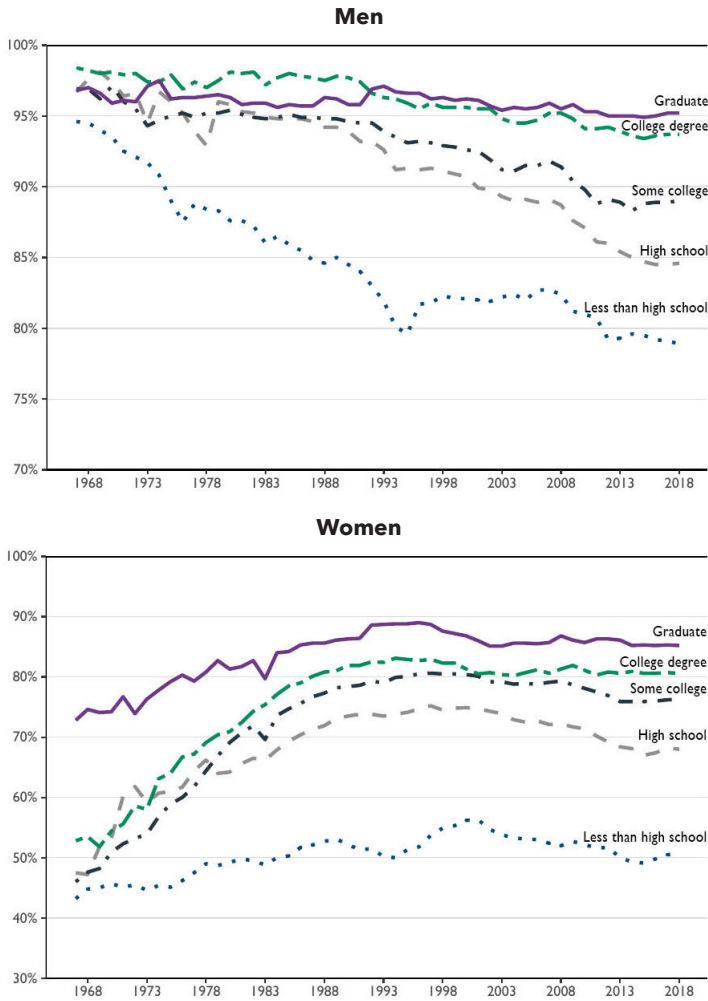
Policy Goal 2: Expanding Labor Force Participation

The U.S. labor force participation rate—the share of working-age individuals employed or looking for work—reached an all-time high of 67% in 1999 and has since declined by nearly five percentage points. This steady decline has coincided with several trends, some cyclical, such as protracted unemployment following the Great Recession; some demographic, such as population aging and the retirement of the Baby Boomer generation; and some structural, such as changes in the demand for certain types of skills or workers.

Prime-age workers (age 25-54) are the backbone of the U.S. labor force. Thus, declines in the labor force participation rate among this group have troubling implications for the future of U.S. economic growth and widespread prosperity. The prime-age labor force participation rate today remains two percentage points below its 1999 peak of 84%. If it had held steady at its peak, there would be an estimated 2.4 million more prime-age workers in the labor force today. Periods of non-employment during prime-earning years can lead to lower future earnings, as workers lose valuable opportunities to gain experience and to build workplace skills.

Declining prime-age labor force participation has been most pronounced among workers with lower levels of education, as shown in Figure 2. That gap in employment between those with and without a college degree has grown by nearly ten percentage points since the 1960s among both men and women. Today, one in five working age men and one in two working age women without a high school diploma are not in the labor force.

Figure 2. Male and Female Prime-Age (25-54) Labor Force Participation, 1968-2017



Source: IPUMS-CPS, University of Minnesota, www.ipums.org

Note: Individuals were considered in the labor force if they reported they were at work; held a job but were temporarily absent from work due to factors like vacation or illness; were seeking work; or were temporarily laid off from a job during the preceding week of the survey.

In their discussion paper, AESG members Keith Hennessey and Bruce Reed review the many potential explanations for the decline in labor force participation among prime-working age individuals. Drawing on the work of Abraham and Kearney (2018), they observe that demand-side factors such as globalization and technological

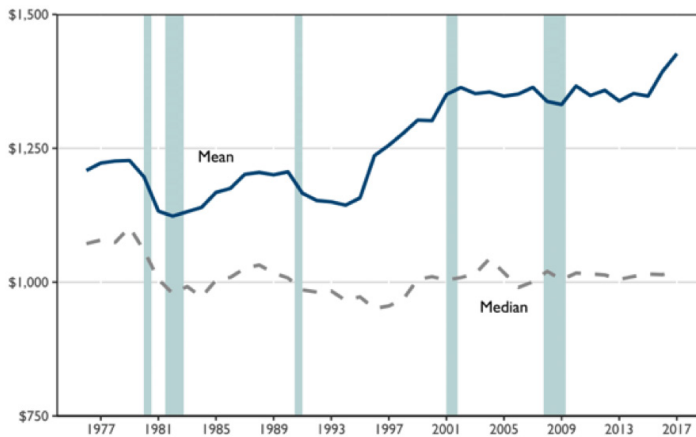
change have depressed demand for low-skill workers, but, this fact alone cannot sufficiently explain the overall decline in labor force participation. Hennessey and Reed point to additional supply-side considerations, such as the rise in disability insurance rolls, which may be discouraging workers from re-entering the labor force after a period of unemployment. They also call for additional research to better understand why labor force participation in the United States is lower than that of other advanced economies.

This section of the volume also includes two policy memos. A memo written by James Ziliak highlights the rural/urban divide in employment rates and economic prosperity. Ziliak provides a thorough review of wage and employment trends across non-metropolitan areas, showing that less-educated, rural workers are further behind their urban counterparts today than they were fifty years ago. Ziliak also puts forward a set of proposals to address rural employment challenges, arguing for both people-based and place-based policy approaches. People-based approaches include relocation assistance, as well as a short-term credit to subsidize commuting expenses. Place-based programs include investments in rural broadband, the expanded small business loans and grants to rural entrepreneurs, and a federal jobs program to revitalize rural infrastructure.

In a second policy memo in this section, authors Gordon Dahl, Manudeep Bhuller, and Katrine Løken address the role of incarceration in limiting employment opportunities and call for prison reform as an economic strategy. In particular, many observers have noted the link between high rates of incarceration and low rates of employment among less educated African American men in the United States. Dahl, Bhuller, and Løken argue the U.S. is missing out on an opportunity to promote employment and build skills among incarcerated populations, which could help improve labor force attachment when formerly incarcerated individuals re-enter society. Drawing upon rigorous evaluations of Norway's prison system, the authors propose shortening prison sentence lengths, investing in education and training programs, and expanding post-release programs to support reentry into society.

Policy Goal 3: Increasing Private Sector Wages and Jobs

In the three decades following the end of World War II, the income of a typical American household grew by roughly 3% per year. Since the 1970s, low- and middle- income American households have experienced income gains of only one percent per year. Figure 3 compares mean and median weekly earnings since the late 1970s. Median earnings have been stagnant since the early 1980s, while mean weekly earnings have grown slightly more, reflecting that wage growth has been concentrated at the upper end of the income distribution.

Figure 3. Average vs. Median Weekly Earnings, 1976-2017

Source: Current Population Survey, 2017; 2016 constant dollars.

Note: Sample includes full-time workers (defined as those who worked more than 2080 hours in a year) between ages 25-64.

Slow wage growth has coincided with slower overall economic growth and, perhaps most importantly, lower productivity growth. The average annual productivity growth rate since the 1970s has been half that of the preceding postwar period.

Understanding the link between productivity and wages is critical to understanding recent wage trends. We thus commissioned two memos on this topic from leading experts. Some recent observers have argued that the link between wages and productivity has weakened, due in large part to diminished bargaining power among workers and increased wage setting power of firms. In his policy memo, author Michael Strain argues that the link between productivity and wages remains strong.

In another memo in this volume, author Chad Syverson observes that wages among workers at the lower end of the wage distribution have even fallen behind the more languid overall growth target. The widening chasm between the upper and lower portions of the wage growth distribution has coincided with larger gaps in productivity growth between firms, which may reflect two different sides of the same coin. Syverson reviews existing explanations for slower growth of productivity and wages, as well as increased dispersion. He concludes that it is impossible to tell, from current existing evidence, whether these trends are the result of increased market power and rent-seeking or of more benign explanations unrelated to market power, such as a breakdown in the diffusion of best practices, and technologies across firms in the marketplace. He then describes potential policy responses to the slowdown in productivity growth: investing in infrastructure, improving managerial practices,

encouraging competitive product markets, and reducing frictions in the input markets of labor, capital, and ideas.

In their discussion paper, AESG members Jason Furman and Phillip Swagel discuss the macro conditions necessary for wage and job growth to occur in the long run and outline a broad bipartisan policy agenda for creating such an environment. The goals of this agenda include: (1) Ensuring the economy is operating at full employment; (2) Increasing long-term productivity and labor force growth; (3) Making a more resilient economy in the face of shocks and inevitable cyclical downturns; (4) Ensuring more sustainable economic growth over the longer term; and (5) Contributing to more broadly-shared prosperity. The authors offer a number of policy approaches to achieve these goals.

Based on their decades of combined economic policy experience, Furman and Swagel acknowledge the political difficulties inherent in designing specific policies to achieve these goals. They thus turn their attention to policy options that more directly target the take-home pay of low-income workers in the short-run. Taking the economic environment and skills as given, they outline two specific alternative policy options for raising the take-home pay of less skilled workers during the course of a business cycle. The first option expands on the existing Earned Income Tax Credit structure to nearly triple the amount that goes to workers without qualifying children. The second option sets up a new structure to deliver wage subsidies to low-income workers, which would be administered through employers.

The wage subsidy proposal in Furman and Swagel's paper expands upon the policy memo written by author David Neumark. In his memo, Neumark proposes an employer tax credit to partially offset the cost of minimum wage increases for firms that employ low-wage workers. Taking future minimum wage increases as a given, Neumark's Higher Wages Tax Credit (HWTC) would provide a tax credit of 50% of the difference between the prior minimum wage and the new minimum wage, for each hour of labor employed. This credit would reduce the incentive for employers to substitute away from low-skilled workers in the face of minimum wage increases, thus mitigating the potential adverse effects of minimum wage increases while simultaneously preserving and possibly enhancing some of the benefits of minimum wage hikes.

This section of the volume also includes a policy memo by author Joshua Gottlieb on the issue of housing prices in high productivity cities. Gottlieb examines the indirect role that housing supply constraints might have on productivity and wage growth by restricting the flow of human capital. Zoning restrictions are estimated to constrain economic production and wages by more than two trillion dollars per year (Glaeser and Gottlieb, 2009) and are often most punitive for low- and middle-income households because they drive up the cost of housing for potential in-movers.

Gottlieb proposes to overcome the NIMBY (“not-in-my-backyard”) phenomenon by encouraging state governments to enact minimum zoning mandates that would preempt local land use restrictions that artificially reduce urban density.

Conclusion

The papers and proposals contained in this volume target specific barriers to economic opportunity for many American workers. They are actionable and evidence-based. We do not pretend to think that any of the policy proposals contained in this volume are the “silver bullet” solution to the challenges outlined in our introductory paragraphs. Yet, the collection of ideas offered in this volume offer policymakers a thoughtful starting place in addressing a critical set of current challenges.

Furthermore, the policy agendas outlined in the three discussion papers contained in this volume have bipartisan appeal. Each discussion paper reflects the joint work of prominent economic policy experts. The discussion papers were informed by the collective contributions of bipartisan working groups and were drafted by a pair of leading experts who served as senior economic counselors in past Democratic and Republican presidential administrations. The authors of these discussion papers united around a common set of facts and worked together to identify specific solutions. We hope this volume serves as a reminder to its readers that bipartisan solutions exist, and that there are ample opportunities to come together to identify and implement them.

PART I

DEVELOPING HUMAN CAPITAL FOR THE MODERN, GLOBAL ECONOMY

DISCUSSION PAPER

A Policy Agenda to Develop Human Capital for the Modern Economy

Glenn Hubbard, Austan Goolsbee, Amy Ganz, and Melissa S. Kearney

POLICY MEMOS

What Works in Career and Technical Education (CTE)? A Review of Evidence and Suggested Policy Directions

Ann Huff Stevens

Scaling Apprenticeship to Increase Human Capital

Robert I. Lerman

The Challenges of Leveraging Online Education for Economically Vulnerable Mid-Career Americans

Joshua Goodman

A Policy Agenda to Develop Human Capital for the Modern Economy

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ABSTRACT

Globalization and technological innovation have intensified the demand for college-educated workers. In 2017, college graduates earned 65% more than non-college-educated workers and were twice as likely to be employed. This proposal recognizes the simultaneous need for more college educated workers and also for a higher level of labor market skill among non-college educated individuals. We propose to invest in the upskilling of the American workplace by better leveraging the potential of the community college sector. Community colleges offer widely accessible and flexible postsecondary education and midcareer training opportunities. They are also a gateway to four-year colleges for millions of students. Yet, despite their promise and potential, community colleges are under intense resource pressures that constrain the educational and labor market outcomes of their students. We call for a new federal grant program to provide funding to community colleges, contingent on institutional outcomes. Our cost estimates suggest new funding on the order of \$22 billion per year. This new public investment in community colleges would promote the policy goals of: (1) increasing the supply of college-educated workers; (2) expanding opportunities for midcareer skill development and training; and (3) providing better pathways into the workforce for non-college-educated workers. We additionally support a set of six complementary proposals to further advance these stated goals.

1. Evidence-Based Investments in Community Colleges

More than ever, a college degree is predictive of an individual's economic success. In 2017, college graduates earned 65% more than non-college-educated workers and were twice as likely to be employed. Increasing the number of Americans with a college degree would advance both individual economic security and the productivity and competitiveness of the American economy. Increasing numbers of high school graduates are enrolling in college, but many fail to earn a degree. Among students who matriculate at four-year institutions, nearly half fail to complete their degree within six years. Among students who first enrolled full-time at a two-year public institution in 2010, nearly 42 percent had not received any degree or were no longer enrolled in school six-years later (Shapiro et. al, 2018).¹ Increasing college completion rates must be a policy priority.

Posing an additional challenge, skills demanded in the modern economy are constantly changing. Workers today typically change jobs and industries multiple times throughout their working years. As a result, individuals must adapt to new

1 Shapiro, D., Dundar, A., Huie, F., Wakhungu, P.K., Bhimdiwali, A. & Wilson, S. E. (2018, December). Completing College: A National View of Student Completion Rates - Fall 2012 Cohort (Signature Report No. 16). Herndon, VA: National Student Clearinghouse Research Center.

technologies, learn new skills, and earn new credentials over their careers. Lifelong learning and skill upgrading is the new normal. As such, American institutions of higher education must be prepared to serve students throughout their careers with a flexible, market-driven model of education.

The United States should make a bold and dedicated commitment to increasing the skills and productivity of its workforce by leveraging the potential of the community college sector. We propose a federal grant program to provide new funding to community colleges, contingent on institutional outcomes in degree completion rates and labor market outcomes. We believe a program of a similar scale to the 19th century Morrill Land Grant Program, which dramatically expanded access to higher education for working-class Americans, is needed to ensure our workforce meets the demands of the modern economy.²

This new public investment in community colleges would promote the policy goals of: (1) increasing the supply of college-educated workers; (2) responding to unmet demand for midcareer skill development and training; and (3) providing better pathways into the workforce for non-college-educated workers through the expansion of high-quality, short-term certificate programs.

The investment of resources in community colleges would be linked to metrics of the policy's success. To determine the appropriate barometers of success, we take a lesson from U.S. history and look to the high school movement of the early 20th century. In 1910, fewer than 10% of Americans had a high school degree. By 1935, nearly 40% of the population had earned their degrees. This inflection point came from substantial new investments in the nation's education resources. We aim to achieve increases of a similar magnitude in postsecondary degree and credential completion rates with a new generation of public investments. Our aim with this proposal is to achieve the following benchmarks by 2030:

1. Close the completion gap between two-year college students aged 18 to 24 and their peers at four-year institutions by increasing the average completion/transfer rate among 18- to 24-year-olds at community colleges from 37.5% to 60% by 2030.³ This would result in 3.6 million additional 18- to 24-year-olds with college degrees in 2030.

2 For background information on this act, see: <https://press.princeton.edu/titles/10320.html>; *Morrill Land Grant Act of 1862*; a related notion is put forward by Goolsbee and Minow (2016).

3 It should be noted that closing the completion gap between two and four-year colleges will require progress in the four-year sector as well. Only about 40 percent of students who transfer from community colleges into a four-year institution complete a bachelor's degree within six years. We refer readers to the Aspen Institute College Excellence Program and the Community College Research Center work on evidence-based policies and tools to improve transfer performance.

2. Increase the share of Americans aged 25 to 64 with a college degree or other high-quality credential from 46.9% to 65% by 2030, which reflects the expected share of jobs requiring advanced skills by that year. This goal would require 28 million additional workers to earn first-time degrees or high-quality credentials by 2030.⁴

2. Why We Need Major New Public Investments in Community Colleges

We call for a dedicated funding commitment to improving the capacity of community colleges to increase degree completion rates, offer opportunities for lifelong learning, and provide career and technical education programs to non-degree-seekers. Community colleges are both pathways to degree completion and institutions that provide career opportunities for students who are not currently pursuing an associates or bachelor's degree. Rather than proposing the creation of new, untested public programs, we focus on improving pre-existing public institutions at scale to better serve these purposes.

GREATER INSTITUTIONAL RESOURCES WILL LEAD TO HIGHER RATES OF DEGREE COMPLETION

Community colleges offer widely accessible and flexible postsecondary education and midcareer training opportunities. They are also a gateway to four-year colleges for millions of students. National data reveal that a third of first-year students at four-year colleges begin their postsecondary education at a community college (Shapiro et al., 2015). Among these students, three in four are racial or ethnic minorities, and 44% are from low-income households (Baum & Ma, 2016). Older, independent students with full-time jobs also make up a greater share of the student population at community colleges than at four-year universities (Baum & Ma, 2016).

Despite their promise and potential, community colleges are under intense resource pressures that constrain the educational and labor market outcomes of their students. For every dollar that is spent on education expenses per student at public, four-year bachelor's institutions, only 75 cents are spent per student at community colleges. The Delta Cost Project (2016) estimates that in the year 2013, average spending per student on instruction and student supports at a community college was \$11,400, as compared to \$14,900 at a public bachelor's institution.⁵ Part of this gap is driven by

⁴ See the appendix to this paper for more detail about our assumptions.

⁵ Both numbers are in 2017 dollars. Bachelor's institutions are defined as institutions at which bachelor's degrees represent at least 10% of undergraduate degrees; fewer than 50 master's or 20 doctoral degrees are awarded per year (Delta Cost Project, 2016).

per-student funding for “student supports,” which include career counselors, mental health resources, and supplemental instruction; such spending is, on average, 40% higher at four-year public schools compared to two-year schools (Delta Cost Project, 2016).⁶ This difference is especially noteworthy because two thirds of community college students are from economically disadvantaged backgrounds, and are thus more likely to require these supports (The Century Foundation, 2013).

Institutional resources have a significant impact on student outcomes. Students who attend institutions with fewer resources, including community colleges, are less likely to complete a degree than similar students who attend a four-year school. (See, for example, Hoxby & Turner, 2013; Cohodes & Goodman, 2014; Goodman, Hurwitz, & Smith, 2015). Unfortunately, students from lower income families and minority students are more likely to attend low-performing institutions (Bailey & Dynarski, 2011), which diminishes these students’ prospects for degree completion, and in turn, for upward economic mobility.

A series of randomized, controlled trial studies demonstrates that enhanced supports for low-income students can lead to improved rates of persistence and completion. Such studies have demonstrated the potential success of academic coaching (Bettinger & Baker, 2014), social worker guidance (Evans, Kearney, Perry, & Sullivan, 2017), and academic tracks dedicated to disadvantaged students (Scrivener et al., 2015). Increasing the public resources available to community colleges will equip them to provide and expand such services, thereby better serving their students. This will ultimately lead to increases in the number of college graduates in the United States, as well as higher rates of economic advancement among students from low-income backgrounds.

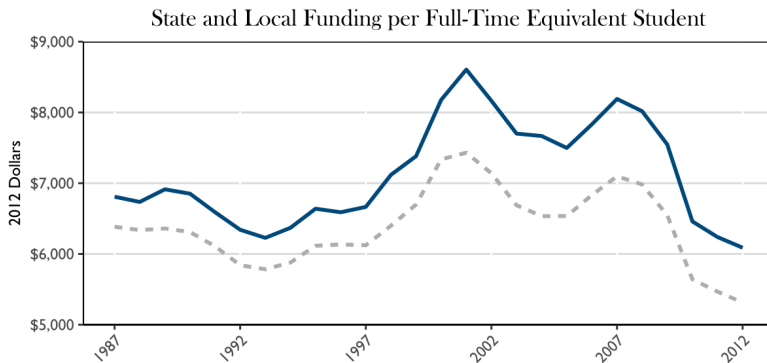
Nevertheless, state appropriations for institutions of higher education have declined significantly since the late 1990s. The decline in per-student appropriations has had a negative impact on persistence and completion rates, while the increase in financial aid spending through federal Pell Grants is not expected to offset the impact of lower public funding per student (Deming & Walters, 2017; Deming, 2017; Bound & Turner, 2007).

Figure 1 illustrates that state appropriations for community colleges reached a 30-year low during the Great Recession. After peaking in 2001 at \$8,600 per full-time equivalent student, inflation-adjusted state and local funding per student for community colleges declined by 30% to \$6,000 in 2012. Figure 2 illustrates the long-term trend in federal funding for community colleges. Federal funding increased significantly between 2009 and 2012, driven primarily by an increase in the maximum amount awarded under the Pell Grant Program. However, the increase in federal funding during this period did not offset this decline in state and local appropriations.

6 The average advisor-to-student ratio in community colleges nationwide is one advisor for every thousand students, compared to one advisor for every 260 students at four-year schools (MDRC, 2010; Robbins, 2013).

Consequently, public colleges and universities have come to rely more heavily on tuition and student fees to cover costs that are no longer supported by state and local tax revenues, and to take advantage of more generous federal financial aid.⁷ Between 2002 and 2012, tuition and fees at four-year public institutions increased 41% (NCES, 2016).⁸ Community college tuition has remained more stable, increasing by 25% over the same period. Community colleges are often the most cost-effective option available to students, with average annual tuition and fees of \$3,520 per year (Community College Association of America, 2017), compared to \$9,650 at four-year institutions and \$16,000 per year in the for-profit sector (Delta Cost Project, 2016).

Figure 1. State and Local Funding Per Full-Time-Equivalent (FTE) Student at Community Colleges



Source: Delta Cost Project, American Institutes for Research, and author’s calculations.

Note: A full time equivalent student is equal to one student enrolled full time for one academic year. Total FTE enrollment includes full time students and the equivalent of part-time enrollment.

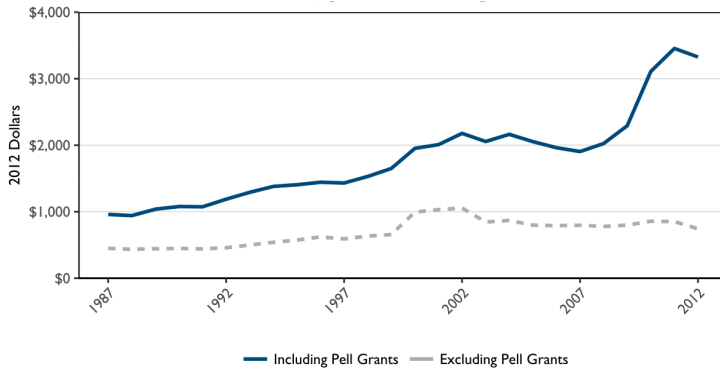
EXPANDING OPPORTUNITIES FOR LIFELONG SKILL UPGRADING

Community colleges play an important role in providing American workers with opportunities for lifelong learning. The average community college student is 28 years old, and one in ten students are over age 40. Two thirds of community college students live and file taxes independently of their parents. A third are employed

7 Higher education is sometimes referred to as “the balance wheel” of state appropriations as it often is cut back the most when other spending categories require more funding (Delaney & Doyle, 2011). Between 1997 and 2017, state appropriations for Medicaid increased 5.7%, while state funding for higher education decreased 3.1%—the largest decline out of all spending categories (NASBO., 2018). Kane, Orszag, & Thomas (2001) find that each additional dollar in state Medicaid spending crowds out higher education appropriations by about six to seven cents.

8 41% increase for four-year public institutions and a 25% increase for two-year public institutions.

Figure 2. Federal Funding Per Full-Time-Equivalent (FTE) Student at Community Colleges



Source: Delta Cost Project, American Institutes for Research, and author's calculations.

Note: A full time equivalent student is equal to one student enrolled full time for one academic year. Total FTE enrollment includes full time students and the equivalent of part-time enrollment.

full time.⁹ Community colleges also educate a disproportionately large share of underrepresented minority and low-income adult learners (Baum & Ma, 2016).

Half of working adults believe they will need to get more training or develop new skills throughout their careers to keep up with changing skill demand (Pew Research Center, 2016). Two thirds of working adults report taking a course or receiving additional training in the past 12 months in order to develop new job skills or expertise for the purposes of career advancement (Horrigan, 2016). Gone are the days when a student could receive a degree after college and expect to be prepared for a lifelong career.

Despite the great need for lifelong skill upgrading, many community colleges lack the capacity and funding to support high-demand training programs, such as healthcare and information technology, due to the relatively high costs of such training in these fields compared to other subject areas (Stewart, Farren, Gootman, & Ross, 2017). In addition, institutional funding is often tied to student headcounts instead of labor market outcomes, which suppresses incentives for community colleges to promote education in fields with the highest labor demand (Holzer, 2015).

⁹ Independent students are defined by NCES as: "age 24 or over and students under 24 who are married, have dependents, are veterans or on active duty, are orphans or wards of the courts, are homeless or at risk of homelessness, or were determined to be independent by a financial aid officer using professional judgment. Other undergraduates under age 24 are considered to be dependent" (NCES, 2018).

Economic downturns exacerbate resource constraints at community colleges, which is precisely the time at which many workers return to school to build new skills and acquire new credentials. During recessionary periods, many unemployed workers choose to go back to school to acquire new skills instead of searching for another job in poor labor market conditions. For example, in the fall of 2009, overall community college enrollment increased by nearly 12% over the previous year; full-time enrollment increased 24% (Mullin & Phillippe, 2009).

There is a tremendous opportunity to improve and modernize community colleges to better serve the needs of lifelong learners. An investment in the capacity of community colleges would enable these institutions to operate more effectively in the new paradigm in which training and education occur over the course of a worker's career.

ADVANCING LABOR MARKET SKILLS AMONG NON-COLLEGE-EDUCATED INDIVIDUALS

Career and technical education (CTE), sometimes referred to as "vocational education," can provide an alternative pathway to labor market skills for students who are not ready or inclined to pursue a college degree. CTE programs combine career-specific instruction with traditional academic content. Many workers are exposed to CTE through the Workforce Investment and Opportunities Act (WIOA) programs and the Trade Adjustment Assistance (TAA) program. Safety net programs, including Temporary Assistance for Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP), also refer workers to CTE. Most community colleges offer CTE programs that include short-term certificates or diplomas that can be earned in as little as six months, as well as programs that lead to a two-year associates degree.

As Ann Stevens summarizes in this volume, CTE offerings at community colleges lead to significant improvements in student earnings and employment outcomes. Research on CTE offerings at California community colleges showed that completion of a CTE certificate increased earnings by 14% to 28% and employment rates by two to four percentage points. The highest returns were in the health occupations, but earnings increased by 15% to 22% in non-health occupations, as well (Stevens, Kurlaender, & Grosz, 2018).

Another evaluation of CTE offerings at public institutions (primarily community colleges) find that completion of a CTE certificate increased annual earnings by more than 30% and increased employment rates by four percentage points. Students at

for-profit universities, meanwhile, exhibited *lower* earnings and employment after completing a CTE program (Cellini and Turner, 2018).

Based on the strong evidence that community colleges play an important role in equipping non-college-educated workers with in-demand skills through CTE, further expanding such programs requires a dedicated commitment to enhanced public investment in community colleges.

3. Accountability

The new federal grant program that we are proposing would offer funding to community colleges based on specific metrics, including: (1) characteristics of the student body (with greater funding allocated to schools with greater shares of students from disadvantaged backgrounds); (2) the labor market conditions in the local community, such as the local employment rate; and (3) demonstrated improvements in student retention and completion.

The federal grant program will be temporary, and its continuation will be contingent upon demonstrated outcomes. We propose allowing the program to expire in 2030 unless the aforementioned benchmarks are achieved. In addition, continual monitoring and evaluation will be required to ensure funds are being directed to their best use (as described below).

The availability of new federal funding for community colleges could entice state lawmakers to divert existing funds away from community colleges toward other uses. To avoid this unintended consequence, we propose making federal grants contingent upon continued state funding for community colleges at or above current levels.

This proposal contrasts with other recent proposals that have called for increased student financial aid, for example, that from the Center for American Progress (2018). We do not take this approach because increasing financial aid can increase the demand for higher education without addressing supply constraints. This mismatch creates several unintended consequences: it could lead more students to attend a college program that does not necessarily serve them well, and it could also lead to higher tuition “sticker prices.” Institutions can capture aid by adjusting prices—including by adjusting tuition, fees, and internal aid. Indeed, Lesley Turner (2017) finds that schools capture 15% of students’ Pell Grant aid through reductions in institutional aid. Nicholas Turner (2012) finds that federal student aid crowds out institutional aid, dollar-for-dollar. Increases in institution-specific subsidized loan maximums increase

tuition prices by as much as 60 cents on the dollar (Lucca, Nadauld, & Shen, 2016).¹⁰ These concerns about publicly provided aid are an important factor in our emphasis on supply-side investments in this proposal.

At least 32 states have adopted performance-based funding measures—which make funding contingent upon successful course completion, credits earned, and credentials earned—for community colleges and public universities. We believe that new community college investments must be tied to both student retention and completion results, as well as tangible outcomes in the labor market, including increased employment and higher wages within students’ given professions. Such accountability metrics are especially important for the evaluation of two-year associates degrees and shorter-term credentials that are intended to prepare workers for specific vocations after graduation. A focus on labor market outcomes would improve the incentive for schools to produce more students with credentials that have significant labor market value.

We do not want to encourage schools to select only the best students to make their completion rates appear higher. Therefore, the funding formula would take into account institutional “inputs,” such as the characteristics of entering students and local labor market conditions, as well as institutional “outputs,” including completion, employment, and wage outcomes.¹¹ Funding would reward schools that make the greatest progress against the “output” measures, conditional upon their initial institutional characteristics. For example:

10 The incidence varies by institution type. Turner (2017) finds that public schools capture less than five percent of their students’ aid. Singel and Stone (2007) find that increases in Pell grants are matched one-for-one with tuition increases for private universities and out-of-state tuition increases for public universities, while Cellini and Goldin (2012) find that private for-profits’ programs that are eligible for aid charge tuition that is 78% higher than comparable aid-ineligible programs. Increases in federal and state financial aid are not the only drivers of the rising direct costs of higher education—increases in the return to college education and cuts in public appropriations also play an important role. Gordon and Hedlund (2017) find that between 1987 and 2010, these factors played an important role in the tuition increases that occurred over that time period, but that increased financial aid was the biggest driver of tuition increases.

11 Suggested metrics draw heavily upon the criteria that are used for awarding the Aspen Prize for Community College Excellence.

INPUTS	OUTPUTS
<ul style="list-style-type: none"> • Share of students attending college part time • Share of students in academic/transfer programs vs. technical/vocational programs • County unemployment rate • Five-year difference in employment rates in county • Language diversity of students • Share of students requiring academic remediation • Share of underrepresented minority students 	<ul style="list-style-type: none"> • Share of students who earn a credential or transfer to a four-year institution within three years • Share of students who earn a credential or transfer into two- to four-year degree program within three years • Among students who transfer to four-year college, share that complete four-year degree • Graduates' earnings relative to regional labor market • Job placement and continuous employment rates • Quality and reliability of data gathered by college on student learning outcomes • College's use of data on learning outcomes to improve coursework • Graduation rates of underrepresented minorities • Achievement gap between white and underrepresented minority students

4. Best First-Dollar Investments

There is substantial variation in the types of interventions needed within institutions to significantly increase college completion. That said, there are many promising, evidence-based directions that could be taken to ensure the highest return on investment. Promising potential interventions that are backed by evidence include:

1. **Expanding student support services and advising.** Increasing the availability of dedicated, nonfinancial student supports, such as case management or individualized financial counseling, has been shown to cost-effectively increase retention and completion rates in a cost-effective way. (Evans et al., 2017; Page, Kehoe, Castleman, & Sahadewo, 2017; Angrist, et al. 2016; Clotfelter, Hemelt, & Ladd, 2016).
2. **Using financial incentives to promote course and degree completion.** Several colleges and universities have experimented with providing students with financial incentives, such as tuition waivers or transportation subsidies (Barrow, Richburg-Hayes, Rouse, & Brock, 2014; Richburg-Hayes et al., 2009), to stay enrolled and to complete degrees. For example, the Stay the Course program in Fort Worth pairs community college students with a trained social worker and provides access to a fund for limited emergency financial assistance. The program has increased completion rates by as much as 31.5 percentage points (Evans et al., 2017).

Improving remedial education to increase academic preparedness. Many students are not prepared for college-level coursework when they enter college and must take remedial courses before advancing to credit-bearing coursework. Students who are required to pursue remedial education are less likely to persist and complete their degrees. However, several recent studies have examined interventions to promote persistence among students who require remedial education. Successful examples include course structure changes (Schneider & Clark, 2018), combining academic supports with incentives (Angrist et al., 2009), and academic coaching (Bettinger & Baker, 2014).

5. Fiscal Costs and Potential Offsets

ESTIMATED FUNDING AMOUNT

We estimate an annual investment of *\$22 billion*. This amount is based on a calculation of what it would cost to increase the rate of completion and transfer among community college students aged 18 to 24 to 60% by 2030, and to increase the share of Americans aged 25 to 64, with a college degree or other high-quality credential to 65% in 2030. Data-driven calculations lead us to conclude that it will cost *\$11.9 billion* to fund instruction and student supports at community colleges at the same per-student level as at public four-year institutions, thus equalizing the intensity of instructional resources across community colleges and four-year public institutions. We then calculate the cost of increasing the share of workers aged 25 to 64 with a college degree or other high-quality credential to 65% by 2030. This would require an additional *\$10.1 billion* per year. One percent of the total funding amount (approximately \$20 million per year) would be set aside for research, evaluation, and technical assistance, which is comparable to other large federal education grant programs.¹²

POTENTIAL PATHWAYS TO BUDGET NEUTRALITY

There is broad bipartisan agreement that greater public investment and accountability are needed to enable public institutions to support a new model of education in which workers are continuously building skills throughout their careers. The challenge we face is that even larger changes are needed to restore a sustainable fiscal position. As Jason Furman and Phillip Swagel observe in another chapter in this volume, there is broad consensus that policy actions are needed to achieve a sustainable fiscal position over time, but there is considerable disagreement over

¹² More detail is available in the appendix to this paper.

the ideal composition and timing of those actions, as well as over the fundamental choices regarding the size, scope, and role of the government in society, which ultimately will determine the nature of the fiscal adjustment.

Setting aside this much larger debate, members of our working group agree any new spending increases or revenue reductions should be deficit neutral. However, we are less optimistic that there is a clear, bipartisan path to pay for such initiatives. Some of us believe the bulk of new spending should be paid for with broad-based revenue increases, while others think the bulk of funding should come from repurposing existing programs in the Department of Education or the Department of Labor that have had disappointing outcomes. While there is agreement that the proposed new spending would need to be offset by a combination of spending reductions and revenue increases, members disagree about the extent to which new funding should be drawn from each source.

6. Complementary Proposals

Several existing proposals that would complement our call for new public investments in community colleges. We discuss policies that could address the strong financial incentives that exist for workers to return to work (often in declining sectors) instead of pursuing longer term investments in training. We also describe several options that could help strengthen alternative pathways into the labor market for non-college-educated students.

EXPANDED PUBLIC-PRIVATE TRAINING PARTNERSHIPS

Many employers have shown a renewed interest in partnerships with community colleges as a way to train workers to fill critical positions. A tight labor market, combined with the ability to influence or even create coursework that directly aligns with needed skills, is appealing for both education providers and companies.

The skills that workers can learn on the job fall onto a continuum between the general, such as interpersonal communication skills or computing, and the firm-specific, such as the skills required for specific processes that are unique to a company or team (Becker, 1962; Hashimoto, 1981). The company loses the value of providing training, especially general training, if the worker leaves to go work elsewhere. A more skilled workforce is better for society as a whole, but companies often underinvest in general training because it makes their workers more attractive to their competitors.¹³

13 A standard economic model would imply that firms will provide general skills training to workers if and only if they are able to pass the costs onto the worker in the form of lower wages during the training period. This is because an employer cannot be guaranteed to reap the benefits of the training investment, since a worker could subsequently take those skills to another employer. If firms are unable to pass the costs of training provision unto workers, which would be the case if wages are unable to adjust downward, they will generally

Public-private partnerships with community colleges can help to address this externality by allowing firms to avoid bearing the entire cost of general training. This social externality helps explain the public sector in providing or subsidizing general workforce training. Our proposal to strengthen public investments in general training at community colleges is likely to complement firm-specific training provided by the business community. Additionally, partnerships between the two sectors will better enable workers to develop a complete skill set, all while sparing businesses from bearing the costs of general training.

IMPROVE AVAILABILITY AND TRANSPARENCY OF DATA ON STUDENT LABOR MARKET OUTCOMES

Many state and federal governments have made a concerted effort to improve the transparency and availability of education and labor market data (Zinn & Van Kleunen, 2014). For example, tools such as collegescorecard.ed.gov and College Navigator make data on graduation, retention, and student debt available for all institutions of higher education that receive federal aid. Nevertheless, important further improvements include harmonizing systems across states, making longitudinal data more widely available, and improving the accessibility and reporting of information to the public (Dynarski, Hemelt, & Hyman, 2015). Data gathering for alternative credentialing programs should also be expanded, and data on labor market outcomes should be linked to degree programs.

EXPAND FINANCING OPTIONS AND INCOME SUPPORTS FOR INDIVIDUALS WHILE THEY ARE PURSUING EDUCATION AND TRAINING

Many individuals who might otherwise seek training or education do not have the financial freedom to step away from working or have any significant amount of time to do so. As Ann Stevens (2018) explains in this volume, cash- and credit-constrained workers often face financial pressure to continue working or quickly return to work instead of entering training programs, even if that decision requires them to return to low-wage work in a declining industry. Safety net programs for prime-age workers in the United States are limited and typically emphasize work instead of training.

One approach to addressing this challenge would be to increase funding for individual training vouchers for disadvantaged adult workers under the WIOA program. The voucher program, which is administered by state workforce development boards, has been shown to increase the long-term earnings of participants from \$300 to

not provide general skills training. This is one explanation for why there is not more training provided by firms.

\$900 per quarter (McConnell, Berk, & Perez-Johnson, 2014; Heinrich, Mueser, Troske, Jeon, & Kahvecioglu, 2013).

Another approach would be to expand lifelong learning accounts. These accounts function like other tax-deferred accounts such as IRAs—individuals contribute tax-deferred (or tax-exempt) funds into a savings account that can be used for qualified education and training programs. Tax incentives would encourage individuals to save and invest funds for continued education. Employers could also make tax-exempt contributions to the accounts, which would be portable so that the account remains with the employee after changing jobs.

EXPAND ONLINE LEARNING OPPORTUNITIES

There is no one-size-fits-all solution for expanding midcareer training opportunities. For instance, online education has made continuing education cheaper, more flexible, and more accessible for many adult learners (Goodman, Melkers, & Pallais, 2016). Enrollment in the for-profit education sector, which is largely online, tripled in size during the 2000s, driven primarily by students over the age of 24 who live independently (Deming, Goldin, & Katz, 2012). Although enrollment at for-profit institutions leveled off during the 2010s, enrollment in nonprofit online institutions continues to soar, particularly in credentialing programs in information technology, healthcare, business, and other high-demand fields.¹⁴ The success of massive online open courses (MOOCs) and other nontraditional credentialing programs also signals that there is a significant appetite among adult learners for skill development in emerging technical fields.

However, significant questions remain about the quality of some online programs and the value of online credentials in advancing worker careers. One resume audit study found that otherwise identical job applicants were 22% less likely to receive a callback from a prospective employer if their degree came from a for-profit online institution as opposed to a nonselective public institution (Deming, Yuchtman, Abulafi, Goldin, and Katz, 2016). Hoxby (2017) compares the earnings of college students before and after their enrollment in online degree programs and finds that the labor market returns to such programs are insufficient to justify their cost to students. While exceptions undoubtedly exist, the mixed performance of online education to date leaves us apprehensive about asking too much of online postsecondary education.

¹⁴ For example, between 2012 and 2015, enrollment in Western Governors University, an online four-year university, grew 70%; Southern New Hampshire University experienced a fourfold increase in enrollment.

Students from low-income and academically disadvantaged backgrounds also perform less well when enrolled in online coursework relative to in-person formats (Joyce, Crockett, Jaeger, Altindag, & O'Connell, 2015; Alpert, Couch, & Harmon, 2016; Krieg & Henson, 2016; Xu & Jaggars, 2013; Figlio, Rush, & Yin, 2013; Bettinger, Fox, Loeb, & Taylor, 2017). Blended learning approaches, which combine online and in-person components, appear to be more promising. Recent studies find that students at four-year universities fare equally as well in blended formats as they do in entirely in-person programs (Bowen, Chingos, Lack, & Nygren, 2013; Alpert et al., 2016; Joyce et al., 2015).

We specifically do not seek to position community colleges as competitors to other high-quality, nonprofit online institutions that seek to appeal to adult learners. On the contrary, we believe there is potential opportunity for community colleges to leverage high-quality educational technology developed by other online institutions, rather than reinvent the wheel in-house. The working group affirms the importance of all institutions of higher education—including public, nonprofit, and for-profit—being held accountable for the labor market outcomes of their students. These institutions must also be transparent about the value their institutions can (or cannot) offer students.

ENHANCE APPRENTICESHIP PROGRAMS

Work-based learning strategies, particularly apprenticeships, have drawn renewed interest as a means of promoting skill development and providing a secure path to employment for young people. Germany, Switzerland, the United Kingdom, Canada, and Australia maintain robust apprenticeship programs in which two to three percent of the workforce is enrolled at a given time. In these countries, apprenticeships are a common path into the workforce and do not preclude students from pursuing four-year college degrees. In the United States, only 0.03% of the workforce is engaged in an apprenticeship.

Although apprenticeship programs are largely untested in the United States, we believe apprenticeships that provide high-quality training and workforce preparation for students prior to, or in conjunction with, college attendance merit further exploration. We also agree with recent emphasis placed on the development of industry-wide credentials to ensure apprenticeship credentials are a credible signal in the labor market. However, apprenticeships can be quite costly to employers. Excluding start-up costs, the most expensive programs cost up to \$250,000 per apprentice; the least costs less than \$25,000 (U.S. Department of Commerce, n.d.). We think it is worth exploring the scalability of apprenticeship models that do not require substantial public investment.

PROMOTE ALTERNATIVE CREDENTIALING

For workers without a college degree, earning an industry-recognized credential can be a useful market signal that leads to higher earnings. Although there is little available evidence on the impact of nontraditional credentials on earnings, this is an avenue worth exploring. Policymakers could help establish a process to evaluate and accredit organizations that provide high-quality certifications and improve the general acceptability of credential programs. Improvements in credential quality and transparency would enhance the signals trainees send to employers, increasing the value of credentialing programs for both employees and employers.

REFORM THE PELL GRANT PROGRAM TO BETTER PROMOTE COLLEGE COMPLETION

Though Pell Grants are the largest federal source of student financing, funding cannot be applied to most career-focused, short-term credentialing programs. Currently, loans are only available for programs that run for at least fifteen weeks, disqualifying many short-term, skills-based training programs. This is an element of the program that might benefit from reform. Other reforms could include: eliminating or drastically simplifying the free application for student aid (FAFSA), as proposed by Baum and Scott-Clayton (2013).

Appendix: Cost Estimates

We calculate costs using our two stated goals:

- a) *Close the completion gap between two-year college students aged 18 to 24 and their peers at four-year institutions by 2030. This would require increasing the average completion/transfer rate among 18- to 24-year-olds at community colleges from 37.5% to 60% by 2030. This will result in 3.6 million more 18- to 24-year-olds with college degrees by 2030.*

We first calculate the funding that would be required to equalize resources for education and student supports at four-year public institutions with those at community colleges. We assume that providing community college students with the same level of resources as those provided to bachelor's degree students—in the evidence-based manner for which we advocate—can bring about similar completion rates. This assumption is consistent with the elasticity estimates from Deming and Walters (2017), who find a one percent increase in institutional funding for community colleges is expected to lead to a 1.45 percent increase in the number of completions one year after investment. Therefore, we calculate the cost of increasing per-student

funding at community colleges to the level at public four-year institutions, holding constant the number of current community college students for the years 2019-2030.

In 2013, the latest year for which data are available, per-student funding for “education and related expenses” at four-year public universities was \$14,900 per full-time equivalent student (Delta Cost Project, 2016).¹⁵ At community colleges, this number was only \$11,400—a difference of \$3,500. In 2015, there were 3.4 million students aged 18 to 24 enrolled at community colleges nationwide (NCES, 2016). Assuming the community college student population remains constant through 2030, increasing per-student resources would imply an annual cost of \$11.9 billion.

b) Increase the share of Americans aged 25 to 64 with a college degree or other high-quality credential from 46.9% to 65% by 2030, which reflects the expected share of jobs requiring advanced skills in that year. This goal would require 28 million total additional workers to earn first-time degrees or high-quality credentials by 2030.

Approximately 65% of jobs are projected to require college-level skills by (or before) 2030 (Manyika et al., 2017; Carnevale, Smith, & Strohl, 2013; Juskiewicz, 2017). Therefore, we measure the number of additional workers aged 25 to 64 that would need to complete a degree or credential in order to achieve the 65% threshold by 2030.

Assuming the policy is enacted in 2019, we expect a three-year implementation lag, so that interventions are fully operational by 2022. According to the Lumina Foundation, 46.9% of adults aged 25 to 65 held a college degree or other high-quality credential in 2016 (Lumina Foundation, 2018). We use the Lumina Foundation measure, since it is the only data source that contains a measure of adults who have completed a high-quality credential. Although the rate of degree/credential completion is already increasing among the U.S. adult population, we must accelerate the rate of degree completion to achieve this goal.

We assume an annual growth rate of 0.6 percentage points per year through 2022, based on historical trends in degree and credential attainment reported by Lumina. Therefore, 51% of the workforce will have a degree or other high-quality credential by 2022. We then calculate the number of additional workers that would need to earn a credential in order to achieve the 65% goal by 2030. Based on population projections from the United States Census Bureau, 28 million additional American adults would need to attain a degree or other high-quality credential between 2022 and 2030 in order to reach the 65% benchmark (U.S. Census Bureau, 2017).

15 “Education and related expenses” in the Delta Cost Project data *include* items directly related to training students: instruction, student services, and a prorated share of administration and operations and maintenance. These *exclude* spending on research, public service, enterprises, hospitals, and independent and other non-academic operations that are irrelevant to community colleges.

Since younger workers are more likely to hold a college degree relative to older workers, we adjust our underlying cohort according to the population that will age in (Hussar & Bailey, 2017; NCES, 2016) and age out over this time period (U.S. Census Bureau, 2017).

We estimate the cost of an additional credential to be \$3,520, which is based on the average annual cost of community college tuition and fees in 2017 (Community College Association of America, 2017). We assume a lower cost per adult learner relative to students aged 18 to 24, since this population will include participants in short-term certification programs and will rely more heavily on online education delivery. This results in an annual cost of \$10.1 billion.

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What Works in Career and Technical Education (CTE)? A Review of Evidence and Suggested Policy Directions

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ABSTRACT

Career and technical education (CTE) is widely viewed as an important alternative to traditional four-year colleges, a means of increasing the earnings of U.S. workers, and an effective response to the changing skill requirements of U.S. employers. While abundant evidence confirms that CTE offerings at public institutions can increase the earnings and employment rates of graduates, substantial barriers to successful expansion of high-quality CTE remain. These barriers include a lack of accessible information about program quality that makes it difficult for students to identify high-return programs and insufficient funding for both CTE students and the public institutions that provide high-quality programs. Low completion rates among those starting CTE programs also limit their positive earnings effects.

1. Introduction

OVERVIEW AND DEFINITIONS

Career technical education, or CTE¹, generally refers to educational programs that are specifically designed to prepare students for future employment in a particular sector or occupation. CTE programs frequently combine career-specific instruction with more traditional academic content, with an emphasis on applying academic skills to career settings. In practice, CTE programs train individuals for a wide variety of occupations and industries (e.g., early childhood instruction, welding, correctional officer positions) with a wide range of technical skill requirements.

CTE is provided in several types of settings. Most community colleges offer a number of CTE programs, including short-term “certificates” or “diplomas” that require between six months and two years of study, as well as programs that lead to two-year associate degrees. CTE is also offered by for-profit colleges, and the fraction of “occupational education” programs offered by these for-profit institutions is rising. Nonprofit organizations that are not affiliated with educational institutions also offer employment training programs; substantially less is known about the population served and the offerings of these organizations. Finally, many high schools offer CTE programs for their students, often with dual goals of preparing students for future employment and increasing the chances that students graduate from high school.

Individuals frequently become connected to CTE via federal employment and training programs. Currently, for example, CTE is part of the services offered under the Workforce Investment and Opportunities Act (WIOA) of 2014, which replaced

1 CTE was previously referred to as “vocational education” and is similar to the Department of Education’s classification of “occupational field of study” programs. The terms are largely interchangeable for the purposes of this brief. For an extended discussion of the definition of CTE, see Career and Technical Education Foundation (n.d.).

and expanded the Workforce Investment Act (WIA), passed in 1998.² Other programs such as Trade Adjustment Assistance (TAA), Temporary Assistance for Needy Families (TANF), and the Supplemental Nutrition Assistance Program (SNAP) also refer workers to CTE.

All of these federal employment programs offer some workers other services as well, such as job search assistance or career counseling. These umbrella federal employment and training programs (and their predecessors) have often been the subject of formal evaluations. Thus, evidence on CTE comes from both evaluations of CTE courses and degrees directly and from evaluations of federal employment and training programs that refer workers to these CTE programs.

The population that CTE serves includes two distinct groups. The first is a category of workers referred to broadly as “disadvantaged workers” or the “hard to employ”—these are workers with low levels of education, skill, prior wages or experience, and/or other sources of disadvantage (such as prior incarceration).³ The second group is composed of “displaced” or “dislocated” workers who have lost long-term jobs.

In recent years, interest in CTE as a means of assisting both of these groups has expanded. The Great Recession and the job losses resulting from globalization and automation have highlighted the potential need for retraining for those affected by labor market disruptions. Over a longer time frame, stagnant wages at the lower end of the income distribution and the low rates of college completion among disadvantaged groups have focused attention on the need for increased access to CTE.

THE EVIDENCE ON CTE AT PUBLIC COMMUNITY COLLEGES AND FOR-PROFIT SCHOOLS

Economists and educational researchers who study the labor market returns to education have often ignored community colleges, and have paid even less attention to vocational or CTE programs within those colleges.

Fortunately, this tendency has been corrected in recent years. A number of new studies examine the labor market returns to community college CTE programs. Virtually all of these studies are nonexperimental—they use observed data to compare the earnings of a group of workers who completed community college degrees or certificates to a comparable group of workers who did not receive CTE awards. The

2 For an overview of the success of WIA programs for disadvantaged adults, and suggestions for building on that success, see McConnell, Perez-Johnson, and Berk (2014).

3 This group is sometimes further divided into disadvantage adults and disadvantaged youth. For purposes of space, this brief will focus almost entirely on the adult population.

best of these nonexperimental studies use CTE participants' own preenrollment earnings to improve their ability to capture the true program effects. While this methodology is not perfect, these studies nonetheless provide useful evidence on the effects of CTE programs.

Many of these new studies show positive returns to CTE certificates and degrees obtained at community colleges. Research on CTE offerings at California community colleges showed that completion of certificate programs in CTE fields increased earnings by 14% to 28% and employment rates by 2 to 4 percentage points (more in the case of health fields). The same study found that longer certificate programs offered slightly higher returns—completion of an associate degree in a CTE field increased earnings by 27%. The highest returns were in the health occupations, but earnings increased by 15% to 22% in nonhealth occupations as well (Stevens, Kurlaender, & Grosz, 2018).

A study of Kentucky community colleges (Jepsen, Troske, & Coomes, 2016), using similar methods, showed that CTE associate degrees increased earnings, and that shorter CTE “diploma” programs increased the earnings of men (but not women). Xu and Trimble (2016) showed positive and significant returns, on average, to both short- and longer term certificates in North Carolina and Virginia.

Studies from other states have produced mixed evidence, often with positive returns only for some certificates or groups. Jacobson, Lalonde, and Sullivan (2005) focused on community college programs serving dislocated workers specifically and found positive effects for CTE programs with heavy science and math components, but little return to other areas of study.

Several studies of CTE in community colleges show differing results for men and women, and virtually all point to significant variation across occupational fields. These two findings may be related since men and women are often found to enroll in quite different fields within the set of CTE programs. In California, for example, women make up two-thirds of CTE award recipients in the high-return, health-related fields, but also account for 88% of CTE award recipients in the much lower return family and consumer services sector. This highlights the fact that heterogeneity in the effects of CTE programs across fields may interact with uneven allocation by gender, race, and other worker characteristics across these fields, leading to potential differences in the average effects of CTE programs across population subgroups.

Another recent study by Cellini and Turner (2018) offers important evidence on how the effectiveness of CTE varies across institutions. The researchers estimated CTE returns across all states, and also compared the returns to CTE programs offered by community colleges to those offered by for-profit colleges.

The researchers found that completing a CTE certificate at a public institution (primarily community colleges) increased annual earnings by more than 30%, on average, and increased employment rates by 4 percentage points, consistent with the more positive findings summarized above. Cellini and Turner (2018), however, found dramatically lower earnings and employment effects of for-profit CTE program completion. Individuals completing certificates at for-profit schools saw their earnings increase by roughly 15%, half the return of a public institution CTE program. The authors caution that these results could be skewed by the fact that their dataset included the years of the Great Recession, during which time earnings were trending downward for low-skill workers. Nonetheless, their findings suggest that the returns to for-profit programs deserve significant scrutiny.

Cellini and Turner (2018) offer another important contribution by providing estimates of the earnings and employment effects of beginning, but not completing, a CTE program. This produces even greater cause for skepticism with respect to CTE programs at for-profit colleges. Students who enrolled in, but did not complete, a CTE certificate program at a for-profit institution saw their earnings fall by approximately 9%. By contrast, among students who enrolled in but did not complete a CTE program at a public institution, the researchers found a 6% earnings increase.

Finally, as noted above, many public high schools also offer CTE coursework and tracks. While the primary focus here is on programs for adults, a recent survey by Jacob (2017) summarizes the limited evidence on high school CTE. He notes one frequently cited evaluation of CTE “Career Academies” within public high schools that found little evidence of improved graduation rates or college enrollment and no effect on earnings for female students, but did find evidence of increased earnings for male students (Kemple & Willner, 2008). Another recent evaluation considered regional vocational and technical high schools—entire schools devoted to CTE instruction—in Massachusetts. This study found strong effects on high school graduation from attending these high schools, but little effect on academic achievement within high school (Dougherty, 2018).

As the research highlighted above illustrates, the first answer to the question of “what works” in CTE is that while there is variation by the length of the certificate, the field of study, and the state, the overall evidence suggests that CTE programs at public community colleges can raise earnings and improve employment prospects. Even among workers who enroll and only partially complete short-term CTE training, the programs appear to provide some benefits. In the for-profit CTE sector, by contrast, there is evidence that completion of certificate programs produces much lower returns for the typical graduate (as compared to graduates of public programs), and that enrollment without completion may actually lower earnings significantly.

THE EVIDENCE ON FEDERAL TRAINING PROGRAMS

Individuals can also come to CTE programs through safety net or federal employment and training programs. A separate set of evidence on the effectiveness of CTE for U.S. workers comes from the evaluation of these federal programs. Unfortunately, a reading of media coverage relating to major federal employment and training efforts provides a negative and confusing picture of the effectiveness of training. For example, major evaluations of these federal programs have generated the following headlines from across the political spectrum:

- “The False Promises of Worker Retraining” (Selingo, 2018)
- “So far, federal job-training programs have been outright failures” (Muhlhausen, 2017)
- “In the Dark on Job Training: Federal Job Training Programs Have a Record of Failure” (Kersey & Muhlhausen, 2004)

An overly negative media characterization of program evaluation studies might not be unusual, but in this case it is symptomatic of widespread and continuing skepticism of federal programs that rely heavily on the public CTE offerings summarized as generally effective above.⁴ Understanding how and why this conflict exists is helpful in untangling the ways in which the evidence on federal employment and training initiatives relates to the more direct evidence on returns to CTE programs.

First, a key distinction between studies of the effects of certificates and degrees earned by individuals versus studies of federal employment and training programs is that most federal programs offer a combination of employment (or reemployment) services and training services. This means that many, and sometimes the majority of, participants in these federal programs do not receive any actual CTE.

Second, even when focusing on program participants who do receive training, it is important to understand the benchmark against which the effects of training under the program are compared. The preferred approach to evaluating federal training programs is to use random assignment into the program or into the program’s available services, so that eligible or participating individuals can be compared to a control group of nonparticipants.

In the case of the most recent WIA study (McConnell et al., 2016) that addresses training specifically, individuals eligible for WIA services were randomly allocated to receive: (1) only job search; (2) more intensive services but not training; or (3) all

4 If anything, headlines from earlier decades were even more negative, likely reflecting the fact that federal programs in this area have improved over time. Evaluations of the Job Training Partnership Act (JTPA) or Comprehensive Employment and Training Act provisions did not provide much evidence of success.

services including training. Thus, the assessment of training within WIA is based on a comparison of the earnings for those randomly selected to be offered training and those offered only the less intensive program services.

Random assignment is generally viewed as the gold standard for program evaluation, but in this case, random assignment may uncover an answer to a narrow question that does not inform us about the effectiveness of training or CTE more generally. The problem here (and in many other related program evaluations) is that members of the control group are free to engage in training outside of the program, and many of them do. The WIA study reports that, among those randomly assigned to receive training, 43% actually did so. Among the control group, 30% participated in training (outside the program). Thus, the WIA evaluation of training compares a group in which 43% receive training to a group in which 30% receive training, so simple differences in outcomes cannot be directly interpreted as the effect of training.

To understand the importance of this detail given the actual rates of training participation in the WIA study, imagine a hypothetical case in which we know that any type of training raises annual earnings by \$4,500 (and assume those without training get no earnings boost). Using the actual rates of training participation from the WIA study, a comparison of the treatment and control groups in this (hypothetical) case would show that the treatment group experienced an earnings increase of:

$$(.43)*(\$4500) + (.57)*(\$0) = \$1935.$$

The control group would show an earnings increase of:

$$(.30)*(\$4500) + (.70)*(\$0) = \$1350.$$

A naïve conclusion from the randomized trial would be that the “treatment” increased earnings by less than \$600, the difference between the treated and untreated groups. That finding would coexist with the underlying fact that training (in this example) actually raised the earnings of those who received it by \$4500. In this setting, the randomized study correctly identified the effect of the program, but the size of that effect was largely driven by the fact that the majority of the treated group received no training, and a large minority of the control group did receive training.

The time frame of the WIA evaluation (and likely many other evaluations) also contributes to the negative view of the study results. The study was the first round of two planned evaluations and presented results on earnings and employment outcomes 15 months after the initial offering of WIA services. In many cases, training had not been completed, or had barely been completed. Many CTE programs offered through community colleges can take one to two years to complete, assuming full-time study (which may be impossible without some form of income support). Other intensive services will also take time to complete. As the WIA study authors note:

It is too soon to judge the effectiveness of the availability of both training and intensive services. Just as five quarters is too short a period to judge the effectiveness of training, it is also too short a period to judge whether the availability of both WIA-funded training services and intensive services was more effective than a counterfactual in which neither of these services were available. (pg. XXVII)

While 15 months is enough time to observe the effectiveness of short-term job search assistance or career counseling on labor market outcomes, it is clearly not long enough to correctly evaluate the effectiveness of 12- to 24-month training programs. Because programs are administered as a single unit, these types of evaluations may not deliver informative analysis of individual components of the programs.⁵

An earlier, nonexperimental study of WIA's effectiveness also looked at the training component of the federal program (Heinrich, Mueser, Troske, Jeon, & Kahvecioglu, 2013). The lack of an experimental framework in this study means that selection into the WIA services could bias results, although the authors used a variety of methods to control for potential bias based on observable characteristics of treated and comparison groups. Like much prior literature, the study found positive effects on earnings for disadvantaged adults who received training, although these results did take some time to appear.

Among dislocated workers, earnings effects were smaller, and negative for several quarters after initiation of training, again reflecting that completion of training takes time. The finding of weaker results for dislocated workers (compared to disadvantaged adults) is common and likely reflects the very large and persistent effects of dislocation on earnings and employment in the absence of any intervention. Nonexperimental matching methods for dislocated workers in particular raise the question of why the control groups are not eligible for dislocation assistance, including the possibility that the controls face better employment opportunities, which could explain the lack of positive findings.

This evidence on training under WIA is largely consistent with reviews of earlier federal employment and training programs. A 1995 review of federal training programs by Robert LaLonde concluded that public sector training programs in earlier decades produced modest gains, with some of the largest gains going to disadvantaged women. This summary also noted the weaker evidence on the systemic benefits of public sector training for dislocated workers (compared to other adult workers).

Later work (LaLonde & Sullivan, 2010) argued that dislocated workers are likely underinvesting in retraining due to insufficient funding and income support and a lack of information about the returns to training, both in general and with respect to specific training programs.

⁵ A second evaluation of the WIA programs was scheduled to be released in 2017. While that report has been completed by the contracting agency, the Department of Labor has not released the report at this time.

2. Known challenges for CTE programs

Even if, on average, CTE programs offered by public institutions produce positive and often substantial returns for those students who complete them, there remain important challenges to overall effectiveness. These include: low completion rates for many programs with positive returns, questions of access and capacity, and a growing need for information to help students distinguish high- from low- or no-return programs.

CTE is often criticized for having very low completion rates, both in the context of community college programs and in the for-profit sector. The federal WIA evaluation (McConnell et al., 2016) found that, among members of the treatment group participating in any training, approximately 71% completed the training. Among control group members, the comparable completion rate was 60%.

National Center for Educational Statistics (NCES) data include summary measures for all higher education programs eligible for federal aid, including completion rates for cohorts of students enrolling in postsecondary “occupational” fields of study at both for-profit and public colleges. The most recent data available follows cohorts of students that entered these programs during the 2003-4 academic year and observes their completion status as of 2009. Of the 1.3 million students who enrolled in occupational programs in 2003-4, just 40% had completed a degree or certificate six years later.⁶

These low completion rates have many causes and present a genuine reason for caution in evaluating the effectiveness of CTE. At the same time, many workers enroll in CTE coursework specifically to brush up on skills in their current sector and have no plans to complete an entire certificate or degree. Because it can be impossible in many data sources to distinguish those who wish to complete degrees from those who simply want to improve skills with a class or two, it is not necessarily accurate to interpret these low completion rates as failures.

Another under-appreciated challenge to CTE completion likely exists for many dislocated workers. One of the purposes of training and “retraining” is to facilitate the movement of workers from declining industries to those expected to offer employment and robust wages in the future. Individual dislocated workers, however, may not have a clear incentive to transition out of their industry. Many studies of displaced workers show that workers who are able to remain in the same sector, industry, or occupation have better wage outcomes than those who switch.

For example, Couch and Placzek (2010) found that displaced manufacturing workers who leave their specific industry group had earnings losses that were 1.65 to 2 times as

⁶ For full table, see National Center for Education Statistics, Table B01 (n.d.a.)

large as those reemployed in the same industry, consistent with many earlier studies. This partially reflects the fact that switching industries is likely to reduce earnings in the short- to medium-term. Furthermore, even sharply declining industries do not disappear overnight, so dislocated workers who begin retraining may face strong incentives to return to their industry if the opportunity arises. If the true extent of an industry's decline is uncertain, or if political rhetoric focused on "bringing the jobs back" is added to the picture, it seems almost predictable that many dislocated workers will abandon training to return, at least temporarily, to their prior sector.

Another potential concern with CTE in its current form is access to and capacity of the current system. The fact that large numbers of dislocated workers and disadvantaged adults find their way to training suggests that CTE opportunities are broadly available, but there is also evidence of capacity constraints within high-return CTE programs. The U.S. Department of Education has noted long wait lists for CTE programs throughout the country (USDOE, 2012).

In California, which has the largest community college system in the nation, CTE programs have often been underfunded, with long waiting lists. A stark example of this comes from work by Michel Grosz (2018), who studied nursing programs offered in the California community college system and found major capacity constraints for this high-return program. Because community colleges are intended to be open access, these constraints often lead programs to establish wait lists or lottery systems for admission to high-demand programs. Grosz analyzed a high-demand, high-return nursing program at a California community college with roughly 30 seats available each year and more than 100 students typically eligible for admission. This mismatch has prompted the program to admit qualified students via a lottery, a solution mimicked by at least a dozen other nursing programs throughout the state. Grosz found that students not admitted to the program via lottery may remain on wait lists for several years before becoming eligible to enroll. While health programs have been in particularly high demand in recent years, these capacity constraints may extend to other programs and states.

Financial challenges in the public higher education sector contribute to access concerns. Economic downturns result in greater numbers of dislocated workers, and high unemployment rates for all workers make it a particularly appealing time to invest in training. Unfortunately, these may be precisely the times when public programs are particularly constrained by state fiscal challenges. In California, for example, Bohn, Reyes, and Johnson (2013) showed that, in the three years following the onset of the Great Recession, there were reductions in the availability of CTE enrollment slots in California Community Colleges of 6-9%.

These financial constraints are particularly important for CTE programs, which are often more expensive to offer than traditional academic programs. For example,

researchers have estimated instructional costs per student at community colleges in both academic disciplines and CTE fields (Shulock, Lewis, & Tan 2013). For academic fields including humanities, biology, and engineering, these costs (as of 2011-12) range from \$52 to \$73 per student credit hour. For CTE programs including medical assisting, drafting, and respiratory care, comparable costs are \$131 to \$265 per student. The same researchers note these cost differentials likely reflect class size constraints and specialized lab and equipment needs in some CTE fields.

Finally, given the variation in effectiveness of training for different groups, across public versus for-profit programs, and across different occupational fields, there likely exist substantial and growing information barriers for workers who wish to invest in effective CTE.

This need is most clearly demonstrated by the growth in for-profit CTE programs. Many for-profit programs offer training that is unlikely to significantly boost the earnings of those who enroll, given low completion rates and much lower earnings effects than in the public sector. The trend, however, is toward more for-profit CTE offerings. NCES data shows that from 2000 to 2014, the number of for-profit institutions offering occupational education programs rose from just over 2000 to more than 3000. In 2000, for-profit institutions accounted for 47% of all institutions offering occupational education; by 2014, that share had risen to 57%.⁷ While the majority of students completing CTE-type training continue to graduate from public two-year programs, a worker searching for a CTE program will encounter a landscape where for-profit institutions abound.

3. The Policy Response

There is abundant evidence from CTE offerings in the public sector and from properly interpreted studies of federal employment and training programs that occupational training can raise the earnings and employment rates of many workers. At the same time, the growth of CTE programs offered by for-profit institutions with small or negative earnings and employment effects means that even highly motivated workers will benefit from information and guidance to navigate the diversity of CTE options they face.

Furthermore, the lack of extended income support for many disadvantaged and dislocated workers seeking training and the challenging fiscal environment facing many public providers of CTE may pose additional barriers.

A more promising CTE policy should include the following key elements.⁸

7 See National Center for Education Statistics, Table P141 (n.d.b.) for institutional counts and National Center for Education Statistics, Table P161 (n.d.c.) for student attainment

8 Robert Lalonde and Daniel Sullivan (2010) present several related policy suggestions in a brief considering the retraining needs of displaced workers.

EXPANDED TRAINING OPPORTUNITIES FOR DISADVANTAGED AND DISLOCATED WORKERS, POTENTIALLY THROUGH AN EXPANSION OF INDIVIDUAL TRAINING VOUCHERS OFFERED UNDER WIOA.

There is little direct evidence on the number of U.S. workers that should be engaged in training, but simple comparisons with other countries suggest we are underinvesting in CTE. A study by Strittmatter (2016) compared OECD and U.S. involvement in worker training and noted that OECD countries spend approximately 0.15% of their GDP on training which involves just over 1% of the labor force at a given time. In Germany, spending on training is 0.24% of GDP. In the United States, the study noted that just 0.04% of GDP is spent on training.

Expanded income support during training

Unemployment Insurance in the United States is typically offered for a maximum of 26 weeks, although this may be expanded during national or local recessions. Other safety net programs for prime-age workers are limited and, increasingly, may prioritize work over training to maintain eligibility. Strittmatter (2016) noted that, in Germany, most workers engaged in training have some form of income support; in the United States, only one-in-five training participants receive income support. Workers who must choose between training and a return to employment are likely to face strong financial incentives to return to work, even if it means accepting low-wage work or returning to an industry clearly in decline.

Recent proposals for wage insurance or reemployment insurance over the short- to medium-term could make engagement in, and completion of, training more feasible for a significant segment of the workforce.

Support for capacity building among public sector training providers, especially community colleges

Given the greater fiscal variability at the state level, a federal role in supporting CTE provision, especially during economic downturns, is likely to be essential to avoid capacity constraints that limit effective training. Federal funding for programs aimed at individual workers should be accompanied by funding for CTE programs.

Improved student access to information about program quality and expected outcomes

Additional investments in training opportunities for individual workers need to be accompanied by well-designed access to information. As noted throughout, training often raises earnings and employment, but results vary dramatically by the training provider, field of study, and across individuals with different work and career histories.

At a minimum, workers in need of training support should have answers to the following questions:

- How often do individuals with similar education, work experience, and prior earnings complete a particular CTE program?
- What are the earnings and employment outcomes of individuals who complete this CTE program? Prior to completing the program, were the education, employment, and earnings of those completing the program similar to mine?
- What are the employment and earnings of workers who have been dislocated from jobs in my industry but do not engage in some form of training?

These steps could strengthen current training opportunities, but a final caveat is the need to recognize the limits of training in our current labor market. The best short-term training can raise earnings by perhaps 20%, with other programs offering smaller benefits. The modern economy poses many challenges for American workers, and CTE programs can't solve all of them.

The evidence is strong, however, that current public-sector CTE programs have the potential to improve earnings opportunities for students that enroll in and complete them. Providing better information on which programs are most likely to lead to higher earnings, providing short-term support to workers enrolling in CTE, and financially supporting successful programs even when state budgets are tight can give CTE the best chance of reaching this potential.

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Scaling Apprenticeship to Increase Human Capital

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ABSTRACT

The 2016 election heightened an ongoing debate in the United States about how best to respond to two of the foremost economic challenges of the current era: stagnant wages and a dearth of promising career prospects for American workers without a bachelor's degree. These challenges persist despite a dramatic increase in recent decades in years of schooling and sizable investments (by both the U.S. government and individual students and their families) in traditional forms of higher education. In this paper, I argue that a large-scale apprenticeship program could address these challenges, while also yielding substantial additional gains for employers and the U.S. economy. I first review the evidence on apprenticeship, which suggests that increasing the availability of apprenticeships would increase youth employment and wages, improve workers' transitions from school to careers, upgrade those skills that employers most value, broaden access to rewarding careers, increase economic productivity, and contribute to positive returns for employers and workers. I then propose policies to stimulate a large-scale expansion of apprenticeship in the United States.

1. The Challenge: Improving the Skills, Productivity, and Wages of Americans

The 2016 election heightened an ongoing debate in the United States about how best to respond to two of the foremost economic challenges of the current era: stagnant wages and a dearth of promising career prospects for American workers without a bachelor's degree. This paper argues that building a large-scale apprenticeship system in the United States would address both of those challenges, while also yielding substantial additional gains for employers and the U.S. economy.

Apprenticeship programs combine academic and structured, work-based learning under a mentor or supervisor. They allow students to earn wages and contribute to production, while working towards a valuable, occupational-based credential. Apprenticeship programs improve the learning process (as students directly apply what they learn), encourage student engagement, incentivize students to perform well in academic courses, increase the match between workers' skills and labor market demands, and widen access to rewarding careers for workers who prefer learning-by-doing over traditional classroom education and the four-year college model.

Wage stagnation, while no doubt worsened by the country's slow, unequal recovery from the Great Recession, is not a new trend. Men's long-term earnings have stagnated with each passing cohort from those entering the workforce in 1967, to those entering in 1983. (Women's earnings increased 59% over the period, but from a low base.) Research (Guvenen, 2018) suggests that this wage stagnation is driven

largely by low starting wages, a pattern which suggests weak transitions from school to the labor market. Commentators and various political factions blame these labor market problems on everything from bad trade deals, to declines in manufacturing jobs, to the outsourcing of jobs, to an uncompetitive tax and regulatory environment, to lax immigration policy.¹

There's another contributing factor that often receives less attention: the weaknesses of the U.S. secondary, postsecondary, and job training systems in preparing many students for well-paid jobs and rewarding careers.

U.S. researchers too often equate "skills" with years of schooling, completion of degrees, or scores on tests of math and verbal capabilities. To Goldin and Katz (2008), increases in educational attainment have been too slow to yield healthy economic growth and reduce wage inequality. This view of skills is one driver of the dramatic expansion of higher education spending over the last decades. In 2013, the United States spent \$27,900 per full-time equivalent student, 89% more than the OECD average of \$14,800.

Despite increases in years of schooling, added government spending, and the buildup of mountains of student debt, U.S. employers report that they face a serious skills mismatch in various occupations, especially those in technical fields. One survey of a nationally representative sample of manufacturing companies found that "eighty-four percent of manufacturing executives agree there is a talent shortage in US manufacturing, and they estimate that 6 out of 10 open skilled production positions are unfilled due to the shortage" (Giffi, Dollar, Gangula, & Rodriguez, 2015). This skills shortfall in manufacturing is primarily in jobs that require occupational and employability skills and is not necessarily about a shortfall in the general skills that come with many college degrees. In fact, worker productivity depends heavily on occupational competencies and employability skills such as communication, teamwork, the ability to efficiently allocate resources, problem-solving, reliability, and responsibility. Strikingly, in hard-to-fill jobs, firms generally prefer relevant work experience over a bachelor's degree (Fuller & Raman, 2017).

The myriad nature of skills raises questions about the near-exclusive focus by policymakers and researchers on schooling and academic test scores in the United States. So, too, does the recognition that many young people become disengaged from formal schooling, leading to weak high school outcomes (as reflected in high rates of enrollment in remedial coursework in two-year colleges) and low completion rates for community college students. Of students starting a two-year community college program in 2012, only 22% of all students and only 12% of black students had graduated within three years (NCES, 2018). Meanwhile, fewer youth have been

1 In a review of factors affecting the 1999-2016 decline in labor force participation, Abraham and Kearney (2018) find that trade and the penetration of robots into the labor market, are the most important factors.

gaining valuable work experience. The employment rate for 16- to 19-year-olds dropped from 42% in 1990 to 29% in 2017.

As I describe below, a good deal of evidence suggests that apprenticeship programs are more cost-effective than academic-only approaches at raising skill levels, especially for employability and occupational skills. Yet the United States has lagged far behind other developed countries—countries like Germany and Switzerland, but also Australia, Canada, and England—in creating apprenticeships. In these countries, apprentices constitute about 2.5-3.0% of the labor force, or about 10 times the U.S. rate.

Increasing the availability of apprenticeships would increase youth employment and wages, improve workers' transitions from school to careers, upgrade those skills that employers most value, broaden access to rewarding careers, increase economic productivity, and contribute to positive returns for employers and workers. This memo reviews the evidence on apprenticeship programs and presents policy proposals to upgrade human capital by stimulating a large-scale expansion of apprenticeships.

2. Advantages and Disadvantages of Expanding Access to Apprenticeship

THE ADVANTAGES

Apprenticeships are distinctive in that they enhance both the worker (supply) side and the employer (demand) side of the labor market. On the supply side, the financial gains to apprenticeship are strikingly high. Studies on U.S. programs indicate that apprentices do not sacrifice earnings during their education and training, and that their long-term earnings benefits exceed the gains to completing a degree at a community college (Hollenbeck, 2008). Recent reports from the state of Washington indicate that the gains to earnings from apprenticeship programs far surpass the gains to all other alternatives (Washington State Workforce Training and Education Coordinating Board, 2014). A broad study of apprenticeship in 10 U.S. states also documents large and statistically significant earnings gains from participation in apprenticeship programs (Reed et al., 2012).

These results are consistent with many studies of apprenticeship training in Europe showing high rates of return for workers. One study (Fersterer, Pischke, & Winter-Ebmer, 2008) exploited variation in apprentices' abilities to complete their programs (caused by firms going out of business) to estimate the effects of additional years of apprenticeship. The researchers found that apprenticeship training raised wages by about 4% per year of training. For workers completing a three- to four-year apprenticeship, post-apprenticeship wages were 12-16% than the wages of those

who did not complete an apprenticeship because the firm went out of business. Because the workers' costs of participation were often minimal, the Austrian study found high overall benefits and modest costs.

Noneconomic outcomes are more difficult to quantify, but evidence from Europe suggests that vocational education and training in general is linked to higher confidence and self-esteem, improved health, higher citizen participation, and higher job satisfaction (Cedefop, 2011). These relationships hold even after controlling for income. An Australian study found that quality apprenticeships improve mental health (Buchanan, 2016).

On the demand side, employers can feel comfortable raising the skill requirements and the complexity of tasks that new hires are expected to accomplish, knowing that their apprenticeship programs will ensure an adequate supply of well-trained workers. Firms reap several additional advantages from their apprenticeship investments (Lerman, 2014). They save significant sums of money in the form of reduced recruitment and training costs, reduced errors in placing employees, and reduced costs when the demand for skilled workers cannot be quickly filled. Other benefits of apprenticeship for firms include reliable documentation of appropriate skills, increased worker productivity, higher morale, and a reduction in safety issues.

Another benefit to firms, rarely captured in studies, is the positive impact of apprenticeship on innovation. Well-trained workers are more likely to understand the complexities of a firm's production processes, and to identify and implement technological improvements, especially incremental innovations that improve existing products and processes. A study of German establishments documented this connection and found a clear relationship between the extent of in-company training and subsequent innovation (Bauernschuster, Falck, & Heblich, 2009).

The evidence suggests that employers achieve positive returns on their investments in apprenticeship. After reviewing several empirical studies, Muehlemann and Wolter (2014) conclude that:

...in a well-functioning apprenticeship training system, a large share of training firms can recoup their training investments by the end of the training period. As training firms often succeed in retaining the most suitable apprentices, offering apprenticeships is an attractive strategy to recruit their future skilled work force... (p. 1)

In the United States, evidence from surveys of more than 900 employers indicates that the overwhelming majority believe their apprenticeship programs are valuable and produce net gains (Lerman, Eyster, & Chambers, 2009). Nearly all sponsors reported that their apprenticeship program helps them meet their skill demands. Eighty-seven percent reported they would strongly recommend registered apprenticeships; an additional 11% recommended apprenticeship with some reservations. A recent U.S.

study found 40-50% returns for two expensive apprenticeship programs (Helper, Noonan, Nicholson, & Langdon, 2016).

Apprenticeships are also a useful tool for enhancing youth development. They integrate what young people learn in the classroom with their on-the-job experiences, which benefits hands-on, nontraditional learners. Early apprenticeships can help engage youth and build their identities (Halpern, 2009). Youth who participate in apprenticeships early in their careers also benefit from a longer period of economic returns to training and a lower probability of developing bad work habits.

Young apprentices work with adult mentors (Halpern, 2009). These mentors and other supervisors not only teach young people occupational and employability skills but also offer encouragement and guidance, provide immediate feedback on performance, and impose discipline. Unlike community colleges or high schools, where one counselor must guide hundreds of students, each mentor deals with only a few apprentices.

Youth apprenticeships can be less costly for employers than programs focused on older workers. Wages can be low because youth have fewer medium- and high-wage alternatives, and because youth have fewer family responsibilities and are more able to sacrifice current for future income. For example, while Swiss firms invest heavily in their apprenticeship programs, they pay their young apprentices very low wages during the apprenticeship period.

Most government human capital programs offer government funding each year (per full-time equivalent trainee) and result in a social cost in the form of the foregone earnings of trainees. In apprenticeship programs, by contrast, there is an initial fixed cost for helping employers establish apprenticeships, but subsequent years require far less government funding as employers bear most of the long-term costs of training. (Firms recover a significant share of their costs during the apprenticeship itself.) Moreover, the foregone earnings of apprentices are modest since they receive wages during their training and as they contribute to production. These contributions allow firms to recover a significant share of their costs during the apprenticeship itself.

THE DISADVANTAGES

Adopting the policies recommended below for expanding apprenticeship may carry some disadvantages. One such disadvantage is that employers may not respond by offering high-quality apprenticeships at scale. These initiatives will no doubt focus the energy of policymakers, energy that might otherwise have been devoted to improving existing educational programs. Thus, even if the performance-based funding for apprenticeships is not spent because few new apprenticeships are generated, other more effective initiatives may be foregone.

A second potential disadvantage is that some of the proposed funding might support employer apprenticeships that would have been created even in the absence of government funding. A third is that weak counseling might lead many young people into apprenticeships that are a bad fit. (Still, apprenticeships are likely to yield better matches between worker interests, worker skills, and the demands of firms than many existing training programs.)

Finally, some scholars are concerned that apprenticeship training, due to its specificity to one industry or occupation, may yield weaker capabilities to adapt to technological change. While this concern is not without merit, I would argue that apprenticeships are more likely than traditional educational models to provide many participants with confidence in their ability to learn (and thus, if necessary, later adapt), as well as with powerful incentives to perform well in their academic coursework.

Recently released data from the 2016 National Household Education Survey found that former apprentices were very likely to apply the skills they learned during their apprenticeship to their current job. Among workers ages 40 and over, 67% of those completing apprenticeships of one year or more reported using the skills they learned in the program all or most of the time; another 24% reported doing so some of the time.² European studies yield similar results (Clark & Fahr, 2001; Geel, Mure, & Backes-Gellner, 2001).

3. Current Barriers and New Proposals

CURRENT BARRIERS TO APPRENTICESHIP IN THE UNITED STATES

The experiences of Australia, Canada, and England demonstrate that scaling apprenticeship is quite possible, even outside countries with a strong tradition of apprenticeship. While none of these countries have the strong apprenticeship tradition seen in countries like Austria, Germany, or Switzerland, they have nonetheless grown significant programs. In fact, if apprenticeships as a share of the U.S. labor force reached the levels already achieved in Australia, Canada, and England (on average), the United States would attain over 4 million apprenticeships, about 9 times the current number of registered apprenticeships in the civilian sector.³

A government role in apprenticeship makes sense economically and socially. Like other public investments in career-focused education and training, apprenticeships lessen credit constraints for students, generate productivity gains not fully captured

² Tabulations by the author from the 2016 National Household Education Survey.

³ Currently, the United States has 444,000 registered apprenticeships. There are an unknown number of independent apprenticeships not registered with state or local governments. See data sources by country in Appendix A.

by students or firms, and lower the excess burdens and administrative costs of transfers. As a cost-effective method for subsidizing preparation for careers, apprenticeships lower political pressures to increase government funding of higher education and implement other policies that impose economic distortions (such as increasing the minimum wage). From a social perspective, apprenticeships are likely to increase mobility and reduce inequality by improving career prospects for those who learn best by doing.

Why, then, has the United States failed to generate the kind of large-scale apprenticeship program seen in other developed countries? In this section, I describe the historic barriers to expansion in the United States.

A Failure to Try

One barrier is a failure to try. Overall, the federal government has devoted less than \$30 million (per year) to the Office of Apprenticeship (OA) to supervise, market, regulate, and publicize the system.⁴ Many states have only one employee working under their OA. Were the United States to spend what Britain spends annually on apprenticeship, adjusting for differences in the size and composition of the labor force, it would provide at least \$9 billion per year for apprenticeship. In fact, the British government spends as much on advertising its apprenticeship programs as the entire U.S. budget for apprenticeship.

Total government funding for apprenticeship in the United States has been minimal, often less than \$100 per apprentice annually (Reed et al., 2012). Meanwhile, the annual cost of instruction and support services per full-time equivalent student in two-year public colleges was approximately \$16,000 in 2008-2009 (Cellini, 2012); today's annual costs are no doubt substantially higher. The Federal Pell Grant program for low- and lower-middle-income college students costs about \$28 billion per year, with a good chunk of the spending going toward career-focused programs in community and career colleges (Rethinking Pell Grant Study Group, 2013).

The Structure of the Registered Apprenticeship System

The second barrier is the complex administrative structure of the registered apprenticeship system. This includes separate state administrations in half the states and federal governance in the other half; the requirement that each firm or set of firms have an approved set of occupational skill frameworks; the lack of national occupational frameworks; delays in the approval process; and the lack of an auditing system to assure quality.

⁴ Recently, federal spending on apprenticeship demonstrations and state expansion grants has increased by about \$50-90 million per year. Annual funding for the Office of Apprenticeship remains at about \$30 million.

Limited Information

A third barrier is the limited capabilities of OA staff and intermediary organizations to sell and organize apprenticeships. Because few employers outside commercial and industrial construction offer apprenticeships, most employers are unlikely to hear about the model from other employers or from workers in other firms. Compounding this problem are two factors: the difficulty of finding information about the content of existing programs, and the fact that developing apprenticeships is complicated for most employers and often requires technical assistance that is unavailable in most of the country.

Asymmetric Funding Treatment

A fourth issue is the asymmetric treatment of government funding for postsecondary education and training. Pell grants, subsidized loans, and state college subsidies provide financial support to students taking for-credit courses. Yet, in general, similar subsidies for academic-related instruction linked to apprenticeships receive little government aid.

THE PROPOSALS

So how can the United States overcome these problems and scale apprenticeships? Building and sustaining a high-quality apprenticeship system will require several elements, including:

- effective branding and broad marketing;
- incentives for direct marketing and organizing apprenticeships to private and public employers;
- credible, recognized occupational standards with continuing research on changing requirements;
- public funding for off-job quality instruction;
- a system of credible end-point assessments of apprentices and programs;
- one or two certification bodies to audit programs and issue credentials;
- simple systems enabling employers to create and to track the progress of apprentices;
- counseling and screening for prospective apprentices to insure they have the aptitude for, and interest in, the field;
- training for the trainers/mentors of apprentices; and
- research, evaluation and dissemination.

Recognizing the United States cannot accomplish this vision overnight, I focus on four feasible initiatives. The goals are to achieve a major increase in the scale of the publicly-supported apprenticeship system within a few years, and to provide an infrastructure for long-term expansion.

Policy Proposal 1: Develop an Apprenticeship Brand

The federal and/or state governments should create a distinctive and quality brand. South Carolina chose to link apprenticeship with local pride by using “Apprenticeship Carolina” as its brand name. Britain has now established a copyright for the term “Apprenticeship” so that employers cannot claim to offer an apprenticeship without meeting the terms of the established program.

Once a brand name has been selected – “American Apprenticeships,” let’s say -- the program should advertise to the public, focusing first on firms and later on potential apprentices. Political officials, business leaders, and the media should highlight apprenticeship as a high-quality career option in all types of occupational areas. Videos of successful employers and apprentices should be widely featured. This proposal is likely to require minimal funding—the United Kingdom spends about \$30 million a year on advertising apprenticeships.

Federal, state, and local governments could show leadership and credibility by creating apprenticeship positions in the public sector. A large share of state and local employees works in occupations that could be filled through apprenticeships, in positions in information technology, accounting, health care, administration of parks and courts, and security (including police and fire). Such a step would be feasible and cost-effective. Britain now requires government agencies to fill 2.3% of their jobs with apprentices.

Policy Proposal 2: Establish and Fund a Public/Private Entity to Develop and Maintain Apprenticeship Occupational Frameworks

These occupational frameworks should reflect both employer needs and long-term skill requirements. Consensus frameworks are especially important if the public sector provides funding for the general skills component of apprenticeships (i.e., for skills that have value outside the training firm). Employers rarely have the time to develop such frameworks, nor do all employers in the same industry always share a common vision. To ensure that American Apprenticeships remains a quality brand and to simplify the process of implementing apprenticeships, the Congress should establish the American Apprenticeship Standards Institute (AASI), which would be tasked with researching, creating, and updating apprenticeship competency frameworks for a broad range of occupations.

Working with industry associations and individual public and private employers, the AASI would produce frameworks with potential job titles, occupational

pathways, certification and licensure requirements, salary ranges, and employment opportunities. The frameworks should be limited to about 500-600 occupations in order not to be so narrow as to limit the range of skills apprentices can apply, or so broad as to lack direct relevance to employer demands.

Each framework should describe the following:

- cross-cutting competencies, including personal effectiveness (such as reliability, initiative, interpersonal skills, and adaptability);
- academic competencies; and
- workplace competencies (such as planning, teamwork, scheduling, problem-solving, and working with tools).

The key occupational skill frameworks should begin with job functions (i.e., what functions should the skill worker in the occupation be able to complete at a high level?), and then specify both the competencies needed to undertake the job functions and the criteria for judging performance in those functions. The frameworks should also describe the knowledge, skills, and tools and technologies required to achieve the competencies and thus perform the job functions at a high level. Currently, examples of competency-based occupational frameworks already developed for the U.S. Department of Labor range from transmission line worker to community health worker.⁵

Employer programs could use these frameworks to gain official recognition for their apprenticeship programs. The United States could look to the United Kingdom's Institute for Apprenticeship as a resource for developing skill frameworks for many occupations. Funding of about \$40 million per year should be sufficient to support the AASI's work in establishing competency-based frameworks and in ensuring they are up to date.

Policy Proposal 3: Establish Programs to Support the Direct Marketing and Organizing of Apprenticeships

Branding and broad marketing will not suffice without a well-developed system for selling and organizing apprenticeships. Directly marketing an apprenticeship program as a partial solution to the talent management efforts of individual employers is not easy and typically requires several face-to-face encounters. Employers whose interest is piqued by an advertisement must have a resource they can turn to for more information about developing and implementing an apprenticeship program. Working with a company to organize apprenticeships requires determining the most suitable occupations, developing a plan to combine work-based and academic

⁵ See Urban Institute (n.d.) for examples.

instruction, and filling out the forms and other materials required for registering apprenticeships.

The United States should establish incentives for intermediaries (private or public) to market directly to, and organize apprenticeships for, employers. Current employees with state and federal labor departments have been unable to sell and organize effectively. In addition, the incentives should be structured so that intermediaries ensure apprentices receive the appropriate training and work-based learning experiences and achieve high completion rates. Funding should go only to those intermediaries that stimulate apprenticeships that follow the official occupational frameworks. Intermediaries should also help employers find and fund quality training options for the off-job components of apprenticeship.

Britain managed to achieve an apprenticeship scale of over 850,000 in about eight years, largely through the efforts of 850 employment and learning providers⁶. Australia achieves high levels of apprenticeship partly through private, often nonprofit, Group Training Organizations (GTOs). The GTOs, which serve as the formal employers and place apprentices with host employers, are tasked with: selecting and recruiting apprentices; paying wages and providing for workers' compensation, sick/holiday pay, and other employment benefits; managing the quality and continuity of training, both on and off the job; and providing the ongoing support necessary for the apprentice to complete the apprenticeship successfully.

The incentives should be sufficient to stimulate intermediaries to create 1.5-2 million additional apprenticeships over the next four years. Evidence from organizations suggests that the effective marketing and organizing of apprenticeships could be achieved at a cost of about \$2,000 for each apprentice that completes the first 60 days of a program, along with an additional \$2,000 for each apprentice that completes the program in full. The payments could vary with the long-term returns to occupations. One reason for expecting modest per-apprentice costs is that once employers establish an apprenticeship program, most are likely to continue the program over time (with less effort by intermediaries). The experience of U.K. intermediaries suggests that about 60-70% of apprentices hired are the result of repeat business from employers.

Along with intermediary incentives, the federal government should establish an independent auditing system to assure program quality and to avoid fraud. The audits, which would increase the credibility of the apprenticeship system, should identify the strengths and weaknesses of existing programs. Current funding levels are far too low for the Office of Apprenticeship to conduct appropriate audits. Since only the programs would be audited, not each apprentice, a sum of about \$100 million should be sufficient to allow the OA to complete audits every two to three

6 See <https://www.aelp.org.uk/>

years. Following the experience of Ofsted in the United Kingdom, the audits could rank programs for quality and identify intermediaries with programs that are deemed inadequate to receive continued funding.

Unlike most government-supported human capital programs, a significant share of the long-term costs of apprenticeship programs will be borne by the employer in the form of apprentice wages and the costs of work-based training. The foregone earnings of apprentices will also be modest since they will receive wages during their training. Firms, meanwhile, will recover a significant share of their costs during the apprenticeship itself. The costs to the government will come largely in the form of setup costs and contributions to off-job training.

The gross costs of the incentive scheme will depend on the number of new apprentices that complete 60 days of their programs and the number that complete their programs in full. The annual costs will also depend on the rate of phase-in for the program. It will take time to reach 1 million new apprenticeships and 750,000 completers per year. Assuming intermediaries stimulate half a million new apprenticeships per year, the initial costs of the incentives would total about \$1 billion. In equilibrium, if the intermediaries successfully generated 900,000 new participants and 675,000 completers per year, the costs of the incentives would reach about \$3.15 billion per year.

At scale, the stock of apprentices in any given year would reach well over 2 million. Since about three-fourths or more of the occupational and employability training for these apprentices would take place at worksites (at no public cost), full public support for the off-job training could be about \$8 billion, raising the overall costs to \$11.15 billion. For comparison, were these apprentices to attend community college full-time, the costs for instruction and services would amount to at least \$32 billion per year (assuming the 2008 figure of \$16,000/student reported by Cellini (2012)). Over time, the costs of incentives to intermediaries could fall as employers adopted apprenticeships without intermediaries and intermediaries lowered their costs by gaining repeat business.

Policy Proposal 4: Use Existing Funding for Off-Job Training and Incentives

One can make a strong theoretical and practical case for a system in which employers are not required to fund the off-job learning components of apprenticeship. Theoretically, the skills learned in the off-job courses are general in the Becker sense that the added productivity of the worker can be applied not only to his or her current employer, but to many other employers. For this reason, the employer may not be able to recoup the provision of this general training. The worker gains the benefit, and the government shares in the gains in the form of higher taxes and reduced transfers.

Federal, state, and local governments already spend tens of billions of dollars on an array of education and training programs. The effectiveness of government dollars would be far higher if at least some of these funds were made available for off-job apprenticeship training. Encouraging this shift in priorities, however, will require detailed analysis of each funding source.

In some cases, government funds could be substituted directly for employer funding, while in other cases existing government training funds could be made accessible for apprenticeship. Currently, for example, the Trade Adjustment Assistance (TAA) program provides funding to those who lose their jobs due to trade impacts. Participants receive both support for training, often in a community college program, and income support while undergoing training in the form of extended unemployment insurance. The regulations governing TAA could be changed to specifically allow funding to be used for the instructional component of a registered apprenticeship program, as well as the apprentice incentive program.

The U.S. Department of Labor's Workforce Innovation and Opportunity Act (WIOA) programs are already required to work with apprenticeship programs, but WIOA staff are ill-equipped to help scale apprenticeship. Some of WIOA's over \$3 billion dollars could be directed toward the intermediary incentive program. Training WIOA business services staff to sell and organize apprenticeships could also defray some of the costs of the incentive program.

Some of the \$1.8 billion now allocated to Job Corps and YouthBuild could be redirected to apprenticeship initiatives, or made available to local program operators to market and organize apprenticeships. These two programs are expensive, cover only about 56,000 participants per year, and yield modest or no gains in earnings.⁷ Although apprenticeships have demonstrated far higher earnings gains than existing programs, including Job Corps and YouthBuild, any diversion of funds should be accompanied by a renewed effort to target disadvantaged youth for participation in apprenticeships.

Funding for the Carl D. Perkins Career and Technical Education Act of 2006 has supported career and technical education in high schools and colleges. Some of the \$1.7 billion annual outlays on the program could subsidize the cost of off-job training for apprentices.

Currently, the Pell Grant program spends about \$28 billion per year. Over half of Pell recipients are in public two-year or for-profit colleges, often in career-focused education programs. Loan programs that are very costly to the federal government

7 Federal spending on Job Corps (\$1.7 billion) is about 20 times the amount spent on YouthBuild (about \$80 million). Also, YouthBuild attracts some private funding. Though these programs yield some benefits, the high costs generally do not justify the benefits. See Schochet, Burghardt, and McConnell (2006) and Miller, Mellenky, Schwartz, Goble, and Stein (2016). As of 2017, the cost per participant in Job Corps was about \$34,000 per participant (Employment and Training Administration, 2016).

also support students in these programs. Allowing students to use Pell grants for apprenticeship would save significant sums and generate higher earnings gains. Although Pell grants are currently not well-suited for apprenticeship, Pell eligibility criteria could be modified to allow apprentices to use prorated Pell grants for the off-job component of their training. Also, one could raise the income protection allowance for students with apprenticeship earnings or treat any individual participating in a full-time apprenticeship as an independent student.⁸

State governments could encourage more apprenticeships with the use of their existing subsidies to community colleges. States commonly reimburse community colleges for some percentage of the cost of a full-time equivalent (FTE) student. Suppose the reimbursement rate were 60% of the costs of a FTE but that much of the actual and accredited learning (say, 70%) for an occupation program took place at the work site in an apprenticeship. If the costs of the community college instruction fell to only 40% of the normal costs of a FTE, but the state continued the 60% subsidy, then colleges could provide the classroom component of apprenticeship at no cost to employers. They could use the remaining 20% to sell employers on, and help them organize, apprenticeships.

The GI Bill already provides housing benefits and wage subsidies for veterans in apprenticeships, however funding levels for college and university expenses are far higher than for apprenticeship. Offering up to half of the GI Bill's per-recipient college benefit to reimburse employers for the off-job education and training when hiring a veteran into an apprenticeship program could be accomplished by amending the law. However, unless the liberalized uses of Pell grants and GI Bill benefits are linked with the intermediary incentive campaign to sell and organize apprenticeships, the take-up by employers is likely to be limited.

Another way of financing the off-job education of apprentices is to link the intermediary incentive program with youth apprenticeships in high schools. Since high school CTE courses, and some college courses within high schools, are already an entitlement, the funds to complement work-based learning in apprenticeships would be readily available.

Policymakers should consider starting such a policy at career academies—schools within high schools that have an industry or occupational focus—and regional career and technical education (CTE) centers. Over 7,000 career academies operate in the United States in fields ranging from health and finance, to travel, to construction. Career academies and CTE schools already include classroom-related instruction and sometimes work with employers to develop internships. Because a serious apprenticeship involves learning skills at the workplace, at the employer's expense, these school-based apprenticeship programs could reduce the costs of teachers,

8 I am grateful to Diane Jones for making these suggestions.

relative to a full-time student. If, for example, a student spent 2.5 days per week (or 50% of their time) in a paid apprenticeship, the school should be able to save 15-30% of the costs of educating a traditional, full-time student. Applying these funds to selling and organizing apprenticeships should allow the career academy or CTE program to stimulate employers to provide apprenticeship slots.

4. Conclusion

Today, funding for the “academic only” approach to skill development in the United States dwarfs the very limited amounts available to market and support apprenticeship. Yet apprenticeship programs yield far higher and more immediate gains in earnings than do community or career college programs and cost students and the government far less. Postsecondary education carries costs for students in the form of both tuition and foregone earnings, and sometimes fails to provide students with a useful degree or credential. In contrast, apprentices rarely lose earnings or are forced to take out student loans. Apprentices, through their connection with the employer, also work on up-to-date equipment and learn modern business practices.

Expanding access to apprenticeship programs could improve the lives of millions of Americans and help prevent further erosion of the middle class. Apprenticeships widen the pathways to rewarding careers by upgrading occupational skills, employability skills, and traditional academic skills. For hands-on and nontraditional learners, academic coursework completed in the context of an apprenticeship program can increase worker motivation and improve the efficacy of the delivery process. Furthermore, given the effects of these programs on worker productivity and innovation, firms will have an increased incentive to adopt “high road” strategies with respect to their apprenticeship programs. Especially in today’s tight labor market, apprenticeships represent one of the best ways firms can attract and retain skilled workers.

While structural barriers to apprenticeship exist in the United States, federal investments in marketing and standards development, along with ongoing financial support for the off-job costs of apprenticeship, could overcome these barriers. And as more employers adopt apprenticeship strategies successfully, network effects could well take over, with employers learning from each other about the value of apprenticeship.

The United States undoubtedly has a long way to go before it reaches the apprenticeship levels in Australia, Canada, and the United Kingdom, let alone the level in Switzerland, where 95% of 25-year-olds have an occupational credential (70% through apprenticeship) and 25% hold bachelor’s degrees. The example of the United Kingdom, however, proves that rapidly expanding apprenticeship as a quality brand for success in a wide range of occupations is feasible.

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Appendix A:

Data on Apprenticeship and Labor Force Levels: Australia, Canada, England, and the United States

Table A1: Apprenticeships as Shares of Labor Force: Australia, Canada, England and United States

	APPRENTICESHIPS	LABOR FORCE	APPRENTICESHIP SHARE OF LF
Australia	270,000	13,180,000	0.020
Canada	453,000	19,200,000	0.024
England, 2016-2017	917,000	30,000,000	0.031
Average: Australia, Canada, and England	546,667	20,793,333	0.025
US, civilian	444,306	161,000,000	0.003
US Projected Civilian Apprentices	4,006,002		

Source: See opposite page for links to data on apprenticeship and labor force statistics

AUSTRALIA

<https://www.ncver.edu.au/data/data/all-data/apprentices-and-trainees-2017-september-quarter-data-slicer>
<http://www.abs.gov.au/ausstats/abs%40.nsf/mf/6202.0>

CANADA

<http://www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/educ66a-eng.htm>
<http://www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/labor07a-eng.htm>
<http://www5.statcan.gc.ca/cansim/a47>

ENGLAND

<http://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf>
<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/headlinelabourforcesurveyindicatorsforallregionshi00>

US

<https://www.bls.gov/news.release/empsit.t01.htm>
https://www.doleta.gov/oa/data_statistics.cfm

The Challenges of Leveraging Online Education for Economically Vulnerable Mid-Career Americans

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ABSTRACT

Economic and technological change has made lifelong learning more important than ever and partly explains the rise of online education, the flexibility of which appeals to mid-career Americans. Most existing online education appears to result, however, in poor learning and labor market outcomes. Promising models of low-cost, high-quality online education are only now beginning to arise. This brief lays out some of the central questions policymakers should ask when considering plans to leverage online education for economically vulnerable mid-career Americans, as well as the state of the evidence surrounding those questions. In short, existing research provides little clear evidence of successful models of online education for academically weaker students, suggesting that policymakers should proceed with caution. Any such efforts should be accompanied by rigorous, data-driven assessment and accountability systems, both to encourage pedagogical innovation and to ensure students benefit from such degrees.

1. Introduction

The rapid pace of economic and technological change has made lifelong learning—the ability to gain skills at any point in one’s career—more important than ever. Economically advantaged Americans can often get such training in the context of their current employer. Unfortunately, many of the institutions designed to help more economically vulnerable Americans with such lifelong learning are ineffective. The majority of publicly funded job training programs seem insufficiently effective to justify their costs (Barnow & Smith, 2016). Community colleges, which serve most students beyond traditional college age, have extremely low graduation rates, with fewer than 30% of those who enroll part time completing a college degree within six years (National Student Clearinghouse, 2018). Community colleges also appear to lower the degree completion rates of students who might otherwise have access to four-year colleges (Goodman, Hurwitz, & Smith, 2017).

As the importance of lifelong learning has grown and existing institutions have at least partly failed to meet demand for such learning, online education has expanded its reach within the higher education sector. Nearly 30% of college students now complete at least some of their college coursework online—almost half of those students are enrolled in fully online programs (Department of Education, 2016). Many such fully online programs are run by for-profit institutions, whose role has expanded with the rise of online education. Massive online open courses (MOOCs), many unconnected to specific degree programs, have also expanded dramatically. The first MOOC was offered in late 2011; the best current estimates suggest nearly 10,000 MOOCs are now being taken by a total of 80 million or so worldwide learners (Class Central, 2018). MOOC-offering platforms have begun partnering with existing universities to offer “micro-master’s” or “nano-degrees,” certifications given after a student completes a fraction of the courses comprising a typical master’s degree.

The broad question raised by the spread of online education is whether the need for lifelong learning can be successfully met through such technological means. The best evidence to date suggests substantial challenges that any proposal to leverage online education must confront.

2. The Central Questions Surrounding the Effectiveness and Cost of Online Education

Do students learn as much in online courses as in in-person courses?

A growing body of research implies courses taught through online formats lead to somewhat worse learning outcomes for students than their in-person counterparts (Joyce, Crockett, Jaeger, Altindag, & O'Connell, 2015; Alpert, Couch, & Harmon, 2016; Krieg & Henson, 2016). Perhaps even more concerning is that, relative to in-person coursework, online coursework appears particularly damaging for the educational progress of less academically skilled students. A recent study of students at one major for-profit college, which enrolls precisely the type of economically vulnerable students that public policy should be most focused on, suggests that online coursework lowers students' grades and educational attainment (Bettinger, Fox, Loeb, & Taylor, 2017). Similar findings appear for students in the community college sector (Xu & Jaggars, 2013). Little rigorous evidence exists of a substantial online program that does not harm less academically skilled students' learning relative to in-person coursework.

There are, however, glimmers of potential success stories in the online higher education space. In some settings, particularly ones with less academically disadvantaged populations, students do equally well across both online and in-person formats (Figlio, Rush, & Yin, 2013; Bowen, Chingos, Lack, & Nygren, 2014). Blended learning approaches combining online and in-person components also appear to generate relatively similar student outcomes as purely in-person coursework, at least among students in large, public four-year universities (Bowen et al., 2014; Alpert et al., 2016; Joyce et al., 2015). If online education can be made less expensive than in-person education, these results raise the possibility that the online format may be a cost-effective delivery mechanism, at least for less disadvantaged students.

Do existing online college degree programs pay off for students?

Existing online higher education options do not appear to pay off economically for the students who enroll in them. One resume audit study found that otherwise identical job applicants were 22% less likely to receive a callback from a prospective employer if their degree came from a for-profit online institution, as opposed to a

nonsselective public institution (Deming, Yuchtman, Abulafi, Goldin, & Katz, 2016). Research using the universe of tax records to compare the earnings of college students before and after their enrollment in online degree programs suggests that the labor market returns to such programs are extremely low and insufficient to justify their cost to students (Hoxby, 2017). This contrasts with recent evidence that certificates and degrees from in-person career technical education programs at community colleges raise students' earnings anywhere from 14% to 45% (Stevens, Kurlaender, & Grosz, 2018), with the highest payoffs coming from healthcare programs such as nursing (Grosz, 2017).

One challenge when considering this evidence is that many online degree programs, particularly ones that have been studied extensively, are run by for-profit colleges. Such institutions have been the subject of intense scrutiny concerning their recruiting practices, financial models, and the quality of education provided. Disentangling the low or negative labor market impact of online degrees from the impact of for-profit colleges is thus difficult. In other words, it is unclear whether these low returns are fundamental to the nature of online education or specific to the particular models used by one postsecondary sector.

Can online delivery increase access to higher education?

Limited evidence suggests the existence of online education options does increase access to higher education for mid-career Americans. The clearest evidence on this comes from Georgia Tech, which in 2014 developed a low-cost, high-quality online pathway to its prestigious master's degree in computer science. That program has attracted thousands of enrollees, none of whom could find appealing options in the existing higher education marketplace, and many of whom are already employed and in their 30s and 40s (Goodman, Melkers, & Pallais, forthcoming). Enrollees in that program already have BAs, often though not always in fields such as computer science or electrical engineering. Other institutions have begun learning from this model, with the University of Illinois at Urbana-Champaign developing a low-cost online MBA, and the University of Colorado at Boulder developing an online degree in electrical engineering. Whether such programs will also increase access to higher education is unclear.

Relatively little evidence exists about the role that online education can play in expanding access to mid-career Americans without BAs. Though online education has expanded dramatically, it is unclear where students choosing online options would otherwise have enrolled if not for those options. Some evidence suggests that community colleges and the for-profit sector compete for students. If all online enrollees would otherwise have attended in-person community college programs, then online education is not changing who is educated but simply where they are educated. If online options provide educations to students who would not otherwise

enroll elsewhere, then such options are expanding access to higher education. One example of an institution attempting to do this is College for America, run by nonprofit Southern New Hampshire University, which provides a competency-based online pathway to associate degrees for those currently working full-time jobs. Though online education seems to have this potential, evidence of expanded access for economically vulnerable Americans does not currently exist.

Why might Americans value opportunities to pursue higher education online?

Online education appeals to potential students largely for two reasons: price and flexibility. The rise of MOOCs, for example, is almost certainly tied to the fact that they are often free for students. The flexibility of online coursework is, however, a sometimes-overlooked key feature of its appeal. Potential students beyond traditional college age often have jobs, families, and homes that constrain them both geographically and temporally. They cannot travel long distances to take coursework, nor do so at fixed times of day that interfere with their work or family commitments. Though some online coursework requires a student to log onto a computer at particular times for discussions or other assignments, many online programs are “asynchronous,” meaning that students may complete the curriculum entirely at their own pace (up to a fixed deadline).

Georgia Tech’s online computer science degree chose this asynchronous approach, which is clearly a deeply important feature to its students. When surveyed about potential features they most valued in that online program, the four most important options students chose all related to geographic and temporal flexibility: the lack of need to commute or relocate, the flexibility of coursework and time commitments, and general convenience. Many applicants also valued the program’s low cost, though fewer than valued its flexibility.

This suggests a tension between the potential for online programs to increase access to higher education and the need to make them pedagogically effective. To reach a wide number of Americans, online degree programs must almost certainly incorporate the flexibility that asynchronous learning brings, but purely online programs and courses have not yielded good learning and labor market results for students. Blended learning, which appears pedagogically more effective, requires participants to physically appear at fixed times and thus may be sufficiently onerous to prevent those with work and family commitments from enrolling.

Does online education cost less than in-person education?

Online education appears to cost less than in-person education, though it is unclear whether that cost savings comes at the expense of educational quality. Whether online delivery costs less than in-person delivery of identical curricula and experiences is unclear. In-person delivery requires physical classrooms and instructors, constraints

which limit enrollment. Purely online delivery entails the development of online materials and interfaces—which necessitates up-front investment—but requires no physical classrooms and is not limited in its potential enrollment by the size of such classrooms. Whether such potential economies of scale sufficiently offset the required up-front investments to make online learning less costly than in-person learning is theoretically ambiguous. What is clear is that institutions with more online students charge lower prices than those with more in-person students and that tuition charged by primarily online institutions dropped between the early 2000s and more recent years (Deming, Goldin, Katz, & Yuchtman, 2015).

That online institutions charge lower prices does not mean that online delivery is more cost-effective. If the quality of the educational product being delivered suffers because of those cost savings, lower prices may not translate into improved student outcomes. Georgia Tech, for example, found that the creation of each individual course required \$200,000-300,000 to achieve the quality they desired. The program only recouped this high fixed cost once it enrolled thousands of students. The scale of the program suggests it is on the verge of producing 10% of all U.S. master's degrees in computer science. A smaller program of high quality may not have been financially viable, suggesting that online programs may need to follow a model of high up-front investment followed by large scaling in order to teach students effectively. Building online courses on the cheap runs the danger of producing low-quality educational experiences that are likely particularly damaging to students without strong academic backgrounds.

3. Conclusion

The rise of a new generation of online degree programs such as micro-master's and nanodegrees suggests there is substantial demand for mid-career training that is not being met by the current higher education marketplace. The rise of the online for-profit sector in the 2000s may also have been the result of community colleges failing to provide degree programs that were sufficiently flexible to meet the needs of working Americans with families, homes, and a host of geographic and temporal constraints. All of this evidence suggests there is real demand for online education that serves the mid-career market in a way that is currently missing, particularly for lower skilled students.

One prominent example of such an effort has come from California Governor Jerry Brown, whose recent *California Online College* proposes to “spend \$120 million... to create a new central online community college designed to bring workforce training to the estimated 2.5 million adults between the ages of 25 and 34 who have a high school diploma or some college experience but no college degree.” Whether such an effort succeeds in improving students' lives depends in part on important

concerns raised by existing evidence about online education's pedagogical effectiveness, labor market returns, potential to increase access, and cost structure.

Any proposal to expand online coursework for economically vulnerable Americans should engage carefully with the following questions:

1. What specific technological and curricular choices can be made to compensate for the apparent challenges that many students have when learning through an online setting? Can online learning be made sufficiently effective for lower skilled students to be worth their and the public's investment in it?
2. What types of training can effectively be done through online coursework and are in sufficiently high demand to be worthwhile for students? In other words, what degree programs will substantially improve such students' economic outcomes?
3. Which institutions are best suited to administer specific online degree programs? Should such administration be centralized in new entities, centralized in a single existing community college or four-year college (such as a flagship institution), or distributed across institutions based on preexisting areas of expertise?
4. Are purely online programs necessary or sufficient to provide worthwhile mid-career training, or are blended programs that combine online and in-person elements a better path to pursue?
5. What accountability systems can be put in place to ensure program quality? Most generally, how can future online programs avoid the apparent low benefit-cost ratios achieved by many existing online programs?

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PART II

INCREASING PRIME-AGE LABOR FORCE PARTICIPATION

DISCUSSION PAPER

A Policymaker's Guide to Labor Force Participation

Keith Hennessey and Bruce Reed

POLICY MEMOS

Restoring Economic Opportunity for "The People Left Behind": Employment Strategies for Rural America

James P. Ziliak

Policies to Reintegrate Former Inmates Into the Labor Force

Manudeep Bhuller, Gordon B. Dahl, and Katrine V. Løken

A Policymaker's Guide to Labor Force Participation

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ABSTRACT

Labor force participation among prime-age workers has been declining for many decades. This memo aims to provide policy makers with a useful framework for thinking about the question: “Why are so many people deciding that seeking work isn’t worth it?” After reviewing relevant facts and trends about labor force participation in the United States, we consider plausible explanations for the causes of decline. We identify 20 potential explanations for low and declining labor force participation and ultimately conclude that there is still too much uncertainty about the causes of the decline, and thus it is difficult to quantify the expected benefits of any particular policy change. We conclude with five policy approaches to increase prime-age labor force participation.

1. What is Labor Force Participation?

Every adult falls into one of three categories:

1. Employed
2. Unemployed and looking for work
3. Unemployed and not looking for work

Policymakers are undoubtedly familiar with the *unemployment rate*, which is simply the number of people in group two, divided by the sum of the people in groups one and two. That is:

$$\text{unemployment rate} = \frac{(\# \text{ unemployed and looking})}{(\# \text{ employed}) + (\# \text{ unemployed and looking})}$$

We also care how many people are *in the labor force*, which is the sum of groups one and two. We typically measure this as a rate, as a share of all adults (groups one, two, and three combined), so:

$$\text{labor force participation rate} = \frac{(\# \text{ employed}) + (\# \text{ unemployed and looking})}{(\# \text{ all adults}^*)}$$

We will discuss it less, but you may also hear discussion of a different rate, the *employment-to-population ratio*, which is group one, divided by all adults:

$$\text{employment - to-population ratio} = \frac{(\# \text{ employed})}{(\# \text{ all adults})}$$

* Technically, all non-institutionalized civilian adults. This excludes those in nursing homes, the incarcerated, and those serving in the armed forces.

This means that if you are unemployed and looking for work, you are *participating* and included in labor force participation (LFP), but you are excluded from the employment-to-population ratio.

When labor force participation is declining, more people are out of work and not looking for work—more people are falling into group three above.

Choosing which ages to measure gets a bit tricky. “Adults” are defined as ages 16 and older. Many analysts begin their analysis by looking at *prime-age adults*: those between 25 and 54 years old. Doing so allows us to partially set aside two age-related dynamics:

- teens and young adults (ages 16 to 24) may choose school over work (and we should want them to do so); and
- adults 55 and older may choose to retire. These retirements may have an indirect effect of increasing demand and wages for prime-age workers, drawing more of them into the labor force.

Policymakers should care about LFP for these two groups, but we begin by trying to understand the simpler problem of what is happening to prime-age adults. By focusing on prime-age workers, we can also worry less about demographic trends, and specifically about the bulge of Baby Boomers in their retirement and near-retirement years. In this paper, we focus on prime-age labor force participation and use *LFP* as shorthand for that concept.

As women are more likely to take time off from paid work to raise children, some analysts begin by studying trends for *prime-age men*, then expand their analysis to include *prime-age women*, and then add back in younger and older workers of both genders.

We offer a caution. Many who participate in public debates about economics gravitate to a discussion of jobs. When thinking about LFP, we recommend you instead start by thinking about people and wages. All three are, of course, related.

2. Important Facts About Labor Force Participation

Four important facts merit the attention of U.S. policymakers.

- 1. Labor force participation in the United States is low.** One in nine prime-age men (11%) are not participating in the labor force. That is a lot of people neither working nor looking for work.

2. Labor force participation has been falling over a long period of time.

LFP among men has been falling for 70 years, since the end of World War II. Female LFP grew rapidly from the early 1970s until around 2000. Technological changes raised wages for jobs often held by women, attracting more into the paid workforce. At the same time, societal norms were changing and women were having fewer children. Since about 2000, female LFP has been falling, roughly matching the gradual decline of male LFP.

3. Labor force participation is now lower in the United States than in other developed economies.

The United States has a lower prime-age labor force participation rate than France, Germany, Spain, Canada, the UK, Japan, Australia, and the EU and G7 averages.* At the same time, the United States has a lower structural (long-term) unemployment rate than most other developed economies, and Americans who are employed work more hours than do their developed-economy counterparts.

4. The declines are unequally distributed. Of particular importance, LFP is both lower and dropping more for those with fewer skills and less education. As is true for other labor statistics, there are also differences by race and by geography.

3. Cyclical vs. Structural

It is important to distinguish between *cyclical* and *structural* changes in LFP. When the overall economy is weak, some unemployed workers may get discouraged and stop seeking work. Measured LFP will then decline. When the labor market picks back up, more and better job opportunities and higher wages will lure some of these *discouraged workers* back into the labor force. Some of the decline in LFP during a recession or slow recovery is therefore temporary or *cyclical* and less of a long-term policy problem.

We concern ourselves here with low and declining *structural* LFP: those not in the labor force even when the overall U.S. economy and labor market are strong, as is true in late 2018.

4. Is Low Labor Force Participation Bad?

Leisure time is valuable. Most people prefer leisure to work, and most work to pay the bills. If someone makes a free choice to choose leisure over work, they will not be participating in the labor force, and who are we to second guess them?

* Employment - Labour force participation rate - OECD Data. (accessed July 1, 2018). Retrieved from <https://data.oecd.org/emp/labour-force-participation-rate.htm>.

On the other hand, if policy barriers, market failures, or cultural forces are preventing or discouraging a person from seeking work, that's a problem. Those contributions to low LFP are bad.

In addition,

- LFP is both low and declining more for those with fewer skills and less education. This seems inconsistent with the idea that most of those not participating in the workforce are doing so because they have enough resources to enjoy their leisure time;
- The per-worker tax burdens of financing government expenditures and debt are higher when fewer people are working and paying taxes; and
- We make a value judgment that work is good for people, and that more people working is good for society. More people working strengthens behavioral norms and social cohesion.

While recognizing that not all causes of lower participation are bad, we therefore start with a policy goal of increasing aggregate structural LFP, with a particular emphasis on those with fewer skills or less education.

5. The Core Decision

A person who is physically and mentally capable of working, and who does not participate in the paid workforce, has decided (explicitly or implicitly) that seeking work is not likely to be “worth it,” that he or she is better off not working. When making such a decision, one is comparing the alternatives of working and not. (If they look for work but don't find it, we would classify them as *unemployed* and count them as *participating*, as part of the labor force.)

When we think about this in the aggregate, we want to know “Why are so many people deciding that seeking work isn't worth it?” Adults don't participate for a range of different reasons. We will return to those after looking at some aggregate numbers.

6. The Numbers

SNAPSHOT

As of 2016, 81% of all prime-age workers were participating—working or seeking work. We can decompose that into 89% of prime-age men and 74% of prime-age women. That means one in five prime-age workers (one in 11 prime-age men and one in four prime-age women) was neither working nor seeking paid work.

After gender, we think the most interesting and important subgroups are by education level. The chart below illustrates how labor force participation increases as education increases.

	MEN	WOMEN
Bachelor's degree and higher	94%	82%
Associates degree	92%	80%
Some college, no degree	87%	73%
High school graduate, no college	85%	67%
Less than a high school diploma	80%	49%

There is a 14-percentage point participation difference between the highest and lowest education subgroups for men, and a staggering 33 percentage point difference for women. One in five male and one in two female high school dropouts is not in the workforce.

DECLINES OVER TIME

LFP for prime-age men has declined 8.6 percentage points since its peak in 1956. About three percentage points of this decline have happened since 2000, although some of that may be a cyclical effect.

We can separate the trends in prime-age female LFP into three time periods.

- It grew from about one-third (35%) in 1948, to one-half (50%) in 1970. That's about +0.3 percentage points per year.
- From 1970 to 2000, we saw much faster growth, about +1 percentage point per year, to a high of three in four prime-age women (77%) in 2000.
- Since 2000, we have seen a slow decline, similar to that affecting prime-age men, such that female LFP is down two percentage points since 2000.

If male prime-age LFP today matched its 1956 peak rate, 5.4 million more men would be in the workforce. If prime-age female LFP matched its 2000 peak rate, 1.3 million more women would be in the workforce. **Historically low LFP means up to 6.7 million more prime-age Americans could be in the workforce.** That

foregone labor is a loss both for those people and for America as a whole. This is a tremendous ongoing missed opportunity.

There is a startling difference in the declines for different levels of education. The following table shows the declines by education level. Since female LFP increased up until 2000, we look at their decline since that peak.

	PERCENTAGE POINT DECLINE IN LFP	
	MEN SINCE 1965	WOMEN SINCE 2000
Advanced degree	-3	0
Bachelor's degree and higher	-4	-1
Some college, no degree	-9	-3
High school graduate or less	-14	-6

The gap between low- and high-education-level LFPs is much wider today than it was 50 years ago.

INTERNATIONAL COMPARISONS

Prime-age LFP in the United States is lower than in other developed economies. In recent years, U.S. prime-age LFP fell from 19th to 32nd among the OECD nations. At the same time, those Americans who do work tend to work more hours than their counterparts in other developed economies.

We have yet to see a convincing explanation for this disturbing comparison.

7. An Uncertain Problem Diagnosis

Diagnosing the causes of the low level and large decline of LFP is hard for three reasons.

1. Many potential factors can influence an individual's decision not to seek work.
2. Different people make the same decision for different reasons.
3. It appears the relative importance of these factors has changed over time.

We have found a wide range of views from economists and labor market experts attempting to explain why LFP is low, and why it has declined so much. The economists we spoke to agreed that globalization and technological innovation are related to the decline in LFP since the 2000s. However, they disagree on the reasons why workers have dropped out of the labor market altogether instead of taking new, lower paying jobs. We have not yet found anything resembling a consensus among experts to inform our recommendations.

In addition, significant parts of this problem have been insufficiently studied by economists. The most comprehensive analysis, by Abraham and Kearney (2018), examines the decline in the employment-to-population ratio since 2000. We use this measure as a proxy for analyzing causes of the decline of LFP over the same period.

Prime-age LFP declined three percentage points between 1999 and 2016, while the employment-to-population ratio declined 4.5 percentage points over the same period. Abraham and Kearney were able to explain about half the decline in employment-to-population since 2000. That nevertheless leaves almost three-fourths of the decline since the end of World War II unexplained.

Policymakers need economists and labor market experts to do similar analysis of the significant LFP declines in the five decades before 2000. Policymakers also need from economists a better understanding of why U.S. LFP is lower and has declined more than in other developed countries.

Our problem diagnosis is therefore uncertain. We offer a combination of our best educated guess about the core explanation and a list of additional plausible hypotheses.

8. Diagnosis

CORE EXPLANATION

Demand for low-skilled, non-college-educated American labor has declined over time, driven by a combination of skill-biased technological change (i.e., automation / robots) and competition from low-wage overseas workers (i.e., trade). Firms have been increasingly substituting machines and foreign labor for American workers, and especially for those workers with fewer skills and/or lower levels of educational attainment.

If long-term labor supply is perfectly inelastic, we would expect the reduced demand for labor would translate over time into lower real wages and no change in labor force participation.

This reduced demand combines with supply-side limitations that cause these workers to either be unable to find a new job, or unwilling to take the new, possibly lower wage, job. It appears the following three supply-side factors are most quantitatively significant.

1. Government payments for disability make not working more financially viable and increase a worker's reservation wage. Abraham and Kearney (2018) identified two programs for which this was particularly true: **Social Security Disability Insurance** and **Veterans Disability Payments**.
2. The **minimum wage** precludes some of the lowest skilled workers from working.
3. **Incarceration** removes potential workers from the labor force. It also makes those released from incarceration less attractive to potential employers and therefore lowers their market wage, both because of the stigma and the loss of skills.

Our core diagnosis, then, is that, at least over the past 18 years, the following factors account for about half the decline in LFP:

**automation + increased trade + disability insurance +
minimum wage + incarceration**

→ **low and declining labor force participation**

OTHER HYPOTHESES

We identified nearly 20 additional plausible hypotheses about why LFP is low and declining. Some of them may be quantitatively significant—we just don't know yet. In each case, we are either less certain about their impact, or think their impact is smaller than the primary factors we have identified. We again emphasize that policymakers need economists to do more work analyzing these various hypotheses and trying to quantify their effects. For now, we just list them.

Hypotheses: "Low and/or declining labor force participation results from..."

1. **Search problems**—People have a hard time finding available jobs
2. **Decreased geographic mobility**—People are unwilling or unable to move to where the jobs are
3. **Occupational licensing**—State rules create barriers to new entrants in certain fields
4. **Decreased unionization/bargaining power**

5. **High marginal tax rates on 2nd earners**
6. **High effective marginal tax rates on the poor and near-poor from benefit payment phaseouts**
7. **The cost of child /elder care** discourages 2nd earners from entering the workforce
8. **Incentives in Social Security** encourage workers to retire early
9. Increases in **drug addiction**—especially opioids
10. The availability of **non-time-limited safety net payments** for food stamps and health care (Medicaid and Affordable Care Act subsidies)
11. **Rising spousal income**
12. Young people **living at home with their parents**
13. Increased attractiveness of **leisure activities**—especially video games and television
14. **Immigration**—Increased immigrant or migrant workers
15. **Underground income**
16. Displaced workers are psychologically **anchored to their prior higher wages**
17. **Male resistance to “pink collar” jobs**
18. Loss of confidence / **depression**
19. **Increased cultural acceptance of not working**

9. Why this Policy Problem is Hard to Solve

- Lower LFP is in part caused by reduced demand for lower-skilled labor driven by a combination of skill-biased technological change (automation) and increased trade. Policies to increase and improve the human capital of these workers are being addressed by another working group, so here we focus principally on the supply-side factors.
- The problem diagnosis is uncertain.
- It is therefore difficult to quantify the expected benefits—the anticipated increase in LFP—of any particular policy change.
- The policy tools are blunt and poorly targeted: in most cases, the effects on LFP are only a small portion of the broader effects. Reducing opioid addiction,

for instance, might increase LFP, but the opioid problem is much larger than just a labor force issue. Labor force effects might be only a small consideration when policymakers are trying to reduce opioid addiction.

- In addition, there may be an imperfect linkage between the causes of declining LFP and the optimal policies to increase it. As an example, skill-biased technological change is a cause of lower LFP, but we would not recommend slowing that change.

10. Our Recommendations

While we have focused on structural LFP, the cyclical component is critical. In the short run, a strong economy and labor market are the most important factors determining labor force participation. Economic growth and increased demand for labor, especially that of low-skilled workers, are the critical path to higher participation. Policymakers should remember this benefit when debating policies to strengthen the short-term health of the U.S. economy.

The human capital proposals and income subsidies of the other two working groups would increase LFP. In addition to those policies, we think the following package of reforms is well-suited to increase labor force participation.

- 1. Tighten eligibility rules for Social Security Disability Insurance**
- 2. Reduce incarceration & improve labor force reentry for former prisoners**
- 3. Rural area experiments: Infrastructure, wage subsidies, and relocation vouchers**
- 4. Reduce state licensing requirements through a legislative fast-track process**
- 5. Test certification alternatives to a four-year degree**

Because our problem diagnosis is imperfect, and because of the difficulties described earlier, we offer a word of caution on these recommendations. While we are confident these policies would increase LFP, we cannot quantify the likely magnitude of those effects. These policies will, we think, help but not solve the participation problem.

1. Tighten eligibility rules for Social Security Disability Insurance (SSDI)

SSDI has expanded over time, from a program to insure against physical or mental disability, to one that, for some, also serves as either an early retirement safety net, or as an alternative long-term unemployment insurance policy. SSDI should be returned to its original policy goal.

In addition, over time many of those qualifying for SSDI have done so because of physical and mental conditions that are difficult to assess objectively. When combined with a complex, multi-stage appeals process, the eligibility criteria have created perverse incentives for both applicants and physicians.

Rather than choose from among the various public SSDI reform proposals, we recommend policy directions and goals for SSDI reform.

- The overall goal should be to return SSDI to its original policy of insuring those with physical and mental disabilities against economic loss.
- To do this, eligibility criteria should be narrowed and the application process simplified and rebalanced to avoid the temptation to treat SSDI as a more general safety net against economic hardship.
- Eligibility criteria should include only physical and mental capacity. Nonmedical factors such as vocation, age, and English-language competency should be eliminated as criteria for new eligibility determinations. The eligibility appeals process should be massively simplified, and structural incentives for treating physicians to game the system should be eliminated.

2. Reduce incarceration & improve labor force reentry for former prisoners

Incarceration is an economic issue. Reducing incarceration, improving reentry into society and the paid workforce, and reducing the stigma of incarceration could increase LFP. We think the following economic objectives are most important to increasing LFP:

- Sentencing reforms (such as eliminating or reforming mandatory minimum sentences) can expand the pool of available workers.
- Exit paths and reentry opportunities should be improved, both for those eligible for release, and for those who already have been released or are on parole.
- We commend those now working on federal prison, sentencing, and criminal justice reform. We also note that the federal prison population is only about a tenth of the total incarcerated population in the United States. To make a significant quantitative dent, states must pursue similar parallel reforms. Improvements across a range of state prison systems may present even more opportunity for sizable LFP improvements than would successful federal reforms.

3. Rural area experiments: Infrastructure, wage subsidies, public works jobs, and relocation vouchers

We are concerned that many rural areas have particularly low LFP, and so we recommend that policymakers explore a range of geographically targeted solutions to address problems in these areas. Four concepts appear promising:

- **Wage subsidies** – Aimed at higher pre-policy wages than the EITC, wage subsidies are the most obvious and direct option for attracting people into the labor force.
- **Rural infrastructure** – Policymakers should take a fresh look at geographically targeted investment, focusing on rural areas of economic distress and concentrations of low LFP. We recommend prioritizing investment in physical infrastructure, including rural broadband, to help these communities rebuild and to encourage economic growth that may attract more people in these communities back into the labor force.
- **Public works jobs** – Localities should experiment with public works jobs, possibly in the infrastructure described above, with a goal of creating entry-level opportunities for nonparticipating workers to reenter the paid workforce.
- **Relocation vouchers** – Others need to move where the good jobs are. To help them, vouchers can subsidize both their job search and their relocation.

4. Reduce state licensing requirements through a legislative fast-track process

In some states more than others, government licensing requirements create significant barriers to entry. Those already employed in an industry pressure the legislature to impose these barriers. A collective action problem develops, in which the legislature finds itself unable to resist interest group pressures to incrementally raise these barriers.

We recommend that an innovative governor work with his or her legislative counterparts to create a process similar to federal “fast-track” trade authority, or similar to the federal military “Base Realignment and Closing” (BRAC) commission of the 1990s. The legislature would grant to the governor authority to make a package of recommended changes to and repeals of state licensure requirements. The legislature would, through this fast-track process, be required to vote on the package without amendment. The legislature would vote “up-or-down” on the governor’s entire package, thus eliminating the ability of interest groups to whittle it down or pick it apart. We think this process might allow state leaders to scale back licensing rules and expand job opportunities, especially for those looking to enter a new line of work.

5. Test certification alternatives to a four-year degree

We are concerned at reports of “credential inflation,” in which employers are increasingly requiring a bachelor’s degree for jobs that had previously had no such requirement. We recommend policymakers look for opportunities to encourage more skill-building pathways and certificates as alternatives to a four-year college degree. Our goal is to expand the range of opportunities for workers who cannot afford four years of college, while respecting private employers’ need to find the best talent available.

Restoring Economic Opportunity for “The People Left Behind”: Employment Strategies for Rural America

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ABSTRACT

Based on several leading economic indicators, most notably rates of employment in the labor force among less skilled men, residents of rural America are much further behind their urban counterparts today than they were fifty years ago. In order to stimulate employment in rural areas, I propose a two-fold strategy of bringing “people to jobs” and “jobs to people,” an approach that combines people-based and place-based policies. The people-based policies include relocation assistance payments for those willing to make a permanent move to a new job, as well as a short-term credit for commuting expenses tied to a new job without residential relocation. The place-based programs include a major one-time investment in rural broadband, a recurring program of loans and grants to enhance entrepreneurship and small business development, and a federal jobs program to revitalize rural infrastructure and amenities.

1. Introduction

Fifty years ago, spurred on in part by Harry Caudill’s (1963) dark portrait of poverty in Appalachia, President Lyndon B. Johnson’s National Advisory Commission on Rural Poverty issued a report entitled *The People Left Behind*. The report detailed the myriad challenges facing rural Americans, including unemployment and underemployment, poverty and hunger, and poor health (Breathitt, 1967). The Commission made several recommendations for immediate action, ranging from a government promise of full employment for all willing and able adults—including public service jobs in areas where private market demand is inadequate—to the establishment of the right to a guaranteed minimum income.

This vision of shared prosperity with the wider U.S. economy has not been realized. In fact, on some metrics, rural people are further behind their urban counterparts today than they were five decades ago, as eloquently expressed in J.D. Vance’s (2016) *Hillbilly Elegy*. The most jarring manifestation of this economic dislocation was the 2016 presidential election, in which a supermajority of rural people voted for Donald Trump and his platform of economic nationalism.

The aim of this brief is to assess where rural America stands on some key economic indicators five decades after the release of *The People Left Behind*, and to recommend policies that would enable rural America to better share in our nation’s great prosperity.

For most individuals, employment—full-time employment in particular—is necessary to avoid living in poverty. However, with the redirection of the U.S. safety net toward work beginning with the 1996 welfare reform, employment has become necessary to avoid absolute destitution (Edin & Shaefer, 2015). Eligibility for welfare, food stamps, and refundable tax credits is conditional upon work for some or all participants, and these work requirements are now spreading to other programs, such as Medicaid.

Alas, as I show below, only one-in-two low-skilled men in rural America worked for pay in 2016, a rate which is 15 percentage points lower than their counterparts in urban America. Fifty years ago, both groups had similar employment rates of nearly 95%. While the rural-urban gap among women is less pronounced, the rate of decline in employment among less skilled rural women has been faster over the past two decades, in comparison to less skilled urban women, such that just over three-in-ten were employed at any point in 2016.

To begin to reverse these trends, I propose a two-fold strategy of bringing “people to jobs” and “jobs to people.” The agenda of bringing people to jobs is aimed at those rural residents who are geographically mobile. One proposal is to provide relocation assistance—both moving costs and a temporary living stipend—for those willing and able to permanently move to work at a new location. The other is to provide a temporary credit to compensate for commuting costs, which will be a progressive function of distance from the place of work.

The agenda of bringing jobs to people is targeted to those unable or unwilling to relocate, or too distant from employment centers to benefit from the commuting credit. Proposals here include: a large one-time investment in rural broadband infrastructure; an on-going program of expanded access to financial capital for entrepreneurs and other small business development initiatives in rural areas; and a program of public sector jobs of last resort to rejuvenate rural infrastructure.

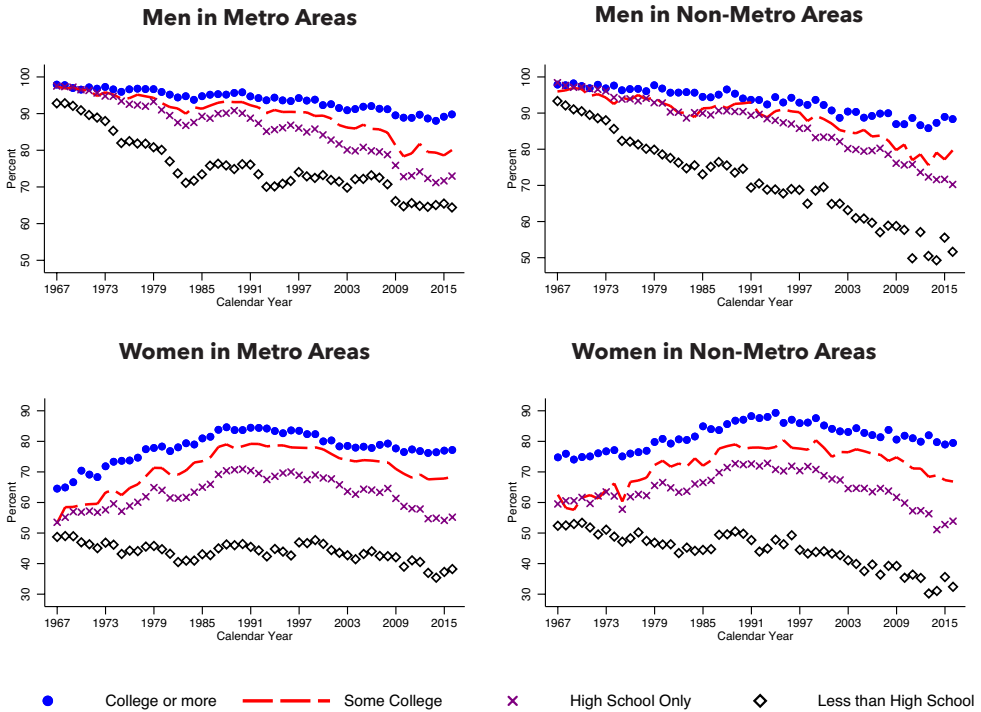
Each set of proposals falls into the class of interventions known as active labor market policies, and are targeted to the current generation of displaced adults. To address more systemic long-term rural poverty will require a renewed commitment to children in the form of substantial investments in education and human capital development more generally.

2. The Context: Five Decades of Economic Change

Major secular changes in the geographic location and technology of production, coupled with deep and protracted business cycles ranging from the oil price shocks of the 1970s to the Great Recession in the late 2000s, have resulted in vast changes in the U.S. economic landscape. One profound development has been the retreat from employment, especially among less skilled men (Eberstadt, 2016). Figure 1 presents trends in the share of 25- to 64-year-olds over the last 50 years who worked for pay at any time in the year, separately for men and women by educational attainment and residence in metropolitan and non-metropolitan areas.

In the late 1960s, nearly every man, regardless of educational background, worked for pay at some point in the year. This strong tie to the labor market among men with less than a high school education was severed around the time of the first oil shock in 1973 and continued unabated thereafter.

Figure 1. Trends in Employment Rates of Men and Women Ages 25-64 by Metropolitan Status, 1967-2016



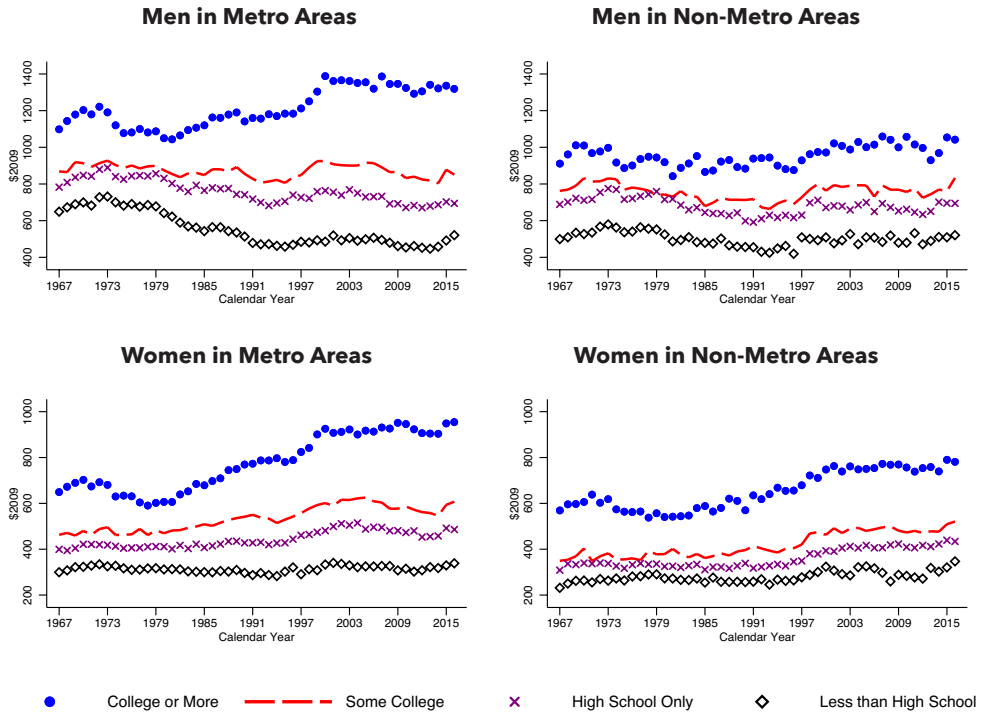
Note: Author’s analysis of data from U.S. Census Bureau (n.d.), Annual Social and Economic Supplement (ASEC) of the Current Population Survey, for survey years 1968-2017 (calendar years 1967-2016). The ASEC is a nationally representative survey of about 60,000 households conducted by the U.S. Census Bureau and serves as the source of official U.S. poverty and income statistics. The sample is restricted to 25- to 64-year-olds in order to focus on those who have typically completed schooling and have not yet retired. I delete observations with imputed earnings or hours information. The geography in the CPS is coarse and does not permit granular decomposition into “rural” and “urban,” and thus I follow convention and refer to metro and nonmetro interchangeably as urban and rural, respectively. Metropolitan status is established by the Office of Management and Budget, and periodically revised, typically after a Decennial Census. Currently, an area is classified as metropolitan if it contains an urban area with at least 50,000 inhabitants.

Importantly, there was no gap among this population in urban and rural areas at the start of the period. By 2016, however, only one-in-two less skilled men in rural America worked, a rate which is 15 percentage points lower than in metro areas. A similar gap did not arise among men of other education levels. Likewise, no similar urban-rural divide is evident among women’s employment rates.¹

1 The pattern of declining employment holds among both whites and African Americans. Employment rates among African American men are considerably lower than among whites in both urban and rural places, but the race gap among women is much more attenuated.

This withdrawal from the labor market has coincided with a stagnation in the rewards to work for those remaining in employment, as seen in Figure 2, which shows trends in inflation-adjusted median weekly earnings among workers.

Figure 2. Trends in Median Real Weekly Earnings of Workers Ages 25-64 by Metropolitan Status, 1967-2016

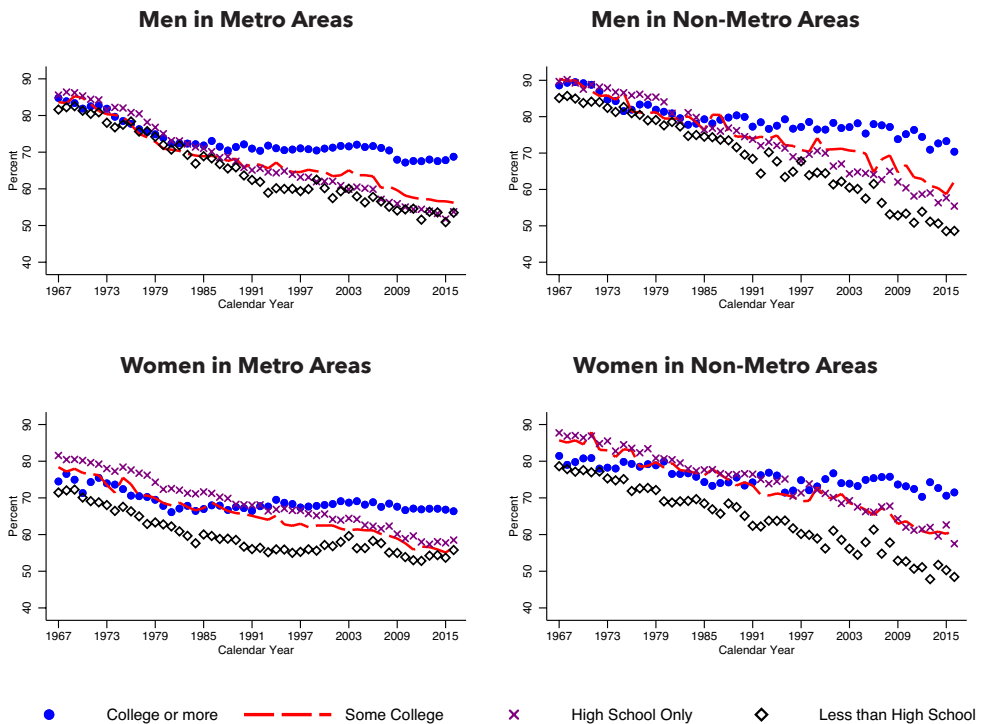


Note: Author’s analysis of data from U.S. Census Bureau (n.d.), ASEC. The ASEC only reported weeks worked in the prior year until 1976, when they also asked about usual hours of work per week. Thus, to create a consistent series, I divide annual earnings by weeks worked for the entire time period, and then deflate by the Personal Consumption Expenditure Deflator with 2009 base year to convert nominal earnings to real.

While there were gains among some workers in certain periods—college-educated men and women in urban areas from the mid-1980s through 2000, and all other workers for a few years in the late 1990s—the overwhelming trend has been one of stalled economic progress, even among the skilled in the last two decades. Most of the rising return-to-skill among men has occurred in urban areas; real weekly earnings of college-educated men in rural America have been stuck at about \$1,000 for five decades, though high-skilled women in rural areas did share in some of the growth of the 1980s and 1990s. A typical assumption is that there is an “urban wage premium” for work to account for differences in cost-of-living (Moretti, 2011), but Figure 2 shows that this premium is mostly realized among college graduates (Bollinger, Ziliak, & Troske, 2011).

Exacerbating the flattening of wages at the family level is the marked retreat from marriage over the past five decades, particularly among low- and medium-skilled individuals (Wilson, 1987; Kearney & Wilson, 2018). Figure 3 shows the fraction of men and women who are married in any given year by education level and metropolitan status.² As we saw with the employment figure, in the late 1960s, there was little gap in marriage rates across education groups. Marriage rates declined for all groups in the subsequent decades; by the mid-1980s, however, marriage rates among the college-educated stabilized. However, rates among the less skilled continued their march downward, resulting in a yawning gap by 2016. For both men and women, the wedge in marriage rates between college graduates and high school dropouts is greater in rural than urban areas.

Figure 3. Trends in Marriage Rates of Men and Women Ages 25-64 by Metropolitan Status, 1967-2016

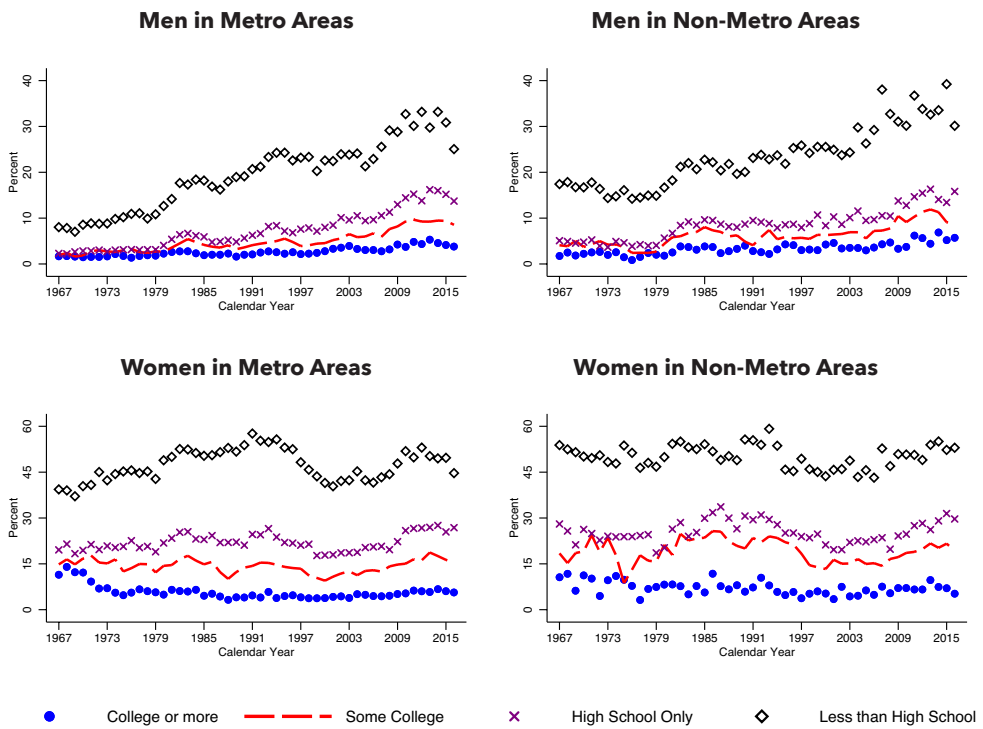


Note: Author’s analysis of data from U.S. Census Bureau (n.d.), ASEC.

2 The Census definition of marriage does not include those persons cohabiting. Starting in the mid-1990s, it is possible to identify cohabiters in the ASEC; if one includes these in the definition of “married,” then the decline is attenuated.

The decline in employment and marriage, and flattening out of wages, have translated into a retrenchment in the nation's War on Poverty, as seen in trends in family poverty rates in Figure 4. A common portrait of poverty in America is of a family headed by a low-skilled single mother; Figure 4 confirms that poverty rates among households headed by low-skilled women are staggeringly high. However, with the exception of college-educated women, rates of poverty among female-headed families are basically the same in 2016 as they were in 1967.

Figure 4. Trends in Family Poverty Rates of Householders Ages 25-64 by Metropolitan Status, 1967-2016



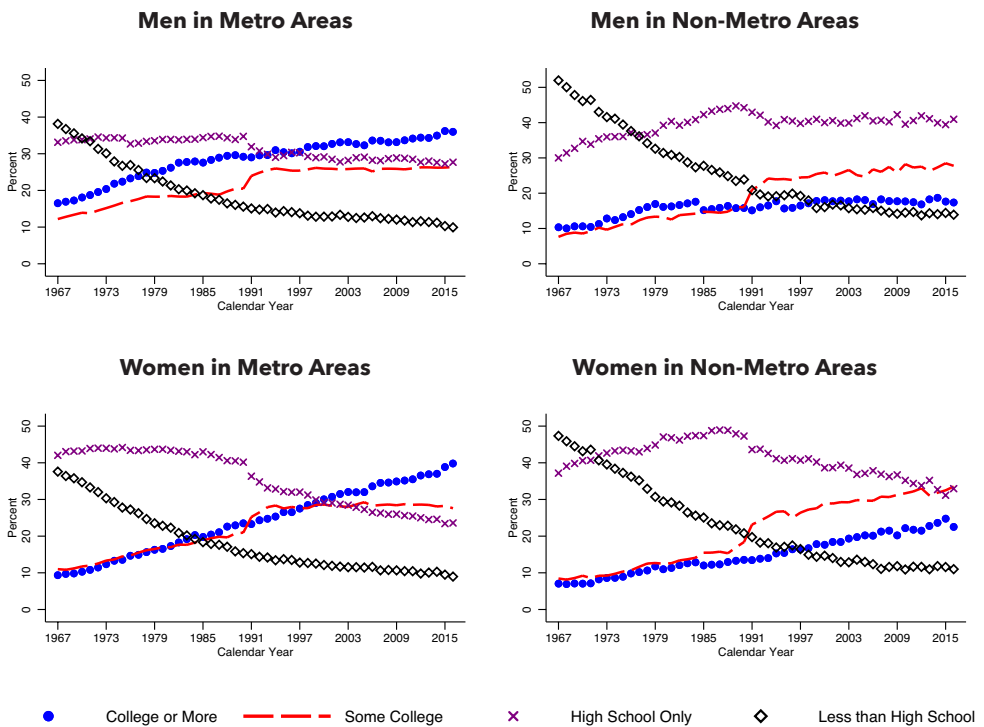
Note: Author's analysis of data from U.S. Census Bureau (n.d.), ASEC. Figure 4 presents poverty rates based on the official U.S. Census Bureau definition. The poverty line varies by family size but is fixed across the nation and is updated annually by the Consumer Price Index. Resources for the family only include money income, are calculated before taxes and credits, and do not include in-kind transfers such as food stamps, Medicaid, or Medicare.

While this is distressingly bad news, the dramatic growth in poverty rates among male-headed households is even more striking. Among households headed by a less skilled man, poverty rates have tripled in urban areas and doubled in rural areas since 1967. This growth in poverty is also seen among male-headed households with

high school or some college, which is the most direct manifestation of the decline in work and marriage depicted in Figures 1 and 3. Reinforcing these trends has been growth in so-called “assortative mating”—marriage is occurring between men and women of similar skill levels at greater rates, and this has exacerbated inequality in the United States (Blundell, Joyce, Keiller, & Ziliak, 2018).

The prior figures show that the economic station of those with a high school education or less has deteriorated over the last fifty years. A common rebuttal is that because of the secular growth in education attainment, those persons with high school or less are a declining share of the population. This is true in the aggregate, but Figure 5 shows that there are very important differences between urban and rural America in terms of skill upgrading, especially among men.

Figure 5. Trends in Education Attainment for Men and Women Ages 25-64 by Metropolitan Status, 1967-2016



Note: Author’s analysis of data from U.S. Census Bureau (n.d.), ASEC.

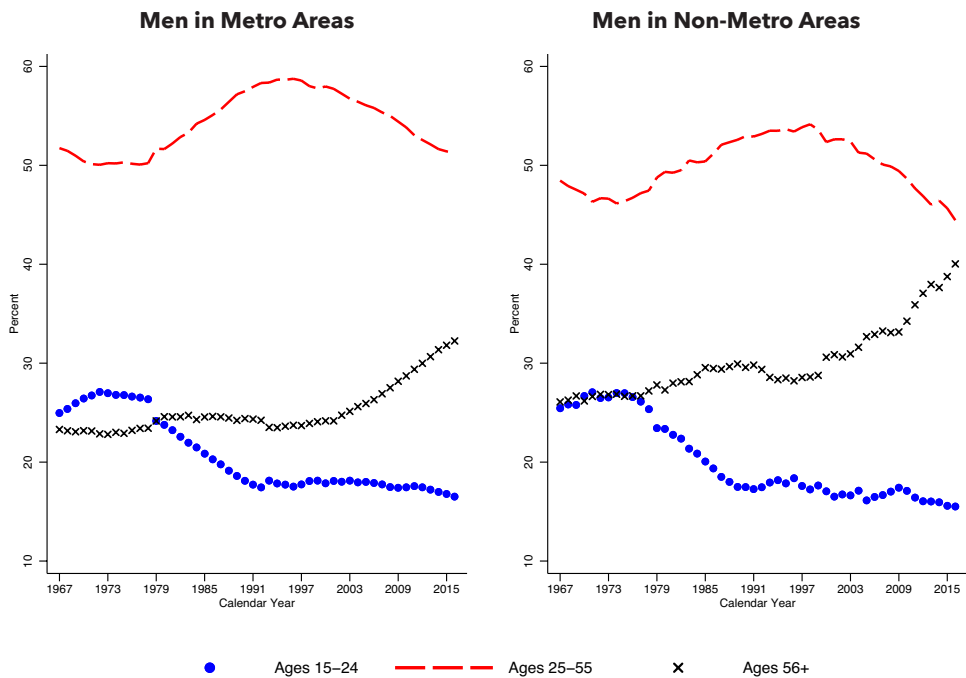
In rural places, the fraction of men with college or more has not budged since 1985. In that year, only 15% of rural men had a college education (or more), about half

the rate among urban men. Moreover, the share of rural men who are high school dropouts, high school graduates, or have some college has not changed since the early 1990s.³

While women in rural areas have continued to increase their skill levels, the fraction with a college degree or more grew substantially more slowly than in urban America. By the end of the period, rural women had rates of college completion of about 20%, compared to 40% among urban women.

The final piece of background on rural places concerns changes in the age composition of the potential workforce, and the concomitant changes in the composition of income. Figure 6 shows trends in three broad age groups: teenagers and young adults ages 15-24, prime age workers ages 25-55, and older workers and potential workers ages 56 and over.

Figure 6. Trends in Age Composition of Potential Labor Force by Metropolitan Status, 1967-2016



Note: Author’s analysis of data from U.S. Census Bureau (n.d.), ASEC.

3 There was a change in how the Census recorded educational attainment in 1991, which accounts for the abrupt change in high school completion and some college in that year, but it has no bearing on the overall trends.

The demographic bulge of the Baby Boom generation is clear in the figure, but so, too, is the fact that the population of rural America is aging faster than the population of urban areas. The share of prime-age workers is about 10 percentage points lower in rural areas, while the share of older persons in rural places is about 10 percentage points higher.

Figure 7. Share of County Income from All Income Transfers in 1970

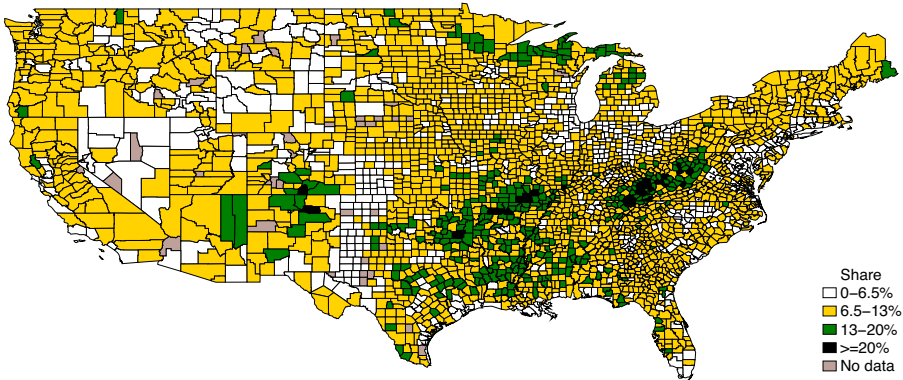
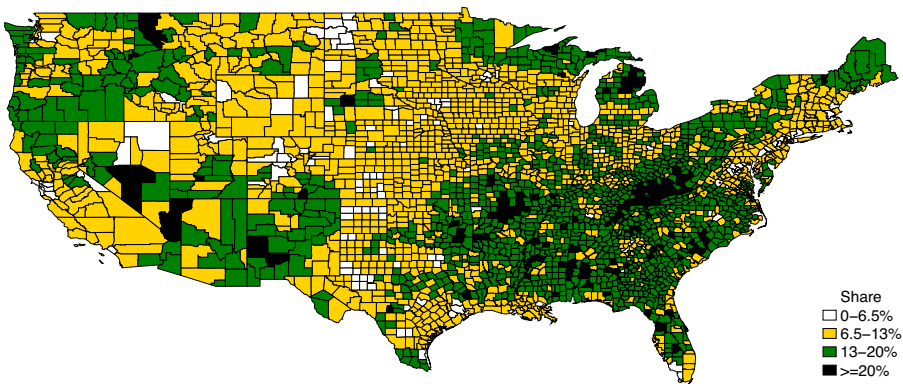


Figure 8. Share of County Income from All Income Transfers in 2015



Note: The data come from Bureau of Economic Analysis (n.d.). Personal income for county is the income received by all persons resident in the area, and includes wages and salaries, supplements to wages and salaries, proprietors’ income, dividends, interest, and rent, and personal current transfer receipts, less contributions for government social insurance. Total transfers in the figures refer to all cash transfers received by individuals such as Social Security retirement and disability (SSDI), welfare (AFDC/TANF, food stamps/SNAP, SSI, EITC, general assistance), unemployment, and education but does not include in-kind transfers from Medicaid, Medicare, and military health insurance.

Figures 7 and 8 depict changes in the share of county income from income transfers (excluding health transfers) in 1970 and 2015. In the figures, the darker the shade, the greater the share of income from transfers. Over the 45-year period, greater reliance

on transfers was widespread, with the possible exception of some of the most economically vibrant major urban centers and select rural counties. However, the counties with very high rates of reliance on transfers, in excess of one-in-five dollars, are found in the more economically remote rural areas. Some of this evolution is from demographic aging and increased receipt of Social Security Retirement, but some also is due to the growth in disability receipt among potential workers from both Social Security Disability and Supplemental Security Income.

3. Proposals to Restore Economic Opportunity for Rural Americans

The evidence is clear: rural America suffers from a lack of employment and a lack of skilled workers, a combination of factors that has resulted in a deterioration in the economic well-being of rural families. Bollinger et al. (2011) referred to this phenomena as a case of “missing markets”—there is neither the demand for, nor the supply of, skill. Over the course of the 20th century, this human capital shortfall has been estimated to account for about 60% of the persistent difference in per capita incomes between the most economically distressed rural regions of the country and the rest of the nation (Islam, Minier, & Ziliak, 2015). The combination of a less educated population with a faster aging population means that economic recovery in rural places will be more challenging than in urban.

To address these challenges, I propose a strategy that combines people-based and place-based policies. A multi-pronged approach is premised on the fact that the reasons for the decline in rural employment are numerous, poverty in the most remote regions crosses multiple generations, and rural America is very heterogeneous, suggesting that a “one size fits all” model is not likely to work.

The literature highlights three main rural subregions (Partridge, 2010): (1) those that are amenity destinations (e.g., resort towns such as Aspen, CO); (2) those that are urban adjacent—for example, Oneonta, NY, which lies outside of but in the shadow of the Albany MSA; and (3) those that are remote and often resource-dependent (e.g., Harlan, KY). Workers, especially those with low and moderate skills, face significant challenges in all three types of subregions, but effective solutions to boost employment are likely to differ. The people-based proposals are targeted to residents of all three subregions, while the place-based proposals are specifically aimed at residents of remote rural regions.

BRINGING PEOPLE TO JOBS (PEOPLE-BASED POLICIES)

The United States currently spends in excess of \$2 trillion annually on myriad entitlement and welfare programs such as Social Security, Medicare, Medicaid,

Disability Insurance, the Supplemental Nutrition Assistance Program, and the Earned Income Tax Credit, among many others. However, compared to our OECD counterparts, we spend remarkably little on active labor market policies (Council of Economic Advisers, 2016) and early childhood support (e.g., child care, Pre-K).

Research on the long-term returns to early intervention (Elango, Garcia, Heckman, & Hojman, 2016) suggests that a major federal investment in the latter is required to truly address systemic rural disadvantage and disrupt the cycle of intergenerational joblessness and poverty. My focus here, however, is on the current generation of workers and thus on active labor market policy.

New Start Relocation Assistance Program

Employment opportunities in rural America are too few to absorb the current pool of potential workers out of the labor force. Observers often pose the obvious question: Why don't these individuals simply move to opportunity? For some, attachment to place is very strong, perhaps for family reasons or preferences for small-town and rural living. Others may have a desire to move but face binding liquidity constraints that prevent them from moving—they may lack the resources for a down payment for housing or other moving expenses, for example, or may be concerned about uncertain employment and earnings prospects in a potential new location.

For the latter group of individuals, I propose a program called the New Start Relocation Assistance Program (NSRAP). Evaluations of active labor market policies find that job search assistance programs are typically the most effective (Heckman, Lalonde, & Smith, 1999; Card, Kluve, & Weber, 2010; Barnow & Smith, 2016), but relocation assistance is not typically included in job search programs.⁴

One such program was established in Germany in 1998, and then expanded with the Hartz Reforms in 2002 and 2003 (Caliendo, Künn, & Mahlstedt, 2017). The program requires recipients to relocate to a new job outside normal daily commuting radius, defined as a 2.5-hour roundtrip or greater from their current residence.⁵ Participants can either permanently relocate to the new destination, or retain their current residence and reside at the new location during the workweek. For those making a permanent move, all moving costs up to €4500 are covered. Those renting a secondary unit for the workweek are provided €260 per month for the first six months of the job. The average per-participant cost for both types of assistance was about €1177 in 2006. The new job has to be lined up ahead of the move, and all decisions on whether to grant the applicant the relocation assistance are determined by the local caseworker's assessment of local employment conditions and the agency's budget.

4 Job search assistance programs vary widely, but often include counseling on how to fill out job applications, how to search for job vacancies, and how to prepare for job interviews.

5 Those accepting jobs less than 2.5 hours from their current residence might be eligible for a temporary commuting tax credit for the first six months on the job. I discuss this in the next subsection.

Caliendo et al. (2017) evaluated the program and found that participants received wages about 25% higher in their new jobs (compared to nonparticipants), and that those jobs were more stable (i.e., longer duration) and offered greater upward mobility. Interestingly, they also found that the program was beneficial for older workers and married workers, who presumably are less likely to move.

The most prominent relocation program in the United States was the *Moving to Opportunity* (MTO) program, which provided low-income families residing in five large urban areas access to housing vouchers to move to low-poverty neighborhoods. This was a neighborhood-change program that, among other goals, was to offer greater job opportunities for participants. As such, it was not a jobs program per se, and evaluations did not identify much improvement in adult employment and earnings; researchers did find gains in health status (Kling, Liebman, & Katz, 2007). However, recent evidence points to long-term gains in college attendance and earnings among the young children of MTO families, though children who were adolescents at the time of the move did worse in the long run (Chetty, Hendren, & Katz, 2016).

Much less well-known are two programs begun in the wake of the 1996 welfare reform that offered payment to welfare recipients to relocate to new jobs.⁶ One was a statewide program in the Commonwealth of Kentucky that offered \$900 to current TANF families to accept a full-time job in a location that was at least 10 miles away from their current residence. The new job had to be verified in advance, or secured within 90 days of the date of request for assistance. An evaluation of the program by Briggs and Kuhn (2008) found that of the 3,992 moves in their sample from 1998-2004, 67% were within county, 16% were to another county in Kentucky, and the remaining 18% were to another state, with Ohio being the primary destination. Their estimates suggest that a one-standard-deviation increase in the payment amount resulted in a 20% increase in employment and an 18% increase in unconditional earnings, but no change in earnings among those currently working at the time of the move.⁷

The other program, More Opportunities for Viable Employment (MOVE), was a county-based program located in Tulare County, California.⁸ MOVE was more generous than the Kentucky program, offering benefits that averaged about \$2,900 per recipient, in part because the new location was required to be out of state. County social workers assisted clients with job search, housing search, and other transitional activities, and

6 The U.S. implemented a relocation assistance program in 1976 in 40 offices, which fell to 18 offices by 1980. Mueller (1981) provides evidence that the program did lead to increased migration among participants relative to a comparison group, and this migration was most pronounced among those with high school or less.

7 At the means, the evidence in Briggs and Kuhn (2008) suggest that elasticity of employment with respect to the Kentucky relocation payment was 0.27, while the unconditional earnings elasticity was 0.24.

8 California is one of a handful of states that devolve some administrative oversight of their welfare program, Temporary Assistance to Needy Families, to the county level. Tulare leveraged this flexibility to establish the MOVE program.

also kept in touch with clients for six months after the move. While there has been no formal evaluation of the program, early indications suggested that 85% of movers had not returned after six months; of those staying in the new location, two-thirds had family members with employment (Moore, 2002). Administrators claimed the program saved the county \$9.8 million, but it was nonetheless ended in 2017 due to budget cuts (Cederlof, 2017).

The scope for the New Start Relocation Assistance Program would extend beyond the welfare population. As such, I envision that it would be run by state workforce development offices rather than welfare offices. The advantage of this structure is that workforce offices already have in place a bevy of job-assistance programs, typically broader in scope than those offered by welfare agencies, that the out-of-work could access.

Eligibility for NSRAP would be available to those: (a) at least 18 years of age; (b) unemployed or out of the labor force; (c) willing and able to permanently relocate to a new job location that is at least two commuting zones from the current residence; and (d) who have secured employment offering at least 30 hours per week at the federal minimum wage or higher, either before the move or within the first 90 days. In order to contain initial program costs, eligibility could be restricted to those out of work for six months or longer, thus focusing efforts on the long-term unemployed. The Kentucky criteria of jobs at least 10 miles away seems too lenient, and the MOVE requirement of out-of-state seems too stringent. Commuting zones are well-defined delineations of local labor markets in the United States based on actual commuting patterns; as of the 2000 Census, there are 709 such zones. The requirement of a move that is permanent and at least two zones away is based in part on the fact that below I propose an alternative program that does not require relocating and addresses commuting costs for jobs likely obtained in the current or adjacent commuting zone.

In terms of benefits, I propose that participants be reimbursed up to \$1,500 in moving expenses and start-up costs (e.g., rental down payments) for moves that are between two and four commuting zones away, and an additional \$500 for moves of five zones or more away from the current residence. The housing contract must be verifiable and executed prior to the move. In addition, the household (not the individual worker in the event of multiple worker-households) would be provided an additional weekly living stipend—this stipend would equal one-half the average maximum Unemployment Insurance benefit for the first 13 weeks, and one-fourth the average maximum for 13 additional weeks (26 weeks is the normal maximum eligibility for UI). In 2017, the average maximum weekly UI benefit was \$441, and thus the maximum that the household would be provided is \$4300 ($=0.5*441*13 + 0.25*441*13$). Those who do not have verified employment prior to relocation would remain eligible for the program, but the post-relocation assistance benefits would expire after 13 weeks if full-time employment is not secured.

Participants would also be eligible for job search assistance programs and activities at the local workforce development center. Based on evaluations of welfare programs in California, Missouri, and North Carolina showing long-term benefits of human capital training prior to work (Hotz, Imbens, & Klerman, 2006; Dyke, Heinrich, Mueser, Troske, & Jeon, 2006), some of these job search programs would ideally include formal training on financial management and career development.

Commuter's Credit

Many rural individuals are unable or unwilling to relocate, and relocation may not be necessary in some cases because of more immediate employment opportunities in the current or nearby commuting zone. Moreover, as the experiences of some participants in the Kentucky program suggest, the challenges that impede economic self-sufficiency in the home location may follow the worker to the new destination (Jaffe, 1999a; 1999b). However, as evidenced by declining employment rates, challenges remain for these rural persons that prevent them from participating in the labor force, even in the presence of the Earned Income Tax Credit.

The second-largest expenditure in the typical U.S. consumer's budget is transportation, accounting for about 15.3% of all spending in 2015-2016 (Consumer Expenditure Survey, 2017).⁹ However, this burden is greater in rural areas, accounting for nearly 20% of expenditures on average. Life without a car is nearly impossible in rural areas, and access to public transportation is all but nonexistent. The extensive rail system in Great Britain and continental Europe shuttles millions of workers daily from rural communities to urban centers that contain plentiful employment opportunities. No such network exists in the United States, and, while the construction of such a network may be a worthy policy goal, it will take decades to implement such an initiative. This transportation burden creates a potential disincentive for residents from rural communities to seek employment because the cost of going to work eats up a sizable share of earnings; this is especially true for low-wage workers who often can only afford older, used vehicles that are less reliable, require greater maintenance, and have worse gas mileage (Glaeser, 2011).¹⁰

Residents from all three rural subregions would benefit from a change in commuting policy. Service workers in amenity destinations very often cannot afford to reside in the resort community because of high housing costs and thus drive from distant locations. Likewise, workers in remote communities often are required to cross multiple county lines and normal commuting zone boundaries to find gainful employment, which entails substantial outlays for transportation.

⁹ This is based on pooled two years of data in the Consumer Expenditure Survey.

¹⁰ Glaeser (2011) argued that the current Census Bureau practice of only accounting for housing prices in the geographic cost-of-living adjustment in the Supplemental Poverty Measure is biased against the poor in rural areas because of transportation cost issues, and recommended inclusion of a transportation adjustment to the poverty thresholds.

Residents in urban-adjacent (and suburban) communities—some of whom would presumably prefer to live within the urban core but face severe housing shortages and/or prohibitive rents due to restrictive building policies—would also find transportation relief a useful stimulus to employment. Using information on commuting distances in the American Community Survey, Edwards, McKenzie, and Short (2014) show that New York, Chicago, and Los Angeles do not show up among the top 50 costliest commuting cities; several of the metro areas adjacent to those cities, however, rank at the top of the list because residents are crossing boundaries to get to work. Indeed, Hsieh and Moretti (2017) argue that the housing restrictions in the high-productivity metro areas of the United States create such a large distortion of labor that aggregate growth was 50% lower than what it would have been in the absence of such policies in the 45 years from 1964-2009. They suggest that subsidizing transportation might alleviate this distortion in the short run.

I propose the creation of a Commuter’s Credit, which would be a transportation subsidy to workers in their first twelve months of employment in a new job.¹¹ Like the New Start Program, the Commuter’s Credit would be operated out of local government employment centers and be available to those (a) at least 18 years of age; (b) unemployed or out of the labor force; and (c) who have secured employment offering at least 30 hours per week at the federal minimum wage or higher. To reduce incentives for short-term job flipping, the credit would be limited to no more than 12 months in any 24-month period.

For those who own their vehicle, the credit amount would be the product of the federal per diem rate for mileage (\$0.535/mile in tax year 2017), the average daily commuting distance from place of residence to the place of work, and the number of days worked. Proof of ownership and mileage would be necessary (e.g., the employment agency would need to verify the home and work address); and to contain costs, a maximum would be necessary.

To gauge possible costs, Edwards et al. (2014), using proprietary data on Census block location of place of residence and place of work, estimated miles traveled to work for respondents in the American Community Survey in 2007-2011. They found that vehicle-owning, nonmetro residents in the South had the longest average daily commute at 24.85 miles, while those in the metro Northeast had the shortest average commute at 17.78 miles. At the current per diem rate and a five-day workweek for 50 weeks per year, this means the credit as proposed would be worth \$3,324 for a resident in the nonmetro South and \$2,378 in the metro Northeast. For cost containment, I recommend capping the number of miles at 20 per day and 5,000 per year for non-metro residents, and 10 miles per day and 2,500 per year for

11 Currently, tax filers who itemize are able to deduct unreimbursed travel expenses for temporary job assignments on Form 2106 but are not permitted to deduct commuting expenses associated with permanent assignments. The downside of allowing a tax deduction (or credit) for permanent commuting costs is that it effectively subsidizes suburban sprawl, adding environmental costs of increased emissions and congestion.

metro residents. This amount would place the credit on par with the average EITC for families with qualifying children; it would also result in a much larger credit for childless workers, providing a needed boost to the incentive to work.

For commuters who do not own their vehicle, the American Public Transportation Association reports that, in 2012, the average one-way bus fare was \$1.54, and the one-way heavy rail fare (e.g., subway) was \$2.04. Assuming a five-day week and a 50-week work year, the average costs amount to \$1,020 (for heavy rail commuters) and \$770 (for bus commuters). I suggest capping deductibility at 75% of mode cost.¹²

BRINGING JOBS TO PEOPLE (PLACE-BASED POLICIES)

The relocation assistance program and commuting credit are designed to assist a mobile workforce. For those workers unable to move and/or too distant from commuting zones offering ample labor market opportunities, I propose a program that brings jobs to people. The target population for these initiatives are those communities categorized as “persistently poor,” based on the USDA definition of county poverty rates in excess of 20% since 1980.

Currently, there are 353 counties, or 11.2% of the total, that are classified as persistently poor; the preponderance of them are nonmetro counties (U.S. Department of Agriculture, 2018). These counties are generally clustered in five regions: central Appalachia, the “Black Belt” region from the Carolinas to Alabama, the Mississippi Delta, the Texas “colonias” that border the Rio Grande river, and counties with Native American reservations in the western United States. These five regions vary greatly in terms of race, ethnicity, geography, culture, and primary economic specialization. What they have in common, and what distinguishes them even from other rural counties, are low levels of formal education attainment, low labor force participation rates, low capital expenditures, and greater distances from urban economic hubs—when combined, these factors help explain the high rates of poverty persistence (Islam et al., 2015). As depicted in Figures 7 and 8, they are also distinct from other rural areas in their long-term reliance on transfers as a share of personal income. The structural impediments that prevent these communities from more widely sharing in the American dream run deep, and many of their residents embody the contemporary characterization of “the people left behind.”

Economists are generally wary of place-based policies, arguing that policymakers are not good at picking winners and losers in business and industry (Schultze, 1983; Glaeser & Gottlieb, 2008). The thinking is that business subsidies may induce new

¹² The National Academy of Science in their proposal for a new measure of poverty recommended capping work expenses at 85% of average weekly expenses as reported in the Survey of Income and Program Participation. Edwards et al. (2014) report that this would amount to \$14.40 per week, or \$720 for a 50-week year (Citro & Michael, 1995).

firms to bring new migrants to the area instead of hiring locals, leading to upward pressure on local house prices and rents. While such price pressure benefits current owners, it harms current renters who are more likely to be poor. However, recent work by Austin, Glaeser, and Summers (2018) provides some theoretical and empirical grounding for place-based policies in areas with historically high rates of nonemployment, which include the persistently poor regions.

The largest place-based policy initiatives in the United States were the Tennessee Valley Authority (TVA), established by President Roosevelt in 1933, and the Appalachian Regional Development Act (ARDA), signed into law by President Johnson in 1965. Kline and Moretti (2014a) studied the TVA program and found that the infusion of federal resources up to 1960 resulted in a large increase in manufacturing productivity and output and spillovers into the local market, though the spillover benefits to national manufacturing were small.

Ziliak (2012) studied the ARDA and found that poverty in Appalachia fell by 7.6 percentage points (16 points in the more impoverished Central region) between 1960 and 2000, relative to the rest of the United States. Most of the effect was realized in the first five years after implementation when the bulk of resources flowed into the Appalachian region. In recent decades, place-based policies have been adopted via enterprise zones, empowerment zones, Promise Zones, and, most commonly, via city or state provision of subsidies for firms to locate “million-dollar plants” in a jurisdiction (Greenstone, Hornbeck, & Moretti, 2010). Kahn (2012) reviewed the place-based literature as it applies to rural areas such as Appalachia and concluded that in-migration is likely to be minimal, and thus most of the benefits of investment are likely to accrue to current residents. These communities, especially those that are persistently poor, currently have inadequate resources to realize these dreams on their own and thus need a federal jump start for their growth strategies.

Rural Broadband

Fifty years ago, when the President’s National Commission on Rural Poverty proposed a comprehensive program for rural America, the most impoverished areas lacked paved roads, potable water, indoor plumbing, and other basic amenities (such as access to health care) that more affluent parts of the nation had been enjoying for decades. In the decades that followed, much of this infrastructure deficit was filled with programs operated through the Departments of Agriculture, Commerce, Health, Housing, and Transportation. These investments, coupled with the War on Poverty programs of food stamps, Medicaid, and Medicare, lead to clear reductions in material hardship (Ziliak, 2012; Nolan, Waldfogel, & Wimer, 2017).

The infrastructure required for the digital gig economy of the 21st century is broadband internet access, but rural areas are lagging sorely behind in access. The 2016

broadband report card issued by the Federal Communications Commission states that 39% of rural residents lack access to broadband, defined as 25 Mbps down/3 Mbps up service, compared to 4% of urban residents (Federal Communications Commission, 2016).

The goal of this technology is to expand telework that permits workers (e.g., from finance, consulting, design, etc.) residing in rural areas to connect to jobs located in urban areas, which both relieves congestion in urban centers and allows workers with good jobs to remain in rural communities. In addition, a robust broadband network would permit rural manufacturers, artists, and craft persons to access more markets for their products. A high-quality network would also facilitate the siting of the growing technology support-services sector (e.g., call centers) and power-hungry data storage hubs used in cloud computing. An example of the latter are the massive Google servers housed in The Dalles, Oregon (population 13,620) and Moncks Corner, South Carolina (population 7,885). Beyond economic development, a robust broadband network will expand education opportunities and access to health care (via telemedicine) for rural Americans.

Levin and Matthey (2017) proposed that the Trump Administration include a one-time rural broadband acceleration fund of \$20 billion to jump start the infusion of the technology to rural areas. The president's recently released \$200 billion federal infrastructure plan allocates \$50 billion to rural infrastructure and \$20 billion to transformative projects (The White House, 2018). I believe that these resources should be first targeted to the persistently poor counties, which are the least connected, and then expanded out toward the adjacent rural communities, before linking to urban centers.

This is the strategy of a project called KentuckyWired, which was established in 2015 by then-Kentucky Governor Steve Beshear (a Democrat) in collaboration with U.S. Representative Hal Rogers (a Republican). This bipartisan plan proposed laying the crucial "middle mile" of fiber-optic cable first in Eastern Kentucky, one of the most prominent persistently poor regions of the nation, and then laying over 3,000 miles throughout the state. The project has faced significant delays and cost overruns, which has led to second guessing and reservations among state legislators on whether to move forward given the budget crisis in the state. Rep. Rogers, however, believes it is a must for the region (The Daily Independent, 2017).

Of the initial cost estimate of \$270 million, less than 10% came in the form of federal grants. This federal contribution is woefully inadequate—the success of this project and others around the nation will require a substantial commitment of federal resources. The nation risks falling further behind our economic competitors without making such a concerted investment.

Financial Capital for Entrepreneurs

Although winning “million dollar plants” and other large-scale manufacturing enterprises are the dreams of many rural (and urban!) communities, manufacturing as a share of overall U.S. employment has declined from more than one-in-four jobs in 1967, to fewer than one-in-ten jobs five decades later (Bureau of Labor Statistics, n.d.a.). During that same period, aggregate employment in agriculture, fishing, mining, forestry, oil and gas, and related sectors, while rising and falling with the business cycle, has held steady at about 660,000 jobs (Bureau of Labor Statistics, n.d.b.). There are concerns that artificial intelligence and other technological advancements may displace millions of incumbent job holders in coming decades, and, partly in response, many of these workers are projected to become self-employed independent contractors (or, worse, disemployed).

Access to high-speed internet is a crucial physical infrastructure need for rural communities seeking to bring jobs to people during this transition period. But once these communities are digitally connected, there will be an additional need for financial capital to help new businesses launch and existing business expand, so that both may take advantage of the new market opportunities afforded by the physical infrastructure. Financial capital for entrepreneurs is a natural complement to broadband expansion, but it is in limited supply and is more difficult to access in rural communities than urban areas (Drabenstott & Meeker, 1997; Markley, Pages, Scruggs, & Miller, 2012).

There currently exists an established federal infrastructure devoted to these financial capital issues in the USDA Rural Development Agency. The agency currently operates over 50 programs, housed under three broad umbrellas—the Rural Business-Cooperatives Service (RBCS), Rural Utilities Service, and Rural Housing Service.

RBCS provides loans, loan guarantees, and grants to foster local economic development, generally in communities of fewer than 50,000 residents. Most of the assistance provided by RBCS flows through state and local governments, lending institutions, or institutions of higher education.

For example, the Business & Industry Loans Guarantees program is operated through federal- or state-chartered banks, savings and loans, or credit unions; the latter financial institutions provide loans for business conversion or development, the purchase of land or capital, and business acquisitions. The loan guarantees are set at a declining fraction of loan amount, from 80% for loans less than \$5 million, to 60% for loans between \$10 million and \$25 million.

The Rural Business Development Grants are provided directly to towns or communities, non-profit corporations, or higher education institutions that award grants in the amounts of \$10,000 - \$500,000 to both for-profit and not-for-profit

emerging businesses (with 50 or fewer new employees and sales less than \$1 million). The grants can be used for technical assistance, development of land, and pollution control, among other activities.

The Rural Microentrepreneur Assistance Program provides loans and grants to Microenterprise Development Organizations (MDOs). These MDOs work with firms with 10 or fewer full-time workers and provide grants up to \$205,000 annually, and loans in the amount of \$50,000 - \$500,000 through a Rural Microloan Revolving Fund that is similar in spirit to the Grameen Bank in Bangladesh and the South Shore Bank in Chicago.

The FY2018 budget for the entirety of RBCS programs is a modest \$1.007 billion, with the lion's share (\$864 million) allocated to Business & Industry Loans Guarantees. However, in a development that seems remarkably incongruent with the administration's \$50 billion rural infrastructure pledge, the president's FY2019 budget completely eliminates the budget for RBCS but retains funding for the Rural Utilities Service and Rural Housing Service.

My proposal is to not only retain funding for the RBCS, but to expand it to \$3 billion, and to initially target the persistently poor regions. Because some of the current programs in RBCS appear duplicative with programs in the Utility Service (e.g., biofuel and rural energy programs), the additional funds should be directed to programs that support new business development and the growth of existing local businesses, and that prioritize local employment growth. For example, Bartik (2001) showed that wage subsidies are effective at stimulating employment if and only if they are targeted to new job creation.

To ensure that the benefits flow to current residents, grants and loans should be given primarily to individuals and businesses who have maintained residency in the area for three of the last five years. Moreover, because evaluations of the effectiveness of microenterprise programs in developing countries often yield mixed results (Banerjee, Duflo, Glennerster, & Dinnan, 2015), a portion of the new funds should be devoted to rigorous evaluations of demonstrations. The Farm Bill, which funds most major programs in USDA, is up for renewal in 2018—this represents an important opportunity for the Congress to more comprehensively fund rural economic development programs.

Jobs of Last Resort

Guaranteed full employment formed the cornerstone of the proposals espoused in *A People Left Behind* (Breathitt, 1967), and achieving "maximum employment" is one of the mandates of the Federal Reserve System, as spelled out in the Federal Reserve Act of 1977.

While the U.S. economy has one of the most dynamic labor markets in the world, and one of the consistently lowest unemployment rates, there is significant geographic variation in the availability of work, with rural areas lagging substantially behind. Paul, Darity, Hamilton, and Zaw (2018) show that the aggregate jobs gap—the difference between the fraction of the labor force unemployed, discouraged, and/or marginally attached to the labor force (the U6 series produced by the Bureau of Labor Statistics) and the rate of new job openings—reached a modern era peak of 16 percentage points during the height of the Great Recession. While it has fallen in subsequent years, it is still, at 6 percentage points, too high. Undoubtedly, this gap is much greater in rural America. While the place-based proposals above will narrow the gap, there is likely to be a sizable number of persons seeking employment in the most remote areas who lack the skills to embark on a path of self-employment or to be absorbed by new private sector employment.

For these persons and communities, I propose that we implement a federal program that provides jobs of last resort. The United States implemented a federal jobs program during the Great Depression with the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC). Combined, they employed millions of workers from 1933-1942. The WPA focused on infrastructure such as roads, bridges, dams, court houses, schools, and utilities, and the CCC focused on parkland and natural resources, developing over 800 parks nationwide and planting over 3 billion trees (Civilian Conservation Corps Legacy, n.d.). President Jimmy Carter proposed public sector jobs of last resort as part of the 1977 Program for Better Jobs and Income, and academics periodically make a case for public sector employment (Danziger & Gottschalk, 1995; Paul et al., 2018).

With employment rates of 50% among the less skilled in rural areas, the argument for such public employment is stronger than ever. These regions have become disability “hot spots,” with rates of participation in SSDI and SSI at least 2 to 3 times the national average. Participation in these programs is often permanent—people rarely exit once on the program (Autor & Duggan, 2006; Duggan, Kearney, & Rennane, 2016). It is almost certainly preferable to offer publicly funded jobs of last resort to those able to work than for those workers to enter and likely remain on disability for the remainder of their productive years.

The \$50 billion allocated to rural areas in the president’s infrastructure plan represents an excellent opportunity to allocate resources to federal employment programs focused on rural infrastructure needs (The White House, 2018). This could entail work on repairs of dilapidated roads; bridges; and public utilities, such as municipal water supplies, rehabilitation of long-neglected CCC trails, and the creation of tourist amenities such as “rails to trails,” among many others.

While meta-analyses of public sector employment programs generally find null effects on earnings (Heckman et al., 1999; Card et al., 2010), there are examples of programs yielding benefits that exceed the costs of the program (Jespersen, Munch, & Skipper, 2008). Successful programs typically are of longer duration and include formal skills training over and above direct on-the-job-experience. The wages paid to the workers should be commensurate to local prevailing wages, which in some cases means that they would still remain eligible for transfers such as SNAP, Medicaid, and the EITC. To improve target efficiency for the local communities, eligibility should be restricted to persons residing in the local commuting zone for at least three of the past five years.

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Policies to Reintegrate Former Inmates Into the Labor Force*

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ABSTRACT

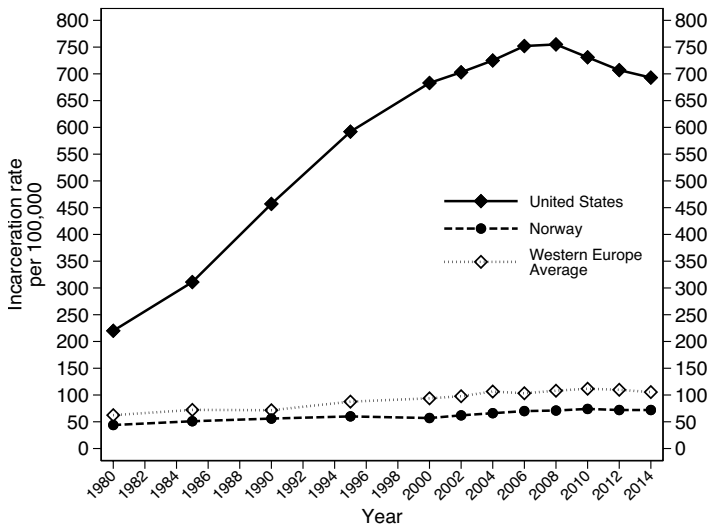
Incarceration rates in the United States have more than tripled in recent decades as rehabilitation has gradually taken a back seat to a policy agenda emphasizing punishment and incapacitation. This raises important questions about the effectiveness of state and federal prisons in the United States, and about whether the resources required for long prison sentences would be better spent improving prison conditions and expanding rehabilitation programs. Contrary to the widely embraced “nothing works” doctrine, we review recent empirical evidence from Norway demonstrating that a well-designed prison system can reduce recidivism and allow for successful re-entry into the labor market. We suggest several possible policy reforms that could be adopted in the United States, which, when combined with shorter prison sentences, would not require an increase in expenditures.

1. Are Convicted Criminals a Lost Cause?

Are there policies and prison reforms that can help ex-convicts reintegrate into society, or are former inmates a lost cause? An influential report released in 1974 by the sociologist Robert Martinson outlined the shortcomings of prisoner rehabilitation programs and concluded that “nothing works” (Martinson, 1974). This report proved to be a pivotal turning point in the United States, with rehabilitation gradually taking a back seat to policies emphasizing punishment and incapacitation. Incarceration rates in the United States tripled in the ensuing decades, rising from roughly 200 individuals per 100,000 in 1980 to almost 700 per 100,000 in 2014, as illustrated in Figure 1.

This policy memo revisits the “nothing works” doctrine. Based on recent empirical evidence, we conclude that convicts are not a lost cause; on the contrary, it is possible for well-designed prisons and reintegration policies to reduce recidivism and allow for successful reentry into the labor market. We base this conclusion on our recent work documenting the positive rehabilitative effects of Norway’s prison system, which stand in contrast to the negative employment and criminogenic effects found for prisons in the United States. Based on this comparison, we suggest several possible policy reforms that could be adopted in the United States to improve the prison experience and better reintegrate ex-convicts into society.

Our proposals run counter to the common presumption in policy conversations that jail time hurts economic outcomes, implying that incarceration itself is the problem. Ex-prisoners do fare poorly in the labor market; however, their labor market prospects were poor before prison—roughly half of prisoners in both the United States and Norway do not report any earnings in the years prior to imprisonment (Bhuller, Dahl, Løken, & Mogstad, 2016; Looney & Turner, 2018). We argue that prison is a missed opportunity to rehabilitate individuals with weak labor market attachment in

Figure 1. Incarceration Trends in Norway, Western Europe and the U.S.

Note: The Western European countries used to construct the population-weighted average include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. Source: Institute for Criminal Policy Research, World Prison Brief (2016)

the United States.¹ The reforms we propose, when combined with cost savings from shorter prison sentences, would not require an increase in prison expenditures.

2. Existing Evidence

CORRELATIONAL EVIDENCE

Much of the literature on the effects of imprisonment has focused on incapacitation effects, finding reductions in crime while offenders are in prison (Barbarino & Mastrobuoni, 2014; Buonanno & Raphael, 2013; Owens, 2009). There is less evidence on the longer term (i.e., postrelease) effects of imprisonment, with mixed findings on recidivism and employment (Bernburg, Krohn, & Rivera, 2006; Brennan & Mednick, 1994; Gottfredson, 1999; Skardhammer & Telle, 2012; Western, Kling, & Weiman, 2001). At face value, this research finds little evidence that prison rehabilitates individuals and suggests that locking individuals up can incapacitate them.

¹ One caveat is that for the previously employed, there appears to be a negative effect on employment, in both the United States and Norway (Mueller-Smith, 2017; Bhuller et al., 2016). Hence, reforms should consider employment-friendly policies, such as electronic monitoring, which allow for work while serving a sentence (Anderson & Telle, 2016; Di Tella & Schargrodsky, 2013).

This research, however, is largely correlational in nature, is often based on small samples, and does not focus specifically on the effects of rehabilitative policies. Correlational studies do not adequately account for the fact that individuals sent to prison are a selected sample and may well have had even higher rates of criminality and even lower rates of employment in the absence of rehabilitative prison policies. Indeed, the average convict has already committed many crimes and exhibited weak labor market attachment prior to imprisonment.

Likewise, negative employment shocks often precede imprisonment. Even among individuals accused of committing crimes, those sent to prison differ from those not sent to prison, in both observable and nonobservable ways. These differences mean that correlations (and similar analyses which cannot control for all relevant factors) describing prison exposure and subsequent recidivism and unemployment may well not be causal.

Based on the paucity of convincing evidence, leading criminology scholars have questioned Martinson's "nothing works" doctrine over the years (see the review in Cullen, 2005). Indeed, a decade ago there was little convincing evidence on the effects of incarceration and rehabilitative prison programs due to limited data and the use of correlational methods.² Nagin, Cullen, and Jonson (2009, p. 115) summarized the state of the literature well: "Remarkably little is known about the effects of imprisonment on reoffending. The existing research is limited in size, in quality, [and] in its insights into why a prison term might be criminogenic or preventative."

RECENT CAUSAL EVIDENCE

An emerging literature has recognized the limitations of correlational data and uses new approaches and new datasets to tease out causal effects. A few small-scale experiments have randomized access to different types of rehabilitation programs. For example, Kuziemko (2013), using data on inmates in Georgia, finds that access to parole boards increases participation in rehabilitation programs and reduces recidivism. There are also a few experiments in the United States focusing on postrelease training and education programs for ex-convicts. These studies have estimated small effects on long-term labor market outcomes but sizable reductions in recidivism (Cook, Kang, Braga, Ludwig, & O'Brien, 2014; Redcross, Millenky, & Levshin, 2012; Visher, Winterfield, & Coggeshall, 2005). Unfortunately, these small-scale experiments are not fully able to answer the question of whether, and in what situations, imprisonment is preventive or criminogenic. As we discuss in section three, more comprehensive prison reforms may be needed to successfully reintegrate criminals into society.

² The ideal dataset would be a long and representative panel with individual-level information on criminal behavior and labor market outcomes linked together both before and after incarceration. This type of data is just now becoming available in a limited set of countries and a limited set of states within the United States.

Larger and more comprehensive analyses have recently been used to study entire prison systems and the effects of incarceration on recidivism and employment. While it is not ethical to randomly assign some individuals to prison and not others, there is naturally occurring variation which is as good as random in some countries. In our research, we have studied the case of Norway, where criminal cases are randomly assigned to judges in a court room. Some judges are stricter and send more defendants to prison, while others are more lenient. Defendants who happen to get the stricter judge face a higher probability of being sent to prison. Since this increased probability is as good as random, the variation in judge stringency can be used to estimate the causal effect of imprisonment.

Similar studies relying on this type of naturally occurring variation are also being conducted in the United States. These studies find either no effect or that incarceration results in higher recidivism and worse labor market outcomes. Mueller-Smith (2015) uses data from Harris County, Texas and finds that incarceration increases both the severity and incidence of recidivism, worsens labor market outcomes, and increases the use of public assistance. Harding, Morenoff, Nguyen, and Bushway (2017) use data on individuals convicted of a felony in Michigan. They find that felony individuals sentenced to prison versus probation have a higher rate of repeat crime three years later. The negative effects found by Harding et al. are primarily a result of violations of postprison parole conditions, and therefore a product of escalating surveillance and punishment, rather than the criminogenic effects of incarceration. Rose and Shemtov (2017) study felony offenders in North Carolina and find a large incapacitation effect while an individual is in prison, but no significant effect afterwards. Aizer and Doyle (2015) find that juvenile incarceration results in lower high school completion rates and higher adult incarceration rates, as compared to similar juvenile offenders who are not sent to detention. Finally, Eren and Mocan (2017) find mixed results, with the incarceration of juveniles increasing future drug offenses, but having no effect on violent crime and reducing property crime.

While the available evidence on the effects of incarceration in the United States suggests this country's prison system is not effectively rehabilitating inmates, we believe it would be a mistake to conclude that rehabilitation is not possible. In the next section, we turn our attention to Norway, where our research finds that the prison system reduces reoffense probabilities and increases employment.

3. Lessons from the Norwegian Prison System

OPPOSING RESULTS FOR NORWAY VERSUS THE UNITED STATES

We begin by comparing the causal effects of imprisonment in Norway versus the United States. As will become clear, Norway's prison system stands in sharp contrast to the system in the United States, which is why the comparison is useful.

Our research on Norway's prison system, which takes advantage of the random assignment of judges (Bhuller et al., 2016), yields three key findings. First, imprisonment in Norway discourages further criminal behavior. We find that incarceration lowers the probability an individual will reoffend within five years by 27 percentage points and reduces the corresponding number of criminal charges per individual by 10. These reductions are not simply due to an incapacitation effect. We find sizable decreases in reoffending probabilities and cumulative charged crimes even after defendants are released from prison.

Our second result is that a misguided correlational analysis would lead to the erroneous conclusion that time spent in prison is criminogenic. If we simply compare criminal defendants sent to prison versus not sent to prison, we find positive associations between incarceration and subsequent crime. This is true even when we control for a rich set of demographics, the type of crime committed, previous criminal history, and past employment. This stands in contrast to our analysis based on the random assignment of judges, which finds that incarceration in Norway is strongly preventative for individuals on average, both on the extensive and intensive margins of crime.

Third, the reduction in crime is driven by individuals who were not working prior to incarceration. Among these individuals, imprisonment increases participation in programs directed at improving employability and reducing recidivism, and ultimately raises employment and earnings while also discouraging criminal behavior. The positive effects of incarceration for this group are large and economically important. For the previously nonemployed, imprisonment causes a 34 percentage point increase in participation in job training programs and a 40 percentage point increase in employment rates (within five years). At the same time, the likelihood of reoffending within five years is cut in half (by 46 percentage points), and the average number of criminal charges falls by 22.

A very different pattern emerges for individuals who were previously attached to the labor market. Among this group, there is no significant effect of incarceration on either the probability of reoffending or the number of charged crimes. Moreover, they experience an immediate 25 percentage point drop in employment due to incarceration, and this effect continues out to year five. This drop is driven almost entirely by defendants losing their previous jobs while in prison.

Given the stark differences in the effects of imprisonment in the United States versus Norway, a natural question is whether the United States can learn anything from Norway's experience. There are both similarities and differences in the criminal population and the criminal justice systems of Norway, as compared to the rest of the world. Norway looks similar to other Western European countries on most dimensions of its criminal population and criminal justice system. The United States, while sharing some commonalities with Norway and other Western European countries in its criminal population, is an international outlier along key dimensions of its criminal justice system.

DIFFERENCES BETWEEN NORWAY AND THE UNITED STATES

Comparing Inmate Characteristics

Along many dimensions, the prison populations in Norway, Western Europe, and the United States are similar.³ In the United States, Norway, and many of the European countries for which data is available, roughly three-fourths of inmates have not completed the equivalent of high school. Five percent of prisoners in Norway are female, compared to 5% in Western Europe and 7% in the United States. In all of these countries, inmates are, on average, in their early or mid-30s. And across all countries, formal employment prior to imprisonment is low. One demographic characteristic that plays an outsized role in the United States is race, with black individuals incarcerated at a rate several times higher than whites.

The types of offenses committed by inmates differ across countries, but perhaps less than one might expect. It is true that the United States has a much larger incidence of homicide. But in terms of the fraction of prisoners who have committed a drug offense, the rates are surprisingly similar—24% in Norway, 22% in Western Europe, and 20% in the United States. By comparison, 14% percent of inmates are serving a sentence for assault/battery and 4% for rape/sexual assault in Norway, compared to 11% and 7% in Western Europe, and 9% and 11% in the United States.⁴ Of course, all of these comparisons need to be understood in the context of a much higher incarceration rate in the United States overall. But they point to a considerable overlap in the types of crimes committed by inmates across countries.

Comparing Incarceration Rates and Sentence Lengths

Figure 1 graphs both the United States' and Norway's incarceration rates over time. Both countries' rates have risen since the 1980s, but the increase has been more dramatic in the United States. Norway's rate went up 64%, an increase which is mirrored in other Western European nations. In sharp contrast, the United States saw a 215% rise in incarceration (from a higher starting rate). Most of the growth in incarceration rates in the United States can be explained by changes in sentencing policy, as opposed to higher crime or arrest rates (Neal & Rick, 2016; Raphael & Stoll, 2013). Such policies include mandatory minimum sentences, the elimination of parole for certain crimes, and changes in the coding of different types of offenses.

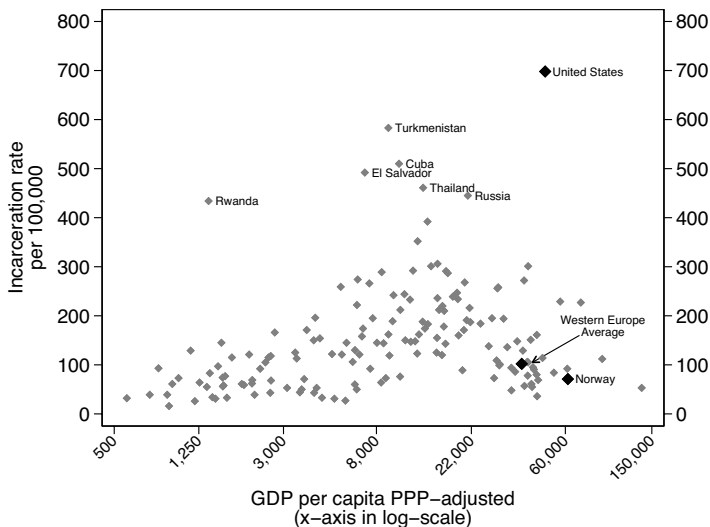
Comparing Norway and the United States to a broader set of countries, the latter remains an outlier, especially given how wealthy it is. This can be seen in Figure 2,

3 For details on the U.S. criminal population, see Bureau of Justice Statistics (2015) and Raphael and Stoll (2013). For Scandinavia and other European countries, see Kristoffersen (2014) and Aebi, Tiago, and Burkhardt (2015).

4 The numbers for the United States are the weighted average of inmates in federal and state prisons.

which plots incarceration rates versus GDP for 160 countries with a population of greater than half a million. No other country comes close to the U.S. rate of roughly 700 per 100,000, and only the six countries of Rwanda, El Salvador, Turkmenistan, Thailand, Cuba, and Russia have rates over 400 per 100,000. In contrast, the figure shows that Norway's incarceration rate (72 per 100,000) is slightly lower than the average for other Western European countries (102 per 100,000). The United States is particularly an outlier after controlling for GDP per capita; while several countries have high GDPs per capita (purchasing power adjusted), the U.S. incarceration rate is several multiples higher than in comparably wealthy countries.

Figure 2. Incarceration Rates versus GDP per Capita



Note: Sample consists of 160 countries with population greater than 0.5 million and with available data on incarceration and GDP. Incarceration rates and GDP are for the latest available year. GDP per capita is adjusted for purchasing power parity (PPP) and reported in 2010 US dollars. The Western European countries used to construct the population-weighted average include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. Sources: Institute for Criminal Policy Research, International Monetary Fund and the World Bank.

While it is difficult to compare measures of criminal activity across countries due to differences in reporting, the markedly higher incarceration rate in the United States is not entirely due to higher crime rates.⁵ Instead, the largest portion of the difference is due to longer sentence lengths in the United States. The average time spent in prison

5 Keeping in mind the caveat that criminal activity is difficult to compare across countries, the United Nations Survey on Crime Trends reports that the United States has roughly double the number of reported assaults than either Norway or the rest of Western Europe (Harrendorf, Heiskanen, & Malby, 2010).

is around six months in Norway, with almost 90% of prison spells lasting less than one year. This is considerably shorter than the average prison spell of 2.9 years in the United States (Pew Center, 2011), and fairly similar to the median of 6.8 months in other Western European countries (Aebi et al., 2015). Shorter prison spells have the advantage of decreasing the amount of time that prisoners' human capital will have to deteriorate and also making it easier on other margins to reintegrate into society.

Comparing Prison Conditions

Another large difference between the Norwegian and American prison systems lies in the conditions prisoners encounter while incarcerated.

Principle of Normality. Prisons in Norway follow the "principle of normality," which dictates that "life inside will resemble life outside as much as possible" and that "offenders shall be placed in the lowest possible security regime." The system tries to place prisoners close to home so that they can maintain links with the families. In addition, low-level offenders go directly to open prisons, which have minimal security and more freedoms and responsibilities. Physically, these open prisons resemble dormitories rather than rows of cells with bars on the door.

More serious offenders who are at risk of violent or disruptive behaviors are sent to closed prisons, which have heightened security. The two types of prisons create a separation between minor and more hardened criminals, at least until the more hardened criminals have demonstrated good behavior.⁶ While more serious offenders serve the majority of their sentences in closed prisons, they are usually transferred to open prisons for resocialization and further rehabilitation before release. Overall, one-third of prison beds are in open prisons, and the rest are in closed prisons.⁷ While the United States does have varying security levels for prisons and jails, the emphasis is on punishment and removal of privileges while in prison.

Lack of overcrowding. Norway has a policy of one prisoner per cell. In contrast, the United States has faced serious overcrowding issues as its prison population has soared, with federal prisons 39% over capacity (GAO, 2012) and over half of states at or above their operational capacity (Bureau of Justice Statistics, 2014). This means that inmates are often double- or triple-bunked, and that there is a higher inmate-to-staff ratio, making it harder to ensure the personal safety of prisoners.⁸

Job training, education, and drug treatment programs. To help with rehabilitation, all prisons in Norway offer education, mental health, and training programs. In 2014,

6 This separation could be important, as Bayer, Hjalmarsson, and Pozen (2009) find that inmates build "criminal capital" through interactions with other criminals.

7 Other European countries are trying out open prisons. Mastrobuoni and Terlizze (2015) study an open prison in Italy and find that inmates transferred to this prison commit fewer crimes after release.

8 See Davidson (2015). According to the Bureau of Prisons, the federal inmate-to-staff ratio is 4.4 to 1, whereas in Europe it is closer to three inmates per custodian.

38% and 33% of inmates in open and closed prisons, respectively, participated in some type of educational or training program. The most common programs are for high school and work-related training although inmates can also take miscellaneous courses. All inmates are involved in some type of regular daily activity, unless they have a serious mental or physical disability. If they are not enrolled in an educational or training program, they must work within prison.

By law, all prisoners in Norway have the same rights to health care services as the rest of the population. Most notably, 18% of inmates participate in a drug-related treatment program while in prison. In contrast, while most state prison systems in the United States aim to provide GED test preparation, adult basic education, and vocational skills training, a recent RAND report (2014) finds that funding for such initiatives is lacking. The GAO reports that the increased number of inmates has led to limited work opportunities and waiting lists for education programs, which both increases inmate idleness and forgoes the potential benefits of such programs. Overcrowding and limited funding have also led to long waiting lists for drug treatment programs.⁹

Post-release support. Norway has been a leader in reforming its penal system to help integrate inmates back into society upon release. A recent *New York Times* article summarizes the system's rehabilitative aims:

The goal of the Norwegian penal system is to get inmates out of it... "Better out than in" is an unofficial motto of the Norwegian Correctional Service... It works with other government agencies to secure a home, a job and access to a supportive social network for each inmate before release. (Benko, 2015).

While offenders in Norway may lose their job when they go to prison, they are usually not asked or required to disclose their criminal record on most job applications. This stands in contrast to most U.S. states, although it should be noted that efforts to "ban the box" in the United States might have unintended, negative consequences for minorities as it appears to encourage statistical discrimination based on race (Agan & Starr, 2018; Doleac & Hansen, 2016).¹⁰

In Norway, there is an emphasis on helping offenders reintegrate into society after their release. Released offenders have access to active labor market programs established to help ex-convicts find a job and to a variety of social support services such as housing support, social assistance, and disability insurance. In the United States, the safety net is less expansive, but even so, ex-convicts often have

⁹ See Government Accountability Office, 2012.

¹⁰ Agan and Starr (2018) and Doleac and Hansen (2016) find that ban the box laws reduce employment for Blacks and Hispanics, consistent with the idea that employers use race to infer the probability a job applicant has a criminal record. Rose (2018) finds no effect of ban the box for people with criminal records, while Jackson and Zhao (2017) find reduced employment for those with a criminal record.

a difficult time accessing services. For example, offenders are not eligible for the Unemployment Insurance program upon release and are frequently denied access to public housing (CEA, 2016). Moreover, since the passage of welfare reform in 1996, many ex-convicts are denied access to the Supplemental Nutrition Assistance Program and Temporary Assistance for Needy Families benefits. Tuttle (2018) analyzes the causal impact of SNAP bans for convicted drug offenders and finds that the policy of denying convicted drug offenders access to food stamps leads to increased rates of recidivism, driven by an increase in financially motivated crimes.

4. Policy Proposals

Our research on Norway's criminal justice system serves as a proof-of-concept demonstrating that time spent in prison with a focus on rehabilitation can help ex-convicts reintegrate into society. The Norwegian prison system is successful in increasing participation in job training programs, encouraging employment, and discouraging crime, largely due to changes in the behavior of individuals who were not working prior to incarceration. This suggests that job training, employment, and reduced recidivism go hand in hand. The bundle of shorter sentence lengths, better prison conditions and programs, and postrelease support helps rehabilitate ex-convicts. Combining the lessons learned from Norway with the best available evidence from other studies (for summaries, see Doleac, 2018; James, 2016; Raphael & Stoll, 2014), we propose the following reforms:

- ***Shorten Prison Sentences***

Reduce average prison sentence lengths from the current average of three years to less than one year. This can be achieved by changing mandatory minimum penalties, considering alternatives to incarceration such as electronic monitoring, increasing the use of probation and parole, expanding the use of residential reentry centers, and easing conditions under which courts can reduce an inmate's sentence.

- ***Improve Prison Conditions and Prisoner Safety***

Reduce inmate-to-staff ratios and eliminate overcrowding to comply with the operational capacity of prisons. Increase the separation of hardened criminals from low-level offenders, especially in state prison systems.

- ***Increase Funding for Job Training, Educational, and Drug Treatment Programs***

Increase funding for these oversubscribed programs to meet demand. Also, impose a mandatory requirement to participate in job training, education, or prison employment programs if physically and mentally able while in prison.

- **Expand Postrelease Programs**

Promising postrelease strategies include comprehensive and high-quality support services (housing, employment, substance abuse, cognitive behavioral therapy), and reducing the intensity of supervision for probationers and parolees.

What Will It All Cost?

Implementing some or all of the proposed reforms may seem daunting, given their high expense. Indeed, Western European countries spend an average of \$66,000 per inmate per year, which is roughly double the average of \$31,000 for the United States. But these averages mask substantial heterogeneity, in part due to differences in wages and labor costs.¹¹ For example, in Norway, the cost is \$118,000 (about the same as Sweden, Denmark, and the Netherlands); in Italy, it's \$61,000; and in Portugal, it's \$19,000. In the United States, the state of New York spends \$60,000 per prisoner, Iowa spends \$33,000, and Alabama spends \$17,000. In New York City, the annual cost-per-inmate reaches \$167,000.¹²

Reform, however, is more affordable than it may initially appear and could even produce cost savings if prison sentences are shortened.¹³ Recall the United States is an outlier in incarceration rates, and that much of this difference is due to sentence lengths that are roughly 5 times longer, on average, than those in European countries. Simple calculations reveal that a European-style prison system, with its higher costs but shorter prison sentences, would result in significant cost savings even if the number of crimes being committed is twice as high in the United States.¹⁴ Shorter prison sentences would free up significant sums of money to spend on job training, education, drug treatment programs, and postrelease support. Shorter sentences would also lower incarceration rates and alleviate overcrowding in federal and state prisons without the need to build new prisons.

While the direct savings from shortening prison times are substantial, the Norwegian experience suggests that implementing a rehabilitative prison system has additional benefits. To the extent that prison increases postrelease employment, this will indirectly reduce expenditures on safety net programs and possibly increase tax

11 In most countries, a majority of prison costs are due to labor expenditures; for example, in Norway, two-thirds of the prison budget is spent on labor.

12 Cost estimates are calculated by dividing total prison budgets by the number of prisoners. The numbers for Western Europe are for the year 2013 and are purchasing power parity adjusted (Aebi et al., 2015). The data for 40 U.S. states with available data are for 2010 (Vera Institute of Justice, 2012). New York City data are for 2012 (NYC Independent Budget Office, 2013).

13 Raphael and Stoll (2014) argue that prison sentences in the United States could be dramatically shortened without inducing a rise in crime.

14 The cost savings become even larger when accounting for the fact that labor costs to hire prison staff are substantially lower in most areas in the United States compared to Europe.

revenue. And while it is difficult to monetize the benefits from fewer crimes being committed, the potential benefits to society from reduced recidivism are large.

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PART III

PROMOTING PRIVATE SECTOR WAGE GROWTH AND JOB CREATION

DISCUSSION PAPER

Economic Strategy for Higher Wages and Expanded Labor Participation

Jason Furman and Phillip Swagel

POLICY MEMOS

The Link Between Wages and Productivity Is Strong

Michael R. Strain

Creating Economic Opportunity for More Americans Through Productivity Growth

Chad Syverson

The Higher Wages Tax Credit

David Neumark

How Minimum Zoning Mandates Can Improve Housing Markets and Expand Opportunity

Joshua D. Gottlieb

Economic Strategy for Higher Wages and Expanded Labor Participation

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ABSTRACT

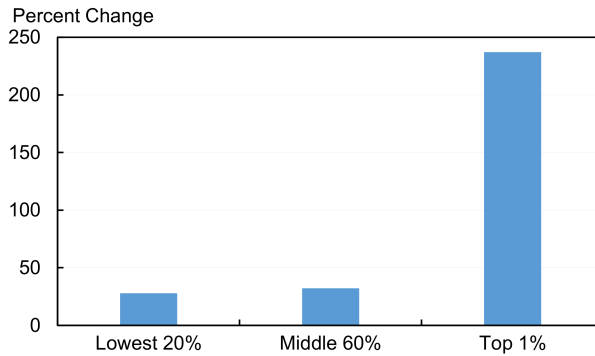
We propose two alternative policy options for promoting increased earnings and employment of low-income households: expanding the Earned Income Tax Credit (EITC) among childless workers, and implementing a wage subsidy for low-income workers that would be administered through employers. The EITC is based on household income and administered as a tax credit, while the subsidy based on hourly wages would require no filing or administrative effort by workers. We compare and contrast the costs and benefits of these two approaches to raising wages. Our two policy options are meant as part of a response to the sluggish income growth at the bottom of the distribution over the past several decades. Over the long term, a broad set of policies is needed to boost productivity and ensure that the resulting incomes gains are widely shared—and we discuss the elements of such an agenda that should receive bipartisan support. Over the near-term, however, the policies we propose are well-targeted to improving the incomes and participation rate of workers at the bottom who have been left behind by the rising prosperity of the U.S. economy.

Introduction

From 1979 to 2015, according to the Congressional Budget Office (CBO), real income before taxes and transfers increased by a total of 237 percent for the top 1 percent, but by only 28 percent for the lowest quintile and 32 percent for the middle three quintiles—in all cases for non-elderly households (Figure 1a). Taxes and transfers meant somewhat larger gains at the bottom of the distribution, but even so incomes after taxes and transfers rose over the same period by a total of 46 percent in the middle three quintiles and 70 percent for households in the lowest quintile (with half of this gain coming from Medicaid, assuming it is valued by households at cost). In contrast, income after taxes and transfers rose by 240 percent for the top 1 percent (Figure 1b). American households in the middle and at the bottom saw annual income gains of barely more than 1 percent on average over three-and-a-half decades.¹ This contrasts with the roughly 3 percent annual income gains enjoyed by the typical family from 1948 to 1974.²

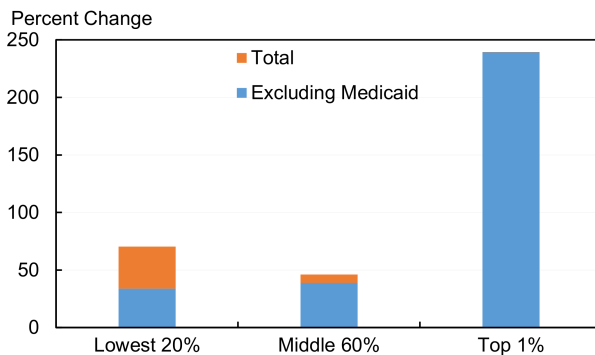
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- 1 The figures in this paragraph are for non-elderly-headed households defined as childless households up to age 64 plus households with children. They are calculated from Congressional Budget Office (2018b), "The Distribution of Household Income, 2015," November. <https://www.cbo.gov/publication/54646>
 - 2 The more comprehensive CBO figures are not available for the earlier period so this is based on Census data which is not a completely apples-to-apples comparison.

Figure 1a. Change in Household Income Before Taxes and Transfers for Non-elderly-headed Households, 1979-2015



Source: Congressional Budget Office (2018b); authors' calculations.
Note: Households ranked by income before taxes and transfers.

Figure 1b. Change in Household Income After Taxes and Transfers for Non-elderly-headed Households, 1979-2015



Source: Congressional Budget Office (2018b); authors' calculations.
Note: Households ranked by income before taxes and transfers.

We propose policies to do better.

The slowdown of income growth can be largely accounted for by three factors (Council of Economic Advisers, 2015). First, the largest reason is that overall economic growth has slowed. From 1948 to 1974, productivity growth (measured in units of consumer goods) was 1.7 percent annually but has slowed to 0.8 percent annually from 1974 to the present. This largely has been mirrored by the slowdown of the growth of mean compensation, although since around 2000 mean compensation has grown slightly more slowly than the overall economy as the share of income

going to labor has fallen. If productivity growth had not slowed after 1974, holding distribution constant, mean wages would have been 47 percent higher today.

The second and also substantial reason is that median wages have grown less than mean wages—the worker in the middle has not kept pace with average wages driven by large gains at the top. In 1974 median wages were 81 percent of mean wages but today they are only 72 percent of mean wages. Holding the slower growth constant, median wages would have been 13 percent higher today if they had simply kept up with mean wages.

Finally, up through 2000 the entry of women into the workforce provided a cushion for the slowdown in wage growth—helping ensure more families had two earners instead of one. Since 2000, however, women’s labor force participation has levelled off and started to decline, joining a trend that has been underway for men since the 1950s. If these trends continue, they will increasingly weigh on household incomes because households will be supported by fewer and fewer workers.

We want policies that result in strong gains in the middle and for the bottom half of the distribution. This could happen with stronger growth and the same or perhaps even greater inequality. In the late 1990s, for example, families throughout the income distribution saw strong gains even while inequality widened. Or it could happen with decreasing inequality. Either way, the test of economic policy should not be solely the growth rate, which reflects economy-wide averages and can obscure mounting inequality, but also how households in the middle and bottom of the distribution are doing.

The economic challenges of wage growth and participation in the workforce, both of which are rooted in and also can contribute to slower economic growth and widening inequality, have neither a single cause nor a single solution. Moreover, the solutions may not necessarily directly reflect the causes—for example, if technology widens inequality it is not necessarily the case that restraining technology is the best solution to inequality.

We took it as our charge to propose economic policies that can improve either wage or job growth, ideally both, in the near-term. For our purposes, this refers to policies acting immediately or over the span of a business cycle. Given this time horizon, this paper does not focus on the important policies aimed at improving human capital which tend to have longer-term payoffs, and which are complements to our proposals.

The first part of this paper outlines some of our goals. We recognize that our list of goals is not comprehensive. Our aim was to list major goals for which we think there will be broad support, not to set down every possible goal.

The second part of the paper provides a high-level synopsis of *some* of the most important elements of an overall economic approach that would help to achieve these objectives and thus manifest in faster wage growth for the typical worker. We do not attempt to flesh out the details of these; in many cases, the details that would be necessary for actual policymaking could prove substantially more contentious than these high-level summaries.

The third part of this paper outlines two specific options for subsidies to raise wages and increase hours worked or labor force participation for less skilled workers while taking the overall economic environment as given. In some economic circumstances, wage subsidies can boost *both* incomes and employment at the same time. One option expands on the existing Earned Income Tax Credit (EITC) while the second option would provide a wage subsidy for employers. Either of these options could be dialed up or down in light of other economic realities.

While these options would require actions to address the overall fiscal trajectory, we consider this issue outside of the scope of our paper—the particulars of the needed fiscal adjustment are not connected to the analysis we provide of the policy options themselves.

The EITC expansion or introduction of wage subsidies would advance prospects for lower-income workers but are far from a comprehensive solution to the issues facing these workers. This option is a complement to (and not a replacement for) policies that improve human capital or boost productivity and thus improve potential output. Moreover, given fiscal constraints, a system of wage subsidies will not be effective in boosting wages for median workers, let alone workers at the 85th percentile. In these cases, the best way to make progress is to get the major economic policies right.

Other members of the Aspen Economic Strategy Group are proposing policies that have the promise of making beneficial long-term impacts on private sector wage and job growth. Progress on the human capital agenda proposed by Austan Goolsbee and Glenn Hubbard would spur productivity growth over a long period, leading to higher incomes and wages over time, which would then translate into job growth. Moreover, progress on a human capital agenda that improves skills and educational levels for those with relatively few could spur income gains over time at the bottom of the distribution. Keith Hennessey and Bruce Reed propose measures intended to increase participation in the labor force. Together these are intended to help to address slower wage and jobs challenges, potentially complementing the ideas put forward in this paper.

The Goals

A policy agenda that will boost private sector wage and job growth starts with getting the economic environment right in both the short term and (especially) the long term. This should entail focusing on five goals:

1. Ensure the economy is operating at full employment, using its full potential.
2. Increase long-term productivity growth and labor force growth leading to a better trajectory for potential output.
3. Make a more resilient economy in the face of shocks and inevitable cyclical downturns.
4. Ensure more sustainable economic growth over the longer term.
5. Contribute to more broadly-shared prosperity.

We believe that these general goals should have broad support from across the political spectrum. All policymakers should want a strong and stable economy with improved productivity growth, and an economy that is more resilient in the face of shocks. All policymakers should also want prosperity to be broadly shared. But there will be sharp differences on how to achieve these outcomes and how to balance the inevitable tradeoffs involved, such as between growth and distribution.

Some Major Policy Elements for Achieving These Goals

Achieving these goals will require policies in numerous areas including fiscal, tax, regulation, immigration, trade, energy, infrastructure, health care, and retirement among many others. In this section we note some specific areas or policies that could form the basis of bipartisan policy efforts without attempting to necessarily provide a list that would be complete from either of our perspectives. This is not meant to be a comprehensive list of the policies that either of us favor—and omitting some policy does not necessarily indicate that one or both of us would oppose it.³

In addition to these affirmative proposals, it is important for policymakers to avoid mistakes, including trade wars, interfering with the Federal Reserve's independence, and so on. We also have in mind to eschew policies that seek to undo technology-driven changes such as by supporting declining industries or preventing the emergence of new ones or of new technologies.

³ To give an example, we both support taking action to address the challenge of climate change, but do not set out policies or otherwise address the issue in this paper beyond this footnote.

There will be inevitable tradeoffs involved between the impact of change in driving growth and in giving rise to dislocation. We are not suggesting to ignore the costs of dislocation on people, communities, or industries, but rather to be cognizant of the tradeoffs involved, including across different time horizons.

1. ENSURE THE ECONOMY IS OPERATING AT FULL EMPLOYMENT, USING ITS FULL POTENTIAL

In general economists support using **monetary policy** as the most effective way to help push the economy back toward full employment in response to both smaller shocks and larger ones, like recessions. Monetary policy has the advantage of being set by an expert group, can rapidly respond to changing circumstances, and does not incur long-run fiscal costs.

Discretionary countercyclical fiscal policy can also play an important role, potentially affecting the economy more quickly than monetary policy in the event of a sharp downturn and can be especially efficacious when interest rates are constrained by the effective lower bound. Moreover, a diversity of instruments may help when the impact of any one instrument is uncertain. All of these were motivations for the fiscal stimulus measures enacted from 2008 through 2012 (Furman, 2018).

We are not taking a position on the current stance of short-run monetary or fiscal policy as this paper is not a response to the immediate high-frequency economic situation; we simply endorse these two tools of monetary policy and discretionary fiscal policy for use whenever economic circumstances warrant.

2. INCREASE LONG-TERM PRODUCTIVITY GROWTH AND LABOR FORCE GROWTH LEADING TO A BETTER TRAJECTORY FOR POTENTIAL OUTPUT

Short-run macroeconomic policy can be effective in moving the economy back to its potential but cannot substantially increase that potential, beyond some positive hysteresis effects. To improve the economy's potential requires stronger productivity growth and/or expanding the workforce. Doing this entails a wide range of policies, including tax and spending policy, regulatory policy, and so on. We note a few of them here:

First, invest more in **infrastructure and basic research** while ensuring that the dollars are allocated effectively and, where possible, the investments are financed through dedicated revenue in a manner that enhances their efficiency. This includes more cost-benefit analysis in the allocation of infrastructure funds or encouraging more such analysis by states that receive formula funds, and ending lower priority

investments. Second, policies to encourage more **participation in the workforce** (the topic of the paper by Hennessy and Reed). Finally, **expanding immigration** would advance both aspects of this goal by expanding the workforce and increasing innovation and entrepreneurial dynamism.

3. MAKE A MORE RESILIENT ECONOMY IN THE FACE OF SHOCKS AND INEVITABLE CYCLICAL DOWNTURNS

The goal is to improve the response of the economy to shocks, reducing the volatility of the economy, and smoothing out the business cycle. This could involve both monetary policy and fiscal policy.

With respect to **monetary policy**, the equilibrium interest rate is likely lower now than it was in past decades and thus it is likely that future policymakers will more frequently find themselves at the effective lower bound. This will constrain conventional monetary policy, and policymakers may be concerned that unconventional monetary policy, like forward guidance and quantitative easing, may not be fully effective or could have negative side effects for financial stability.

This implies that monetary policymakers should continue to explore alternative policy tools, goals, and institutional arrangements. As examples, the questions to be explored include the most effective ways to undertake quantitative easing if again needed; the appropriate target for monetary policy; and alternative institutional arrangements that could facilitate a monetary policy response when needed.

With respect to **fiscal policy** this means improving the automatic stabilizers that automatically expand spending or reduce taxes when the economy weakens and then reverses these impacts as it improves. This already happens with tax revenues, unemployment insurance, the Supplemental Nutrition Assistance Program (SNAP), and other programs. An improvement of the automatic stabilizers could involve an addition on top of current spending levels or involve reducing a program in good times and expanding it in harder times so that it averages out to roughly the same size over the business cycle.

One of the top priorities for improved automatic stabilizers is **unemployment insurance (UI)**. Unemployment insurance benefits are limited in duration and magnitude, generally lasting up to 26 weeks and replacing, on average, somewhat less than 50 percent of wages, although that varies substantially across states. In theory these limits balance the cost of discouraging work against the benefits of helping people smooth their consumption in the face of unforeseen shocks and also allowing jobseekers to take the time to match to better jobs. The optimal design of unemployment insurance is open to debate, but one feature that such a system would have is to increase benefits and/or extend the period for which people can

receive benefits when the unemployment rate is higher, and then reverse this as the labor market recovers. When the unemployment rate is higher there is less concern about moral hazard (because in a deep recession the problem is too few jobs not too few people willing to work) and a greater concern for helping people smooth consumption (Chetty 2008). (Separately, unemployment insurance has other issues—like falling coverage rates with many workers, including part-time ones, falling through the cracks in the system, a fact that also reduces its countercyclical effectiveness (West et al., 2016; McKay, Pollack, and Fitzpayne, 2018).)

Federal policymakers sometimes expand and more frequently extend unemployment insurance benefits during recessions, but this is often done in a haphazard manner, potentially starting too late as the economy turns down. The federal Extended Benefits program triggers additional assistance to states with high unemployment. However, these triggers are designed ineffectively and do not cover the full cost of expanded/extended benefits (West et al., 2016). Such triggers could be fixed to reflect state unemployment levels and increases in unemployment rates. Given the impact of downturns on states' financial conditions, it would also make sense to have 100 percent Federal funding to provide longer and possibly larger benefits in the next downturn.

There is likewise research evidence that Federal assistance to state and local governments was relatively effective in supporting the economy during the recession (see e.g. Chodorow-Reich et al., 2012; Dupor and McCrory, 2018, Dupor and Mehkari, 2016; Chodorow-Reich, forthcoming). A typical way to put this assistance in place is for Congress to adjust the formula by which the federal government matches **state-specific Medicaid spending**—this is known as adjusting FMAP (Federal Medical Assistance Percentage). A statutory approach that automatically adjusted the FMAP based on, say, state unemployment rates could provide for a more rapid fiscal response to cyclical downturns while still allowing legislative discretion to make changes. As with UI, it would be important for the rule to contemplate both recessionary and expansionary periods in designing such a countercyclical policy.

4. ENSURE MORE SUSTAINABLE ECONOMIC GROWTH OVER THE LONGER TERM

Ensuring that growth is strong and sustainable over time would involve steps to achieve a sustainable fiscal trajectory, more moderate growth of health spending, stability of the financial system, and more.

CBO (2018a) estimates that the **fiscal gap** is 2 percent of GDP over the next 30 years but would be about twice as large if policymakers choose to continue recent spending increases and temporary tax provisions. Moreover, some of the solutions to the wage and jobs challenges we face will entail provisions that, by themselves,

would raise spending or reduce revenue—and thus exacerbate this fiscal challenge. Thus it is necessary to find other ways to reduce lower-priority spending and/or increase revenue both to put the debt on a sustainable path and to make room for new higher-priority provisions, like the EITC or wage subsidies we discuss in the next section.

Ultimately the fiscal adjustment cannot merely consist of “paying for” new proposals absent a larger fiscal framework. For example, consider the case of reversing the December 2017 tax cut and using every penny for new spending programs. That may be a better or worse compositional policy but it is equal in its degree of fiscal responsibility to never having undertaken the tax cut and simply increasing spending.

Policy actions are needed to achieve a sustainable fiscal position over time, but there is considerable disagreement over the composition and timing of those actions—and indeed, disagreement over fundamental choices regarding the size, scope, and role of the government in society that ultimately will determine the nature of the fiscal adjustment and the shares of revenue and spending out of GDP.

One fiscal measure that we think would be efficient is changes to the tax treatment of health insurance. The so-called “**Cadillac Tax**” included in the Affordable Care Act (ACA) and subsequently delayed until 2022 requires employers to pay a 40 percent tax on coverage in excess of a relatively high limit. This creates an incentive for individuals, businesses and insurers to devise efficient ways to reduce the growth of health costs and thus to increase wages. The Cadillac Tax grows over time so further delays or repeal would significantly worsen the fiscal hole. Instead, it could be retained or possibly reformed.

One proposal would be to have the tax rate on health insurance above the “Cadillac” level vary with families’ tax rates rather than applying a 40 percent tax rate regardless of income. Another set of tweaks proposed by the Obama Administration would be to adopt State-specific high-cost thresholds and alter the indexation of plans (Furman and Fiedler, 2016). A more ambitious change would be to eliminate the exclusion, either for payroll taxes as proposed by Martin Feldstein (2017) or entirely, and replace it with a flat credit. All of these changes are politically challenging—the Cadillac Tax has never taken effect. Still, steps such as these would help to slow health spending and improve the fiscal trajectory, or prevent policy from making it worse.

5. CONTRIBUTE TO MORE BROADLY-SHARED PROSPERITY

Finally, we both believe that achieving full employment, expanding potential growth, and ensuring more resilience and sustainability would—even absent other steps—increase wages across the board. But we also believe that further steps to ensure more broadly-shared prosperity are necessary, either because they can increase

growth and equity at the same time or because they can achieve additional equity at an acceptable cost.

First, a rapidly growing body of well-identified causal research has found that the social safety net for children can increase long-run earnings, employment, educational and health outcomes, and reduce crime (e.g., Cohodes et al., 2016; Hoynes, Schanzenbach, and Almond, 2016; Wherry et al., 2018; Brown, Kowalski, and Lurie, 2015; Heckman et al., 2010). Specifically, one step we endorse is for the remaining states to take up the **Medicaid expansion** that was passed under the Affordable Care Act (ACA). The Children’s Health Insurance Program (CHIP) provides health insurance for children in low-income families but the benefits identified in the research are connected to safety net programs that cover the adults in the household, namely Medicaid.

We realize Medicaid expansion is politically fraught since it is wrapped up in the debate over the ACA. Expansion is also seen as fiscally controversial, with some governors worried about the cost, even with the federal government picking up most of the cost of the expansion (and even while states declining the expansion are effectively foregoing considerable federal subsidies). We also worry about the fiscal constraints facing states. In light of the evidence on the positive impacts and given the reality that legislative efforts to repeal the ACA are at a standstill, we endorse take-up of the Medicaid expansion by the remaining states—and note that several additional states have chosen to expand Medicaid in the last year.

Second, there is considerable evidence that wages are not set in a simple competitive market but that employers have power over wage-setting and thereby the ability to hold down—what is sometimes called **“monopsony” in labor markets** (Benmelech, Bergman, and Kim, 2018). This might be especially the case when a few firms constitute a large share of hiring in a local labor market; the idea is that greater concentration of economic activity would strengthen this monopsony power and contribute to the increased wedge between mean and median wages discussed in the beginning. Some analysts would see policy implications as suggesting to take steps to further the bargaining power of workers including through unions, better enforcement of anti-trust laws, and reducing non-compete agreements. While the two of us are not putting forward a policy proposal here (in part because we do not agree on the precise agenda), the broad idea is to take action to help promote more shared growth—and to the degree to which these steps reduce or countervail existing employer market power they would promote efficiency as well.

Third, increasing mobility between jobs and between places is another way to help more people share in the benefits of the economy while increasing efficiency. There has been a long-term decline in the fraction of people moving between places, jobs, occupations and industries (see e.g. Molloy et al., 2016; Molloy, Smith, and Wozniak,

2014; Davis and Haltiwanger, 2014). While there may be a number of perfectly good or efficient reasons for these shifts, there are also a number of policy distortions that have contributed to them. In particular, the growing gap between housing values and construction costs appears to be due in part to scarcity that is deliberately caused by **land use restrictions**. These restrictions drive up rents in more economically successful areas, reducing the ability of people to move to good jobs – the AESG proposal by Josh Gottlieb provides details.

At the same time, the share of jobs that require an occupational license has grown from less than 5 percent to 29 percent, with the requirements for many licenses varying across states (Kleiner, 2015 and Department of the Treasury Office of Economic Policy et al., 2015). Reforming **occupational licensing restrictions** would make it easier for people to move between jobs, potentially also increasing their leverage to bargain for higher wages.

Two Options to Subsidize Wages for Less Skilled Workers

Our desired outcome is to increase wages and employment for people across the income spectrum. Within this outcome, an important policy priority and one that lends itself to specific, targeted policies is to raise the wages of workers with lower skills and levels of education.

There will be other potential benefits from policy success beyond higher wages and job creation, including lower rates of crime, improved marriage-ability of those who work and have higher incomes as a result, and more economically active communities, which have positive spillovers for other residents. Indeed, many others have pointed to the considerable personal and societal negatives of having a large part of the population not working or earning low wages.

We propose two distinct options that would achieve many of the same objectives. The first option expands on the existing EITC structure to nearly triple the amount that goes to workers without qualifying children (for whom the maximum credit is \$519 in 2018). The second option sets up a new structure to deliver wage subsidies through employers. There would be important administrative hurdles to overcome to put this second proposal into operation. But some states already carry out the necessary steps as part of their unemployment insurance systems, suggesting that it is feasible.

We first provide a broad overview of these two options and then discuss some pros and cons of the two approaches.

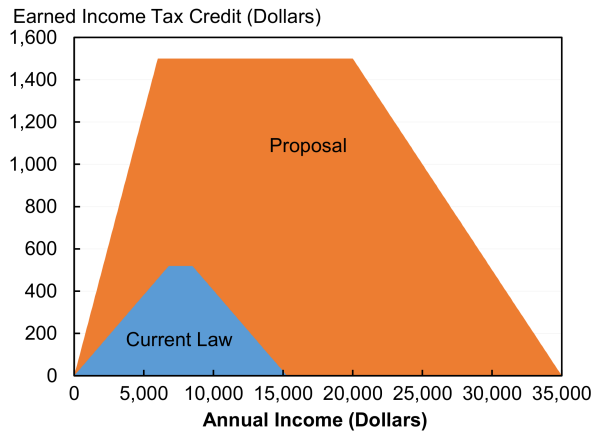
OPTION 1: EXPAND THE EARNED INCOME TAX CREDIT FOR WORKERS WITHOUT QUALIFYING CHILDREN

The EITC has been expanded numerous times since its inception in the 1970s. In addition, the child tax credit was created in 1997 and has also been expanded and made more refundable since then. Both of these policies focus on households with children. As a result, parents who have qualifying children and whose incomes are below the poverty line generally get net tax credits back from the government—lifting about 4 percent of such households above the poverty line from the direct effect of the tax credit and potentially more when the additional work encouraged by the tax credit is factored in (Furman, 2014).

The EITC has a small benefit for workers without qualifying children, a group that includes both childless workers and also parents—generally fathers—who are not married and not living with their children. In 2018 this credit was \$519 for workers with adjusted gross incomes between \$6,780 and \$8,490. The credit starts to phase down after incomes reach \$8,490, a little bit more than a halftime worker at the minimum wage makes, and is fully phased out above \$15,270, which is just above the earnings of a full-time worker at the minimum wage. This small credit is generally outweighed by the taxes these workers pay, resulting in about 7.5 million low-income workers without qualifying children being taxed either into poverty or more deeply into poverty each year (Marr and DaSilva, 2016). For example, a worker making just over the poverty-line wage of \$12,140 will pay \$929 in taxes and receive \$241 in EITC, moving him below the poverty line. Moreover, this credit is too small to make much of an effect on decisions about working and, in fact, many qualified beneficiaries are not aware of it and either do not claim it or get it as a windfall. Finally, the credit is limited to workers between the age of 25 and 64.

A number of economists, including one of us (Furman, 2006; Scholz, 2007), and policymakers (President Obama, former Speaker Paul Ryan, Senator Sherrod Brown and Congressman Richard Neal) have all proposed to expand the childless EITC. Our option would increase the maximum EITC for workers without children to \$1,500 (phased in at a 25 percent rate on the first \$6,000 of earnings) and have the full credit available to workers who earn up to \$20,000. The credit would fully phase out for incomes above \$35,000. The change from the current schedule is shown in Figure 2. These parameters could be adjusted based on budgetary and other considerations. In addition, the option would lower the eligibility age from 25 to 21 while maintaining the prohibition on full-time students receiving the credit.

This option would cost \$14 billion if it were in effect in 2018 and would provide an average benefit of \$870 to 16 million workers (assuming 75 percent take-up). A worker making just above the poverty line would now get slightly more in EITC (\$1,500) than what the worker pays in other taxes, moving the worker further above

Figure 2. Earned Income Tax Credit for Childless Adults

Source: Internal Revenue Service; authors' calculations.

the poverty line. Overall, on net, the tax code would reduce the poverty rate for this group by 3 percentage points (assuming no changes in labor supply, an issue we return to below).

This paper does not address the important issues surrounding subsidies for families with children. Other proposals include increasing the EITC for one-child households to better reflect their comparative cost of living (Hoynes 2014) and also converting the child tax credit and EITC into a child allowance that is separated from work.

OPTION 2: A WAGE SUBSIDY FOR LOWER-INCOME WORKERS

The second option is a wage subsidy for lower-income workers, an idea that goes back at least to Muth (1966), was championed by Nobel-prize winning economist Ned Phelps (1997), and more recently has been proposed by Karl Scholz (2007), Cass (2015), and Austin, Glaeser, and Summers (2018). This idea is both larger than the EITC and departs from the existing administrative infrastructure so it would need further testing and vetting before it was implemented. Unlike the EITC, this option would be delivered to employers of low-income workers—although this administrative difference should not affect the ultimate beneficiaries of the tax credit, which does not depend on whether it is paid to employers or workers. The bigger difference from the EITC is that it would be based on hourly wages rather than annual household income or other circumstances and the benefits to workers would be in the form of wage compensation which would require no filing or other administrative effort by workers.

Our wage subsidy proposal would establish a tax credit for hourly wages paid to low-wage employees. To be eligible for the credit, employers would need to pay an hourly wage of at least \$10 an hour to all employees. The credit would start at \$2 an hour and phase down by \$0.50 for each \$1 increase in the hourly wage above \$10 per hour—fully phased out for wages of \$14 an hour. An employer now paying the federal minimum wage of \$7.25 an hour could pay \$10 an hour at an effective net cost of \$0.75 per hour, with the \$2.00 per hour subsidy covering 73 percent of the incremental cost. An employer paying \$12.50 an hour would receive a \$0.75 per hour wage subsidy, and so on.

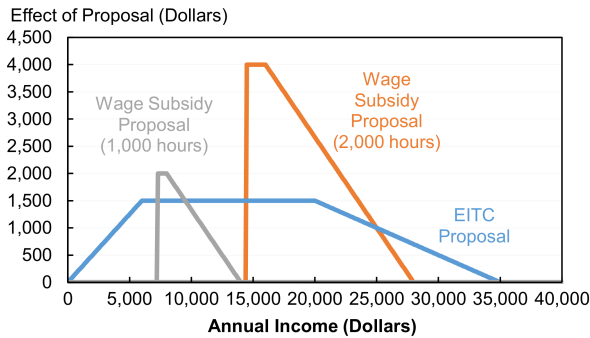
The subsidy would be provided as a tax credit to employers in a similar manner to the current Research and Experimentation Tax Credit, so that for companies without income tax liability it could be carried forward to use against future earnings or applied against payroll taxes for smaller businesses (this latter provision especially would be important for new firms). There are no fully refundable business tax credits and we do not propose one. This is to maintain program integrity although it comes with some tradeoffs in terms of eligibility for employees at smaller and less profitable firms.

Our option would establish a single nationwide schedule for the subsidy, although it could also be limited to or made larger for specific places as proposed by Karl Scholz (2007) and Austin, Glaeser, and Summers (2018) in order to take advantage of the spillover effects of poverty in highly disadvantaged areas. As Austin, Glaeser, and Summers (2018) note, however, even if the proposal were not made contingent on location, the fixed dollar value of the subsidy would effectively make it more valuable in lower-cost areas, a form of *de facto* geographic adjustment.

Research finds limited impact from past wage subsidies to disadvantaged workers because employers screened out the targeted workers (Katz, 1998). Evidence from the Targeted Jobs Tax Credit, the Welfare-to-Work Credit, and the Work Opportunity Tax Credit is that take-up is low in part because of an apparent stigma in which employers, see the cost of training low-wage workers as high. Our proposal would apply to all low-wage workers rather than disadvantaged workers or people leaving welfare, which would reduce the possible impact of this stigma.

The tax credit provided for a full-time worker under this proposal is compared to the expanded EITC proposal in Figure 3, with different subsidies depending on the total number of hours worked. Note that unlike the EITC option, this option would include workers with children, but it could be altered to sync up with the EITC in a variety of ways. Details would also have to be considered for workers with substantial earnings from tips. We do not propose or model the full set of changes in the child tax credit and EITC that might accompany this proposal; instead, we present cost estimates and benefit estimates for workers without dependent children—which makes them comparable to the proposal for EITC expansion. Specifically, this option would cost about \$60 billion annually, providing an average subsidy of \$2,060 annually per worker to 30 million workers (assuming 95 percent take-up).

Figure 3. Expanded Earned Income Tax Credit for Childless Adults vs. Wage Subsidy



Source: Authors' calculations.

Note: Wage subsidy proposal depicts scenario in which all benefits of the subsidy pass through to workers. Wage subsidy proposal assumes 1,000 or 2,000 hours worked per year.

The plan would be administered by states, along the lines of the current UI system. This would require states to track not only annual or quarterly pay but also hours, something Minnesota, Oregon, Rhode Island, and Washington already do through their employment systems. The policy would provide a one-time subsidy to firms and states to implement these administrative and payroll changes (one could imagine the small subsidy applied to payroll processing firms such as ADP for employers that use these services).

This is not a minimum wage in the sense that employers could pay below this level and simply forgo the wage subsidy. The requirement that firms pay all workers at least \$10 per hour helps skew the benefits of the credit to workers by avoiding a situation in which employers of workers who now make less than \$10 per hour simply pocket the subsidy without passing on the credit to workers through higher wages.

ANALYSIS OF THE OPTIONS AND PROS AND CONS OF THE DIFFERENT APPROACHES

Much of the effect of the two proposals would be the same—additional income for low-income workers that likely also results in higher employment rates, increased marriage rates, more child support payments and reduced crime. The size of the two proposals as we have put them forward is different, but either of them could be dialed up or down to hit specific targets (although it is easier to do a smaller EITC proposal because it just alters existing tax parameters and applies to a more limited group whereas the fixed cost of establishing a new wage subsidy program would only make sense if it were at a sufficient scale). We discuss the impact of the

two options, including their similarities and differences, without focusing on the different costs, even though the cost of each proposal would be a central factor in any actual implementation.⁴

Employment and other associated effects

A long literature has found that the EITC has substantial employment effects (Eissa and Liebman, 1996; Meyer and Rosenbaum, 2001), and has also been shown to increase marriage rates, reduce crime, and improve current and long-term health, educational, and other outcomes for children in the households that receive the credit (Hoynes, Miller, and Simon, 2015; Evans and Garthwaite, 2014; Bastian and Michelmore, 2018). In New York City and Atlanta, the evaluation firm MDRC is conducting a randomized control study to evaluate the impact of an EITC for workers without dependent children, similar to our proposal. Final results from three years in New York City found that employment increased by an average of 2.4 percent in the latter two years of the experiment, with the gains in both years statistically significant, and, in the evaluators' view, more representative of the ongoing impact of the program (Miller et al., 2018). Overall, the evaluation found that earnings increased an additional \$0.33 for each \$1 workers received directly from the program—the opposite of the proverbial leaky bucket.⁵ (Employment gains were even higher for participants who were offered information about employment services.)

Wage subsidies like the ones we are proposing have not been evaluated so we do not have specific evidence about their impact. Labor supply, however, is elastic. To the degree to which our wage subsidy proposal raises after-tax wages, it would be expected to increase labor supply as well. For example, if the proposal raised after-tax wages for low-income workers by 10 percent, then using CBO's labor supply elasticity of 0.31 for primary earners in the lowest decile, it would be expected to increase labor supply by 3 percent (or slightly less after taking into account the income elasticity, which is that people making more money want to consume more leisure and thus work less) (CBO, 2012).

There is no firm basis for comparing the employment effects of the two proposals because they have not been evaluated in complementary ways. Cass (2015) argues that wage subsidies would have a larger employment effect because they result in a transparent, upfront increase in hourly wages whereas the EITC is only received in a lagged, lump sum manner that will have less of a behavioral impact.

4 Dickert-Conlin and Holtz-Eakin (2002) compare employee-based and employer-based subsidies that have much in common with our two options but also have important differences. They "find a modest preference for employee-based approaches" like the EITC.

5 A full evaluation would also need to reflect the welfare costs associated with additional work. Normally reduced leisure should be counted as a cost but for this population there is an argument that increased participation might be counted as a benefit.

Another issue is the incentive on different marginal tax rates. The EITC encourages participation, but for workers in the phase-out range, it increases marginal tax rates both for extra hours worked and for higher wages. Overall the evidence is that increased participation substantially outweighs any incentives for hours worked. The wage subsidy, in contrast, does not impose any marginal tax rate on increased hours worked but imposes a higher marginal tax rate on additional wages, which means that it would not discourage someone from working longer but could impose larger distortions on other choices. Overall, both proposals likely expand work incentives on net but also impose some distortions—an outcome that is inevitable with any income-related program.

Incidence of the two proposals

Both the EITC and the wage subsidy would have an incidence that is mostly on workers but also partly on firms. In the case of the EITC, the increased labor force participation would likely lead wages to fall somewhat, allowing employers to capture some of the benefit of the subsidy. In the case of the wage subsidy, wages likely would not rise by as much as the amount of the subsidy, thereby also allowing employers to capture some of the subsidy. Economic theory says that it generally does not matter which side of the market gets the check from the government, since the underlying economics dictates the incidence. In practice, there may be some “flypaper” effect that leads to a greater benefit to the side of the transaction that receives the check.

In competitive markets, as usual with tax policy, we would expect relatively larger increases in wages if labor supply is inelastic—as might be the case today with the unemployment rate quite low. Conversely, the wage subsidy might result in more of an increment to employment rather than wages when the economy is weaker and the supply of labor is relatively elastic (and of course it would be necessary to consider the elasticity of labor demand as well).

There is no direct evidence on the incidence of the EITC. Rothstein (2008) simulates what this incidence might be based on a variety of modeling assumptions, projecting that single mothers keep \$0.70 of every dollar of EITC, while employers capture \$0.30. Direct evidence is clearly needed, especially since the incidence of any given proposal to expand the EITC need not be the same as that for the EITC as a whole. In particular, a wage subsidy that applied to all workers would not have the feature that Rothstein found in the EITC of potentially lowering wages for ineligible workers.

To the degree that wages fall somewhat (for the EITC) or the credit is not fully passed through (for the employer subsidy) that would generally reflect an increase in labor supply. In other words, the subsidy would encourage employers to hire low-wage workers and also induce more of them to enter the labor market, which is an outcome that has its own benefits.

The analysis is more complicated in moving away from the competitive model of the labor market and considering monopsony power on the part of employers. In general, the more market power an employer has, the more it would be expected to capture the benefit of the wage subsidy and the less they would be expected to increase employment in response.

Both options also raise an important question about whether the minimum wage should be increased. A higher minimum wage would help to ensure that more of the benefit of the subsidy went to workers. Depending on the magnitude of the minimum wage increase and the time horizon, employment losses could reduce the intended positive effects. In the case of an EITC, a combination of increased EITC and a higher minimum wage might be optimal even in competitive models in which the minimum wage increase results in employment losses (Lee and Saez, 2012). The wage subsidy could be combined with a minimum wage increase for similar incidence reasons, effectively making our proposal a way for the cost of the increased minimum wage to be partly subsidized for employers (that is, for the cost of the minimum wage to be diffused more broadly in the economy in whatever manner of financing is preferred).

Targeting

The EITC can be better targeted to household circumstances because it is based on annual household income. For example, a teenager in a high-income household would not get the EITC but could benefit from the wage subsidy. The wage subsidy goes only to workers with low hourly wages, whereas in some cases (not overly frequent) the EITC could go to higher-wage workers who work fewer hours.

The EITC is also shaped to target other circumstances such as by providing a larger benefit to households with more children. One could also consider having subsidies for children separated from work support.

The wage subsidy may be better targeted at lower-skilled workers with fewer opportunities. This is because it is based on the hourly wage whereas the EITC goes to some households with higher hourly wages who only work part time and thus have lower annual incomes.

Timing of Payments

The EITC provides a refund to employees the year following their work and is paid in a lump sum. This can be a form of desirable forced savings but can also be a source of instability and even costly debt financing in the period leading up to the lump sum payment. The wage subsidy would lead to higher paychecks and thus a more regular income.

Moreover, this difference could lead to varied psychological effects for workers. It is possible that workers would prefer the idea of higher pay from their employer compared to a benefit delivered as a larger government refund (even if to the economist the economic incidence is what matters), although there is also evidence that many recipients have positive feelings towards the EITC (Sykes et al., 2015).

Take-up Rates, Administration, and Compliance

The EITC expansion would be straightforward for the Internal Revenue Service (IRS) as it only involves changing parameters already in the tax code. It would be relatively straightforward for workers as well, with a modicum of added complexity since additional workers would be eligible to file for the EITC (in practice, more than half of low-income workers use paid tax preparers). Currently about 85 percent of households with children take up the EITC; the final results for the credit for households without dependent children in New York City indicate a take-up rate of 59 percent (Miller et al., 2018). In addition, there is some EITC error rate in terms of improper claims, often around the issue of which adult has a child under the precise definition of the credit; this would not be an issue for our EITC option—that is, while it is desirable to address the EITC error rate it is not essential to do so before implementing this expansion proposal.

The wage subsidy option would rely on largely untested administrative mechanisms of administration through state UI systems, which would add burdens for states and for employers (though as noted above, several states do already track hours in their UI systems). Take-up rates for the wage subsidy could be higher relative to the EITC because businesses are more sophisticated about claiming tax benefits and no filing or effort by workers is needed.

The biggest concern with a wage subsidy would be fraud. In particular, both the employer and the employee would have an incentive to report higher work hours, which for any given total amount of pay would result in lower hourly pay and thus larger subsidies.⁶ This could be an even bigger issue since hours, unlike dollars, are much harder for the government to observe and monitor. Programs that are contingent on hours in Europe have suffered from widespread fraud. For wage subsidies to have a chance of working without such fraud, significant enforcement efforts and penalties on employers for fraud may be required.

6 In the current tax system the incentives help to produce truthful reports of how much workers are paid by their employers because of the offsetting incentives of the employer and worker. The employer has an incentive to report a higher number for wages and thus to get a larger deduction against business income while the employee prefers to report lower pay and thus pay less taxes. This is why there is nearly perfect compliance with taxes on wages, in contrast to other parts of the tax system, like small business income, that lack the same types of reporting and offsetting incentives.

Conclusion

The U.S. economy has enormous strengths but it also has major challenges—with wage growth and participation in the workforce, especially for less-skilled workers, at the top of the list. Currently there are different visions for dealing with these issues. One is based on a smaller government with lower taxes and less regulation, another based on a more active government that directly aims to address these problems. The two authors of this paper have varying degrees of sympathy with these two approaches. But we also believe that substantial common ground can be found, especially in terms of the goals we should be trying to achieve and some of the high-level policies that would help to achieve them. Moreover, some specific policies—like expanding the EITC or establishing wage subsidies—could be a part of any overall approach. Many of the ideas underlying these policies are already known but additional work would help to clarify remaining concerns and to develop concrete policy proposals that will be ready when an opportunity to address these issues presents itself.

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The Link Between Wages and Productivity Is Strong

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ABSTRACT

Much of the public debate in recent years suggests that wages are not primarily determined by productivity. Indeed, the argument that the link between compensation and productivity has been effectively severed is commonly made. In this paper, I first discuss the wage-setting process and the conceptual issues that are of critical importance to any empirical investigation of the link between compensation and productivity. I then highlight some recent evidence suggesting that, contrary to the current narrative in some policy circles, the link between productivity and wages is strong.

1. How Should We Think About Wages?

Adam Smith's invisible hand is alive and well in the textbook understanding of wages.

Workers—who need jobs in order to generate earnings to purchase goods and services—enter the labor market willing to supply their labor in exchange for a wage above which (or equal to) the rate at which they are indifferent between working and not working.

Employers enter the labor market because they need workers to produce goods and services. Assuming the labor market is “competitive,” firms take the market wage as a given, operating under the assumption that they cannot influence it. They hire workers up to the point at which the additional revenue generated by hiring an additional worker is equal to the wage rate (i.e., the additional cost of employing that worker).

In this simple model, the higher the wage, the greater the number of workers who want to work; the lower the wage, the greater the number of workers firms want to hire. The labor market reconciles these conflicting wants by settling at an “equilibrium” wage rate—a wage rate such that everyone who wants to work (at the equilibrium wage) finds a job, and every firm that wants to hire workers (again, at the equilibrium wage) finds all the workers it wants. At the equilibrium wage, the labor market clears: labor supply (the number of workers who want to work) equals labor demand (the number of workers firms want to hire). A wage rate above the equilibrium wage would result in too many workers seeking too few jobs; a wage rate below would result in the opposite.

Let's pause here and note that this is a *model* of how labor markets work. In reality, the labor market for an industry or a geographic area—to say nothing of the U.S. labor market as a whole—likely never reaches equilibrium.

Why not? Wages may be “sticky,” in the sense that firms are reluctant to reduce workers' nominal pay when market conditions change. (Economists refer to this as “downward

nominal wage rigidity.”) Minimum wages and other labor market regulations may interfere with the ability of the labor market to adjust wages to the market clearing point where labor supply and demand are equal. International trade and technological advances may frequently change the demand for some types of workers, inhibiting a stable equilibrium from holding. These are just a few of many reasons.

Another crucial way the simple textbook model abstracts from reality is by assuming that firms typically face a market wage that they must take as given. In actual labor markets, firms often have some control over the wages they offer to their workers—labor markets deviate from the “perfectly competitive” standard textbook treatment. For example, firms in some locations and industries may have to increase their wage offering in order to attract additional workers. (This is an implication of the traditional understanding of “monopsony power” in the labor market.) These firms might be seeking workers who have a hard time changing jobs, such that higher wages are required to induce mobility. Firms that have a hard time monitoring their workers might pay higher wages in order to increase the costs workers face from slacking off and potentially losing a relatively well-paying job. Or firms might pay a higher wage to workers in order to increase their productivity and reduce turnover and the costs associated with it. (Implications of “efficiency wage” theory.) Businesses with monopoly power, meanwhile, face less incentive to hold down costs and may pay higher wages as a result.

Importantly, wages in many firms are also in part the result of a bargaining process between firms and workers. If firms have increasing bargaining power, then they will be able to push worker wages to the lowest wage workers will accept.

Even given these real-world considerations, the textbook model is extremely useful because it highlights the central role productivity plays in wage offerings. Intuitively, this link should be strong: If a worker can only produce, say, \$15 per hour of revenue for his employer, then why would his employer pay him more than \$15 per hour? And if a worker generates \$15 per hour in revenue, then why would she accept a wage less than \$15 per hour? The relationship between productivity and wages—wages equal “marginal revenue product”—also has attractive moral properties. If the relationship is strong, then workers are being paid, in a sense, “what they are worth” to the firm.

In my view, it is most useful to think of wages as being determined by a combination of competitive market forces, bargaining power, and institutions. Worker productivity is the baseline for which wages are determined. But unlike in the simple textbook model, the baseline is not the end of the story. Deviations from the baseline occur for a variety of reasons, several of which I discussed above.¹

¹ For a more formal discussion, see Clemens and Strain (2017).

In what follows, I will highlight some recent evidence suggesting that the link between productivity and wages is strong. This short paper is not intended to present a comprehensive summary of the economics literature, or to be a comprehensive discussion of wage determination. Instead, the evidence I discuss is illustrative and is intended to provide a framework for thinking about the wage-setting process, and how that process has evolved over time.

2. Conceptual Issues

In this section, I will discuss some of the conceptual issues that are of critical importance to any empirical investigation of the link between wages and productivity.

MEASURING WORKER PAY: WHICH WORKERS?

The strength of the link between productivity and wages is more complicated than it appears at first glance, in part because there are several sensible ways to define wages, and it is not clear which is best. Specifically, one must decide *whose* wages are of interest.

A natural answer here is the typical worker. To study whether the typical worker's pay is strongly related to productivity, the median wage of all workers is a good measure to use. Half of workers earn above the median and half earn below, making the median wage a good measure for middle-income (and, arguably, middle-class) wages.

Another measure of the typical worker's pay that's often used is the average wage for production and non-supervisory employees. This group of workers, which constitutes about 80% of the private-sector workforce, can roughly be thought of as workers, not managers. The Bureau of Labor Statistics defines this group as "production and related employees in manufacturing and mining and logging, construction workers in construction, and non-supervisory employees in private service-providing industries" (U.S. Department of Labor, 2018).

Economists Josh Bivens and Larry Mishel—who don't share my view on the strength of the link between productivity and wages—provide a reasonable argument for focusing on production and non-supervisory employees when thinking about the relationship between wages and productivity. They argue that researchers' focus should be on the strength of the relationship for "most American workers," and that "a key part of the growing gap between typical workers' pay and productivity is precisely the huge increases in salaries for highly paid managers and CEOs" (Bivens and Mishel, 2015). Therefore, they argue, managers should be excluded when investigating the relationship.

In addition to the typical worker's wages, it is also of interest to study the relationship between productivity and the average wage of all workers in the economy. The logic here is straightforward: If you are using economy-wide productivity to study the relationship between productivity and wages, then you should use economy-wide wages as well. While it is true that wages have been growing relatively faster for high-wage workers over the past several decades, it may also be true that the productivity of those workers has been growing relatively faster. Excluding them from the analysis may leave a key piece of the puzzle missing.

In addition, if the underlying reason for interest in the relationship between productivity and wages is not to see how workers' standards of living have evolved with productivity, but instead to study how firms compensate workers in their role as a key input to production, then it's desirable to study the average wage of all workers, not just of production and non-supervisory workers.

MEASURING WORKER PAY: CONVERTING NOMINAL WAGES TO INFLATION-ADJUSTED WAGES

The conceptual distinction between payments to workers as a factor of production and payments to workers as a measure of their standard of living also plays a critical role in deciding which measure of inflation should be used to convert nominal wages into real wages. When interested in the former, it is sensible to use a measure of producer prices because that captures the costs facing employers. When interested in the latter, a measure of consumer prices is reasonable because the prices consumers face are most relevant to their standards of living.

But when investigating the relationship between wages and productivity, a strong case can be made that wages should be deflated using a measure of the change in the prices of goods and services produced by businesses, not those consumed by workers. Economic theory predicts that workers are paid according to the marginal product of what they produce, not what they consume. Thus, an output price deflator is most appropriate.

MEASURING WORKER PAY: WAGES OR TOTAL COMPENSATION?

When determining whether higher productivity is translating into higher pay for workers, it is important to look at more than just real cash wages. For the "typical" worker—both the median worker and the average production and non-supervisory worker—and for all workers, non-wage compensation, including health benefits, is a large portion of total compensation. Indeed, non-wage compensation has risen as a share of total compensation from around 14% in the 1970s to around 19% today (Bureau of Economic Analysis, n.d.a.; Bureau of Economic Analysis, n.d.b.). In addition

to benefits, performance pay such as bonuses should be included in compensation. Arguably, stock options should be included as well, as those constitute a significant component of total compensation for some of the economy's highest-compensated workers.

MEASURING PRODUCTIVITY: NET OUTPUT OR GROSS OUTPUT?

Productivity can be defined as the amount of goods and services (output) produced in the economy for every unit of labor. For example, output per worker and output per hour of work are both productivity measures. Gross output includes capital depreciation, while net output does not. Since depreciation is not a source of income, net output is the better measure to use when investigating the link between worker compensation and productivity.

3. Direct Evidence on the Link Between Pay and Productivity

In a recent working paper, economists Anna M. Stansbury and Lawrence H. Summers (2017) address the link between pay and productivity. To my knowledge, their paper is the most recent to directly address this question. They use fluctuations in productivity growth over time to study how changes in productivity growth affect (or do not affect) wage growth.

Their paper is very thoughtful and carefully done. They study compensation of typical workers, using both the median wage and the average wage of production and non-supervisory employees, as well as the average wage of all workers. They deflate their compensation series using a consumer price measure rather than an output price measure, which I advised against above but which does increase the degree to which their results relate to the standard of living enjoyed by workers.² They use net domestic product per hour of work for their productivity measure.

Their empirical strategy is relatively straightforward. They calculate the three-year moving average of the change in (the log of) inflation-adjusted compensation for each group of workers and the three-year moving average of the change in (the log of) labor productivity. In this way, their measures of compensation and productivity can be thought of as measures of smooth, short-run compensation and productivity growth.

They then simply regress the compensation growth measure on the productivity growth measure, controlling for measures of the unemployment rate in order to make

² In their paper, Stansbury and Summers report that using an output price deflator produces little change in their results.

sure that business cycle effects aren't distorting their estimates of the underlying relationship between productivity and compensation. Their main results use data from 1975 through 2015.

For median compensation, they find that a one percentage point increase in the growth rate of productivity is associated with a 0.73 percentage point increase in the growth rate of compensation. Importantly, they find that their estimate is "strongly statistically different" from zero—i.e., from no relationship between productivity and compensation—but not statistically significantly different from one. In other words, they cannot reject the hypothesis that productivity growth maps to compensation growth one-for-one, but they can reject the hypothesis that there is no relationship between the two.

When studying compensation for production and non-supervisory workers, Stansbury and Summers find that a one percentage point increase in the growth rate of productivity is associated with a 0.53 percentage point increase in the growth rate of compensation. The relationship for these workers is weaker than for median compensation, and their estimate is statistically significantly different from both zero and one.

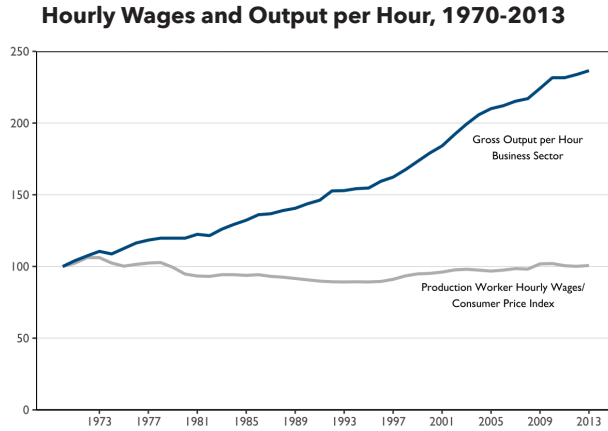
For average compensation, they find that a one percentage point increase in the growth rate of productivity is associated with a 0.74 percentage point increase in the growth rate of compensation. As with median compensation, their estimate is statistically significantly different from zero, but not from one.

They conclude that "productivity growth still matters substantially for middle income Americans," and argue that "the substantial variations in productivity growth that have taken place in recent decades have been associated with substantial changes in median and mean real compensation." They take as given that compensation for typical workers has been stagnant over the past several decades, and reconcile their results with this by concluding that "other factors are suppressing typical workers' incomes even as productivity growth acts to increase them."³

4. Wages and Productivity Over Time

The conclusion from the Stansbury and Summers (2017) paper might be surprising given the public debate around the relationship between compensation and productivity, much of which suggests the link has been severed. This impression has been generated in part by charts that look like the following (Lawrence, 2016).

3 Stansbury and Summers estimate other models to confirm the robustness of their results. They also estimate models on data from decades prior to those discussed above, and separately for the period since 2000. In addition, they investigate whether technological progress has created a divergence between productivity and compensation. My brief treatment here has omitted discussion of many interesting components of their paper. I encourage those who are interested to read their entire paper.



Source: Lawrence (2016); U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics

Note: 1970=100

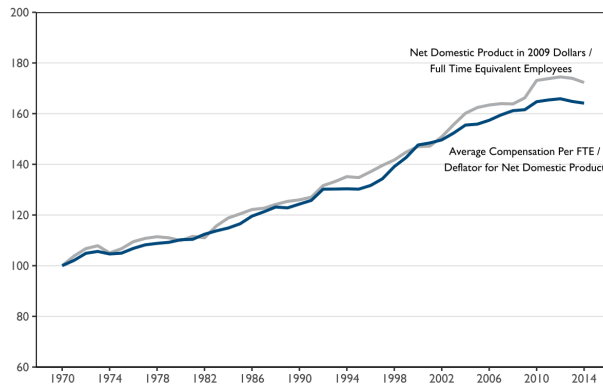
This chart, created by the economist Robert Lawrence, shows wages and productivity over time when the former is defined as the wages of production and non-supervisory employees, deflated by the consumer price index, and the latter is defined as gross output per hour in the business sector. The takeaway is clear: productivity has grown quite a bit, while wages have stagnated for decades. More specifically, the chart shows that productivity grew by 124% from 1970 to 2012, while wages during this time period increased by 26 cents (in 1982-84 dollars). This chart ignores the important conceptual issues discussed in Section 2 of this paper.

Lawrence then makes the following adjustments to the calculations that produced the chart above: (1) He uses output from the total economy, rather than just the business sector. (2) He uses net output (which removes capital depreciation), rather than gross output. (3) He includes both full- and part-time workers. Taken together, Lawrence finds that measuring productivity as the ratio of net total economy output divided by full-time equivalent employment reduces the 2013 gap in the chart by 20%.

Lawrence also considers a number of adjustments to the compensation calculation in the chart above. He finds that using compensation rather than wages reduces the 2013 gap in the chart by 8.2%. By including workers in managerial and professional positions, and by using a more inclusive measure of earnings, Lawrence explains 30% of the 2013 gap in the chart. By deflating wages using an output price index, Lawrence explains 35% of the gap. After those adjustments, the chart looks as follows.⁴

4 In his chapter, Lawrence also discussed differential compensation growth for workers in different parts of the wage distribution, and how these differences have contributed to growing inequality. He notes that many explanations for growing inequality are consistent with a strong link between productivity and compensation. He also discusses international trade, arguing that average wage differences between nations move in line with productivity. I encourage those who are interested to read his entire chapter.

Net Domestic Product and Real Product Compensation per Full-Time Equivalent Employee



Source: Lawrence (2016); Bureau of Economic Analysis National Income Accounts.

Note: 1970=100

In the chart above, productivity growth and compensation growth were coincident between 1970 and 2001. The chart depicts a divergence since 2001, especially since the Great Recession, but not a dramatic one.

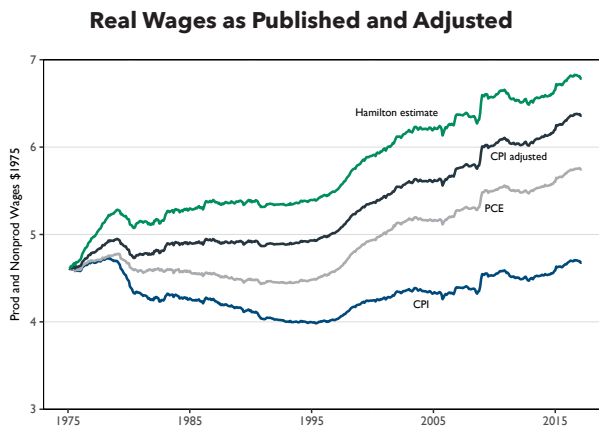
The takeaway from this chart is clear: When properly measured, with variable definitions based on the most appropriate understanding of the relevant underlying economic concepts, trends in compensation and productivity have been very similar over the past several decades. Of course, it is also the case that two variables can evolve similarly over time without necessarily being related. But this chart, combined with the statistical evidence in the Stansbury and Summers paper and economic theory, provides compelling evidence that productivity and compensation are strongly related.

5. Stagnating Wages?

Implicit in the conversation over pay and productivity is that pay has been stagnant, with little or no growth for the typical worker since the 1970s. As with the relationship between pay and productivity, the question of wage growth is heavily influenced by the choice of inflation measure.

It is common for economists and analysts to use the consumer price index (CPI) to adjust wages for inflation over time. However, the CPI is not obviously the superior measure. The personal consumption expenditures (PCE) price index is the Federal Reserve's preferred measure of inflation. The PCE has many advantages over the CPI. Arguably, its most important advantage is that, unlike the CPI, it accounts for the fact that consumers change the goods they purchase in response to price changes.

The next chart is produced by economist Bruce Sacerdote (2017).⁵ The blue line represents average wages for production and non-supervisory workers, adjusted for inflation using the CPI. The green line represents the same wages, adjusted for inflation using the PCE. The red line represents those same wages, adjusted assuming that the CPI overstates inflation by 20% (a common, rough estimate of CPI bias). And the orange line deflates wages using a correction to the CPI proposed by economist Bruce W. Hamilton. The data run from 1975 through 2015.



Source: Sacerdote (2017), used with permission.

Using the PCE, Sacerdote calculates real wage growth for production and non-supervisory workers of 24% from 1975-2015, or 0.54% per year. Removing 20% of CPI price inflation growth results in real wage growth of 0.76% per year. The Hamilton adjustment finds growth of 1% per year.

To be clear, I am not arguing that real wage growth of 0.5% per year is strong. I am making the weaker, but still important, claim that the dominant narrative of “no wage growth” in recent decades is heavily dependent on one’s choice of inflation measure, and that there are good reasons to prefer other measures to the CPI.

6. The Need to Increase Productivity

In my view, wages and productivity are strongly linked. But that does not mean wage gains have been equally distributed across workers. Indeed, they have not been. Half of workers do not reach typical compensation levels (when defined as median compensation), and many workers do not reach average compensation levels.

⁵ In addition to what I discuss in this paper, Sacerdote also examines changes over time in the enjoyment of consumption goods such as cars and the size of homes among lower- and middle-income workers.

Public policy acknowledges this and has taken steps to correct it through the tax and transfer system. The nonpartisan Congressional Budget Office (CBO) reports that between 1979 and 2014, the sum of market income and social insurance payments among households in the bottom 20% of the income distribution grew by 26%. After taxes and transfers, income growth for this group of households was 69% (Congressional Budget Office, 2018).⁶

But more should be done. Given the strength of the link between pay and productivity, it is important for public policy to attempt to make workers, particularly low-wage workers, more productive. Policies to increase the skills of, and training available to, workers—for example, reforms to our K-12 education system and the expansion of apprenticeships and other forms of work-based learning—should be enacted. Earnings subsidies should be expanded to draw more people into the workforce. Policies to encourage business investment should also be considered. Labor market regulations that serve as barriers to workers and reduce the quality of matches between workers and jobs should be removed.

And policymakers should have confidence that measures to increase the productivity of workers will translate into higher pay.

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6 Income before taxes and transfers is defined as market income (labor, business, and capital income, in addition to other income related to market activities) plus social insurance benefits, including Social Security and Medicare, among others. Income after taxes and transfers is defined as income before taxes and transfers less federal taxes plus means-tested transfers, including cash payments and in-kind transfers such as Medicaid and food stamps, among others. These income measures are conceptually very different from what has been discussed in this paper, but they serve to illustrate the extent to which the tax and transfer system addresses inequality.

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Creating Economic Opportunity for More Americans through Productivity Growth

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ABSTRACT

The U.S. economy in recent years has been characterized by slow average productivity growth and increasing productivity dispersion within industries. These trends have coincided with analogous changes in wages—slow average wage growth and greater wage inequality between workers. In this essay, I discuss research into the potential causes of these patterns and outline several policy changes that would yield expected productivity and wage benefits under general conditions.

1. The Challenges: Slow Productivity Growth and Widening Productivity Gaps

U.S. labor productivity growth has been slow for more than a decade. Since 2005, it has averaged 1.3% per year, less than half its 2.9% annual growth rate in the decade prior. Because labor productivity growth effectively bounds the rate of sustainable per-capita growth of gross domestic product (GDP), this slowdown has critical implications for people’s material wellbeing. Considerable potential growth has already been lost in the 14 years since the slowdown began: Had labor productivity growth sustained its 1995-2004 rate, annual GDP would be over \$4 trillion (20%) higher today. The slowdown is therefore costing the United States over \$12,000 per capita annually.

Because there has historically been a tight correspondence between labor productivity growth and wage growth, the slowdown also portends slower real wage growth for workers. This is observable in the data. While real total labor compensation per full-time equivalent employee (calculated using the GDP deflator) increased 2.1% annually from 1995-2004, it has grown only 0.8% per year since then. These compensation trends are driven by two factors: the size of the pie (i.e., total GDP) is increasing at a slower rate because of lagging productivity growth, and workers’ share of that pie is falling (e.g., Elsby, Hobijn, & Şahin, 2013).

Workers at the lower end of the wage distribution have faced a double deceleration. Not only has average compensation growth slowed, but wages at the lower end of the distribution have fallen behind even that more sluggish target. Indeed, this trend preceded the overall productivity slowdown of the past decade—lower end wages have trailed productivity growth for about 40 years. One should be clear what “lower end” means here: It is not just the very lowest percentiles that have failed to keep up with productivity growth—even median wages have fallen behind (Bivens & Mishel, 2015).¹

1 It is worth noting that, in addition to these measures of material wellbeing, certain populations have experienced over the same period declines in other measures of welfare, like life expectancy (Case & Deaton, 2017).

The spread in the wage distribution mirrors the productivity trend. The variance of productivity levels across firms has been increasing since at least 2000 in the United States and elsewhere (Andrews, Criscuolo, & Gal, 2015; Decker, Haltiwanger, Jarmin, & Miranda, 2018)—that is, productivity gaps are widening within industries. Producers at the frontier have continued to see relatively brisk productivity growth, while growth in the lower quantiles has slowed. This divergence has accompanied gains in the relative size of high-productivity producers; a small number of superstar companies have continually eaten up more market share (Brynjolfsson, McAfee, Sorell, & Zhu, 2008; Autor, Dorn, Katz, Patterson, & Van Reenen, 2017).

Recent research indicates the simultaneous spreading of the productivity and wage distributions is not a coincidence. Song, Price, Guvenen, Bloom, and von Wachter (2015) demonstrate that two-thirds of the increase in the variance of U.S. workers' earnings from 1978-2013 occurred between firms, rather than within them. A considerable amount of other research has demonstrated that higher productivity firms in an industry pay higher wages (e.g., Faggio, Salvanes, & Van Reenen, 2010; Carlsson, Messina, & Nordström Skans, 2016).

In other words, as firms have diverged in their abilities to turn inputs into outputs, so have their worker compensation packages. Song et al. (2015) develops evidence that this divergence is tied to increasing sorting and segregation of workers across firms, with high-earning workers increasingly concentrating in high-performance companies.

A NOTE ON EMPLOYMENT IMPLICATIONS

The discussion so far has focused on the wage implications of recent productivity trends, but there could also be employment effects. Naturally, if output is fixed, lower labor productivity raises employment. However, output is not fixed, so there are countervailing employment effects of lower productivity growth. Lower productivity levels imply higher costs, and therefore higher output prices—higher prices reduce demand for the both the output and the labor required to produce the output. Further, higher output prices can also reduce demand for products that are complements or inputs of the now lower productivity product. Labor productivity growth's employment effects are therefore theoretically ambiguous.

The potential employment effect of productivity growth that is currently receiving the most policy attention actually concerns not slow productivity growth, but rather rapid productivity growth in the form of automation, which some worry may put massive numbers of people out of work. Of course, in such a scenario, labor productivity would grow tremendously, well above the current languid pace.

Such a productivity surge would be a good thing for the economy and the workers in it. It is certainly true that over long horizons, productivity growth due to capital deepening has coincided with reductions in employment in sectors like agriculture

and manufacturing. Further, recent work has highlighted instances of specific technologies substituting for labor in a manner that leads to a net decrease in employment and average wages (Acemoglu & Restrepo, 2017). However, the balance of evidence suggests that this is not yet a sizable, economy-wide phenomenon (Autor & Salomons, 2017). Thus, to the extent that a new wave of automation could create an unemployment problem as a side effect, such concerns might best be left until there are signs that productivity growth is accelerating again while aggregate employment growth is slowing. As a result, I will not discuss this topic further in this memo.

EXPLANATIONS FOR THE PRODUCTIVITY AND WAGE GROWTH SLOWDOWN

Research has not yet definitively identified which specific forces have caused the slowdown in average productivity and wage growth and the increase in their dispersion. I discuss several plausible candidates.

Mechanically speaking, labor productivity growth can come from two sources: capital deepening and total factor productivity (TFP) growth. Capital deepening is an increase in capital per worker. TFP growth is often interpreted as technological progress—it takes the form of producers in the economy developing ways to make more or better products from the same amount of inputs. I interpret it similarly here, though one should be mindful that, as a residual, TFP can also reflect factors such as market power, nonconstant returns to scale, and measurement error. A deceleration in capital investment relative to labor force growth, or a reduction in the pace of technological change, will reduce labor productivity growth.

I consider, in turn, the possible roles of slowing investment and technology in the productivity slowdown. Before doing so, however, I focus briefly on why the bulk of evidence suggests that the slowdown is *not* just an illusion of mismeasurement.

Arguments for this “mismeasurement hypothesis,” such as Mokyr (2014) and Hatzius and Dawsey (2015), point out the rising prominence of IT-based goods—such as smartphone cameras and GPS systems, online social networks, and downloadable media—that cost consumers little but seemingly deliver considerable surplus. The main argument is that productivity statistics miss these goods because they do not involve a monetary transaction, at least per unit consumed on the margin. However, a number of recent studies (Cardarelli & Lusinyan, 2015; Byrne, Fernald, & Reinsdorf, 2016; Nakamura & Soloveichik, 2015; Syverson, 2017) suggest that the slowdown is not primarily a mismeasurement problem. Using different data and approaches, these studies demonstrate that while mismeasurement certainly exists, there is no indication that it became systematically worse in the necessary direction and with enough magnitude to account for the slowdown.²

2 Though as a policy matter, improving economic statistics would be helpful for many reasons.

Research is somewhat mixed regarding the importance of a slowdown in the growth of one of the largest and most commonly measured capital stocks: tangible private capital. Ollivaud, Guillemette, and Turner (2016), for example, calculate that reduced capital deepening played a substantial role in the labor productivity slowdown in the United States and many other OECD economies. McKinsey Global Institute (2018) comes to a similar conclusion. On the other hand, recent calculations by Fernald, Hall, Stock, and Watson (2017) suggest that tangible private capital stocks per worker are at the level one would expect given the Great Recession and the following recovery. Syverson (2016) finds in U.S. manufacturing that while decade-long changes in labor productivity and capital intensity were aligned, their year-to-year correlations were much weaker.

A possible reconciliation of these disparate findings is that a recession-driven slowdown in private investment probably contributed to the labor productivity growth slowdown. It is less clear going forward that a dearth of private investment will be a millstone around the neck of productivity growth.

It is arguable that investment in a particular type of *public* capital—infrastructure—has lagged for some time, has not yet recovered, and is acting as a drag on productivity growth. While private, nonresidential capital per worker averaged 1.4% annual growth over the past 20 years, publicly owned capital per worker grew only 0.7% per year. It is not just the *quantity* of public capital seeing a relative decline. Almost every type of publicly owned capital—equipment and structures at the federal, state, and local level—has aged substantially over the past 20 years. The dollar-weighted average age of public capital grew from 20.3 years in 1997 to 24.4 years in 2016, an increase of 20%. The average highway is almost six years (25%) older than it was 20 years ago, and other transportation infrastructure is 3.5 years (21%) older. Transportation infrastructure is a publicly provided factor of production. When it becomes more thinly stretched or effectively obsolesces, productivity can decline.

The case for slowing technological progress (reflected in TFP growth) weighing down labor productivity growth has been made in related but slightly different guises by Cowen (2011) and Gordon (2015). The core narrative of their research is that the economy has picked the low-hanging technological fruit and now must make continually greater efforts to progress at a given rate. This notion has found some empirical backing recently in Bloom, Jones, Van Reenen, and Webb (2017). This study shows that multiple specific technologies have recently experienced a pattern of increasing effort-per-unit-progress.

A related, yet distinct, explanation for slowing technological progress cites a loss of dynamism in the economy. Economic dynamism of multiple types—business formation and closure, job reallocation, worker mobility—has been in steady decline in the United States for decades (e.g., Davis & Haltiwanger, 2014; Molloy, Smith, Trezzi, & Wozniak, 2016; Decker, Haltiwanger, Jarmin, & Miranda, 2017; Kaplan &

Schulhofer-Wohl, 2017). While dynamism need not be inherently related either positively or negatively to growth, hundreds of studies have shown that market-driven reallocations of activity across producers, whether among existing producers or through replacement of exiting firms by entrants, tend to raise average productivity by shifting resources to more productive uses. This, in effect, is technological progress through compositional effects: markets reward with growth producers that figure out how to do things better. If reduced dynamism slows this process, average productivity growth falls.

A somewhat more optimistic explanation for the slowdown in technological progress is that the economy is undergoing an adjustment period between major technologies, with artificial intelligence in particular being a candidate for the next general-purpose technology (GPT) (Brynjolfsson, Rock, & Syverson, 2018). The driver of this “implementation lag” is that two things must happen before new GPTs can have notable effects on aggregate productivity growth. First, the GPT stock must be accumulated to a sufficient size to move aggregates. Second, the complementary processes and technologies necessary to fully harness the GPT must be discovered, developed, and implemented. Historical evidence from earlier GPTs (e.g., David, 1990) indicates both processes can take considerable time. Productivity growth slows in the adjustment period while inputs are used to build capability rather than produce output.

Elements of each of these explanations probably play some role in explaining the slowdown. Infrastructure growth per worker has faded in both quantity and quality. The low-hanging fruit technological slowdown story has some credence. However, the pessimistic implications for future productivity growth that often accompany this narrative would be tempered if the implementation lag explanation is partially accurate because the latter implies the current slowdown is a temporary but necessary predicate for accelerated future growth. As for dynamism, there is no doubt that it has fallen; the still unanswered question is how large of an effect this fall has had on productivity and wage growth.

EXPLANATIONS FOR GROWING PRODUCTIVITY AND WAGE DISPERSION

As with the overall productivity and wage growth slowdowns, researchers have proposed several explanations for the growing productivity gaps among producers within industries. Here, too, these explanations need not be mutually exclusive.

Increasing market power and rents may be one source of the spread. Multiple studies have proposed this theory, including Furman and Orszag (2015), Barkai (2017), and De Loecker and Eeckhout (2017). This explanation asserts that certain companies have been able to better separate themselves from both their competitors and from

competition (including from potential entrants) more generally. This separation has, in turn, led to growing disparities in outcomes like productivity, profitability, and wages. Such competition-limiting ability could have multiple sources: rent-seeking that favorably shapes institutional or legal environments, natural winner-take-all effects in network goods markets, old-fashioned antitrust violations missed or ignored by the authorities, or shifts in consumer tastes that raise brand loyalty. Relatedly, these factors can create a skewed distribution of the gains from technological progress, which may lead to dissipative efforts on the part of companies to attain or preserve those gains. If this were the case, even if average productivity growth were holding at a decent pace, the benefits to the median worker (or, more generally, those at lower wage quantiles) could be nil.

The evidence consistent with the market power story includes broad-based increases in accounting margins and profits, as well as declining entry rates. On the other hand, Karabarounis and Neiman (2018) argue that interpreting increasing accounting margins as profits relies on a narrow definition of capital costs. Moreover, if the same interpretation were applied to historical data, it would imply that profits today, while increasing over the last three decades, are still actually lower than their implied levels in the 1960s and 1970s. In addition, Autor et al. (2017) find some patterns consistent with increasing within-industry skewness being related to more competition rather than less. This is still an area in need of further research. While the market power story appears plausible, current evidence is considerably short of dispositive.

An alternative explanation for increasing productivity dispersion is that something damaged the processes that diffuse best practices and technologies. Companies at the frontier may be successfully innovating, but diffusion frictions may be preventing less productive firms from keeping up. Andrews et al. (2015) show evidence of this. They find that companies at the frontier of the productivity distribution (defined as the top 50 to 100 firms globally in an industry) still experience reasonably robust productivity growth, while those at the median stagnate. Thus, it may be that technological progress itself may not have slowed that much, but rather that the economy's ability to distribute the gains of that progress has faltered. The upshot of this diffusion failure is both slower aggregate productivity and wage growth (both of which, after all, are averaged across all producers, not just those on the frontier) and increasing disparity in productivity and wages.

2. Policy Proposals

The discussion above has elucidated two problems facing American workers: slow average productivity growth and increasing productivity gaps between firms. Both of these productivity patterns are related to analogous patterns in workers' wages.

Research points to several candidate policies to address these phenomena. The best policy to apply depends, of course, on the specific mechanism(s) driving the problems. Because that question is yet unsettled, it is difficult to identify with precision the optimal policy response. As such, a multi-faceted approach to the problem is sensible. This is prudent in other ways, as well—many of the policies proposed below have limited implementation costs and would improve other elements of the economy's functioning, even if they do not end up having a large direct influence on productivity.

Invest in Infrastructure

If, as discussed above, a dearth of public productive capital is reducing labor productivity, infrastructure investment could reverse this. Fernald (1999) and Baum-Snow (2007) document examples of such gains in the United States; many other studies have shown similar qualitative effects in other countries (for reviews, see Crafts (2009) and Calderón and Servén (2014)).

Care should be taken to place infrastructure where it provides the greatest benefit-to-cost ratio; examples of projects that have notably failed to do so are well known, from the trivial (the “bridge to nowhere” in Alaska), to the considerable. Note that “where” refers not just to geographic location but also to the type of infrastructure (e.g., transportation, water, telecommunications, electrical). These can be complex, situation-specific details but addressing them could bring substantial productivity benefits by making workers in infrastructure-using industries more efficient. The work of Agrawal, Galasso, and Oett (2017) suggests a potential further benefit. They find that infrastructure might raise productivity growth not through capital deepening, but rather by spurring technological innovation. I now turn to other mechanisms to do the same.

Policies can influence TFP growth through many potential mechanisms (I discuss several below), all of which act through two channels. The first channel is the stimulation of innovation among existing producers; the second channel is compositional. In the second channel, no single producer needs to raise its own TFP for aggregate TFP to grow—instead, average productivity growth occurs through the reallocation of activity toward producers with higher TFP levels. This second channel is, by nature, tied to the variance in productivity across producers discussed above and, as such, policies that influence it interact with this dispersion. Of course, mechanisms in practice can act through both channels simultaneously.

Improve Managerial Practices

One mechanism with broad potential to raise TFP levels across producers is the improvement of managerial practices. There is a mounting evidence that certain

management practices are causally related to productivity (e.g., Bloom & Van Reenen, 2007; Bloom, Eifert, Mahajan, McKenzie, & Roberts, 2013; Bruhn, Karlan, & Schoar, 2018). Bloom, Sadun, and Van Reenen (2017) offer an overview of this research. While U.S. businesses are on average some of the best managed companies in the world according to one of the most comprehensive measures available, most still hold plenty of room for improvement. Furthermore, there is considerable dispersion in management practices across firms—reducing these gaps would raise average productivity and wage levels and reduce variance across firms.

The management practices that would be the most beneficial to implement will vary across companies, so blanket prescriptions are not straightforward. There is also a limit to how directly policy can influence companies' management practices. However, partnerships and networks can allow for the transmission of better practices across firms (National Academy of Engineering, 2015). Policies can shape these networks and the institutional frameworks that underlie them; those that encourage effective transmission networks should be implemented.

The next set of recommended policies focuses on the economy's ability to shift activity toward more productive producers. This is the key to the second, composition-based channel through which technological-innovation-boosting policies act. But it can affect the first channel, too. A market's greater capability to moderate such shifts can incentivize otherwise laggard producers to innovate, for fear of being overtaken.

This reallocative capability of the economy is also closely tied to the decline in economic dynamism. Falling dynamism impedes the reallocation process. While an aging population likely accounts for some of the decline in dynamism, and as such creates a component that is less movable through policy, there is clear evidence that other mutable factors are at work (Hyatt & Spletzer, 2013; Kaplan & Schulhofer-Wohl, 2017). Institutional or market frictions that limit reallocation and are addressable by policy should be the target of action. There are many, both on the product (customer-facing) and input (supplier-facing) sides of the market.

Encourage Competitive Product Markets

The most obvious product-side element is to encourage competition and consumer choice. The easier it is for consumers to find and, if necessary, switch to their preferred product, the better the market functions and the better are welfare outcomes (Syverson, 2004a; Syverson, 2004b).

As noted above, there is currently extensive debate about whether product markets have recently become less competitive on average and on the implications—for the labor market and otherwise—of any such economy-wide shift. While this is not a settled matter, it is true that encouraging greater competition in any given market can raise productivity, both by making it easier for the market to reallocate activity to lower cost

producers and by heightening the incentive for firms to take actions that raise their productivity levels. Policies that encourage competition are not limited to antitrust enforcement; they also include trade policy and prudent regulation (see Syverson (2011) for a survey of the evidence on how these mechanisms influence productivity).

Reduce Frictions in Markets for Inputs—Labor, Capital, and Ideas

Reducing barriers to the efficient movement of inputs across producers should be a priority. These include policy-amenable institutional barriers like occupational licensing requirements and noncompete agreements, both of which have seen notable increases in frequency of use over the past decade or two. While in principle such devices could have efficiency-enhancing effects (occupational licensing can improve safety, and noncompete agreements might give employers more incentive to invest in workers' human capital, for example), recent research has demonstrated that they have clear productive efficiency costs in many settings.

Kleiner, Marier, Park, and Wing (2016) find that occupational licensing raises the price of (constant-quality) medical care. Johnson and Kleiner (2017) show state-level occupational licensing considerably reduces interstate migration of workers.³ Jeffers (2018) and Starr, Balasubramanian, and Sakakibara (2018) both find in different empirical settings that noncompete agreements reduce new business formation. Kleiner (2015) and Marx (2018) describe and recommend policies to improve regulations surrounding occupational licensing and noncompetes, respectively. While there may as yet be insufficient evidence to determine if these factors have actually served to reduce aggregate employment (Abraham & Kearney, 2018), they might still reduce aggregate productivity due to the mismatch they create between workers and jobs when labor markets are unable to allocate workers to their most efficient use.

Additional labor market frictions are also present. One is the interaction of labor markets with distortions in the housing market. There is now well-developed evidence that regulation-related supply constraints are raising the price of housing in certain metropolitan areas (e.g., Glaeser & Gyourko, 2002; Gyourko & Molloy, 2014; Shertzer, Twinam, & Walsh, 2016). Moreover, these areas tend to have higher labor productivity levels than less constrained areas. As a result, aggregate productivity losses occur because of the economy's inability to allocate labor to locations with the greatest economic benefit (Hsieh & Moretti, forthcoming). Separately, underdeveloped markets for childcare may make it difficult for some to work at the jobs for which they are most suited.

3 Occupational licensing also tends to yield wage premia to those in licensed occupations (Kleiner & Krueger, 2013). However, to the extent that this is the result of rent-seeking (such as reducing competition to raise output prices, such as in the Kleiner et al. (2016) study) rather than a productivity advantage, the higher wages that result will be socially inefficient.

Markets for capital, both tangible and intangible, are sometimes laden with frictions that prevent productive firms from expanding or unproductive ones from ending operations (Caballero, Hoshi, & Kashyap, 2008; Manaresi & Lenzu, 2018). While these capital misallocations are not always a direct result of policy, policymakers should build an institutional structure for capital markets that has as a prime goal the efficient allocation of inputs across producers.

This relates to the earlier discussion about improving management practices. These practices—or perhaps more precisely, the knowledge of what they are and how to implement them—are also an input. Policy should strive to reduce frictions in ideas markets. The notion of frictional ideas markets highlights potential problems with the legal structure underlying intellectual property, which is obviously influenced by policy choices. Research has documented a growing disconnect between patenting and innovation (Congressional Budget Office, 2014), for instance, and distortions in the patent system create various other inefficiencies (Budish, Roin, & Williams, 2015).

A useful thing to remember here is that policies that reduce frictions on one side of the market are complementary to those that work on the other side. If product markets are completely sclerotic, beneficial reallocations will not happen even if input markets are friction-free. The reverse is also true: frictionless product markets do no good unless the best firms that consumers would prefer to flock to are able to obtain the inputs they need to expand. Thus, addressing both product and factor market frictions simultaneously creates a benefit that is bigger than the sum of its parts.

3. Discussion and FAQ

The goals of the proposed policy changes are straightforward enough: to raise the average productivity growth rate and help close the gaps between the highest and lowest productivity firms.

The costs of implementing the policies varies. Infrastructure investment is costly. If done prudently—and prudent planning is, in itself, a cost—the expected return is high. Significant resources would, however, be needed to accomplish this.

Policies to improve management practices would not be inherently costly. Forums and networks where best practices can be shared, taught, and learned need not consume a lot of resources. However, there are doubtless many internal costs within firms to improving these practices (otherwise, they would have presumably implemented many of the practices already).

Removing frictions in output and input markets through policy would involve some institutional changes that, while not directly requiring the use of many real resources, would be time-consuming. Perhaps the greatest cost element is that any

policy changes made would destroy rents of those who currently benefit from the status quo. This will probably foment considerable opposition, which would require committed effort to overcome.

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The Higher Wages Tax Credit

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ABSTRACT

In the face of continued low employment, stagnant wages, persistent poverty, and rising inequality, minimum wage increases will likely continue to hold appeal as a policy response. In this paper, I propose a Higher Wages Tax Credit (HWTC) to partially offset the costs imposed by minimum wage increases on firms that employ low-skilled labor. Following a minimum wage increase, the HWTC would provide a tax credit of 50% of the difference between the prior minimum wage and the new minimum wage, for each hour of labor employed; the credit would phase out at wages higher than the minimum wage, and as wage inflation erodes the real cost of higher nominal minimum wages. The HWTC would reduce the incentive for employers to substitute away from low-skilled workers in the face of minimum wage increases, thus mitigating the potential adverse effects of minimum wage increases while simultaneously preserving and possibly enhancing some of the benefits of minimum wage hikes. The credit is also intended to infuse the debate around increasing the minimum wage with a more realistic accounting of the costs and benefits of such a policy by partially transforming minimum wage increases into a more conventional redistributive policy.

1. The Challenge

Long-term employment declines among less skilled individuals, stagnant real wages at the bottom of the wage distribution, continuing poverty, rising or persistent wage and income inequality, and the increased conditioning of safety net cash and in-kind support on work have spurred policy changes and debate about how best to increase employment and income from work.

Hiring credits, whether targeted at economically depressed areas (“place-based”) or disadvantaged individuals or families (“people-based”), have at best a mixed track record with regard to increasing employment.¹ I have elsewhere argued that hiring credits are likely to be most effective when they are triggered by economic slowdowns—workers’ eligibility for credits based on unemployment are less likely to convey a negative signal during downturns, and government expenditures on credits for firms likely to hire anyway are minimized (see Neumark, 2013). The case for hiring credits as a response to longer-term, structural problems of low employment among sub-populations is particularly weak.

The Earned Income Tax Credit (EITC) has a well-established record of increasing employment among the recipients eligible for the most generous benefits—typically less educated single mothers with children (Nichols & Rothstein, 2016). The EITC also helps reduce poverty, because of both the strong work incentives it creates and its

1 See Neumark (2013) for a recent review of people-based hiring credits, and Neumark and Simpson (2015) for a recent review of place-based policies.

effective targeting of low-income families (Neumark & Wascher, 2011). However, the EITC has potentially adverse effects on low-skilled workers without children, perhaps especially low-skilled men, due to the outward labor shift among low-skilled women with children that the credit may cause (Leigh, 2010; Neumark & Wascher, 2011).² The EITC can also discourage labor supply among secondary earners (Kearney & Turner, 2013). Thus, while the EITC is widely viewed as a very successful program, and one that increases incomes in families with children, it is not a sufficient tool to address the full gamut of problems highlighted above. In fact, the EITC may actually exacerbate some of those problems—for example, by lowering the wages of low-skilled workers who are not eligible for it.

In contrast, a higher minimum wage is a simple tool to raise wages and income from work. While there is debate about how much an increase in the minimum wage reduces the employment or hours of affected workers, it is clear that some workers benefit. Moreover, unlike the EITC (at least as presently structured), a higher minimum wage has the potential to increase wages for low-skilled men.

In recent years, there has been a torrent of state and local minimum wage increases. For example, as of the end of 2017, 30 states (including the District of Columbia) had minimum wages above the \$7.25 federal minimum wage, with an average difference of 26% (Neumark, 2018). At the state and local level, California, New York, Seattle, and the District of Columbia have or will soon have a \$15 minimum wage; other localities may follow. Finally, a change in the national political alignment could result in a \$15 national minimum.³

While the effects of minimum wage increases are contested, it is impossible to dismiss the sizeable body of evidence that suggests minimum wage hikes reduce employment among the least skilled (including recent research that addresses criticisms of earlier evidence).⁴ In addition, it is uncontested that higher minimum wages do not target low-income families very well, in part because of the large number of teenagers earning the minimum wage, and in part because poverty is more strongly related to whether or not one works and how many hours one works, rather than low wages (Burkhauser, Couch, & Wittenburg, 1996; Burkhauser & Sabia, 2007).⁵

2 Expanding the EITC to solve the latter problem could have the unintended consequence of reducing the beneficial effects on low-skilled women with children.

3 The Democratic Party adopted a \$15 national minimum wage in its platform for the 2016 election, and the policy was an important component of Senator Bernie Sanders's economic agenda during his campaign for the nomination.

4 See the review in Neumark (forthcoming).

5 For example, based on 2014 Current Population Survey data, 57% of poor families with heads of household aged 18 to 64 have no workers (Neumark, 2016).

2. The Policy Proposal: The Higher Wages Tax Credit

In response to this challenge, I propose a Higher Wages Tax Credit (HWTC) to partially offset the costs imposed by minimum wage increases on firms that employ low-skilled labor. In the face of continued low employment, stagnant wages, persistent poverty, and rising inequality, I make the following assumptions:

1. Higher—possibly much higher—minimum wages will likely continue to hold appeal as a policy response.
2. There are potential adverse effects of minimum wage increases that can at least partially undermine the possible benefits of higher minimum wages.
3. There is the potential to make minimum wage increases more effective.

The HWTC attempts to mitigate the adverse responses to minimum wages increases, while simultaneously preserving and potentially enhancing some of the benefits of higher minimum wage policies. The HWTC is also intended to infuse the policy debate around increasing the minimum wage with a more realistic accounting of the costs and benefits of such a policy—it does so by partially transforming a higher minimum wage policy into a more conventional redistributive policy by shifting part of the cost of higher minimum wages to those with the highest incomes, via the income tax system.

Some argue that a higher minimum wage is needed to offset the negative effects on market wages of the increase in labor supply induced by the EITC, which might be viewed as an argument against the HWTC. Such a narrative, however, is flawed—in its simplest form, if we raise the minimum wage enough to offset the reduction in the market wage from the EITC, we will also kill off the employment gains from the EITC (Neumark & Wascher, 2011). Thus, combining a higher minimum wage (to offset the negative effects of the EITC on wages) with the HWTC (to mitigate the job losses from a higher minimum wage) may better align the combined effects of the EITC and the minimum wage.

The HWTC would use government expenditures to provide a tax credit that partially offsets the costs of minimum wage increases imposed on firms that employ low-skilled labor. Presumably, the credit would be financed by the level of government that chooses to impose a higher minimum wage.

The credit would work as follows: In the year after a minimum wage increase, the HWTC would provide a tax credit, paid to businesses, of 50% of the difference between the average wage of affected workers below the new minimum wage at the time of the increase and the new minimum wage, for each hour of labor employed.⁶

6 There is nothing sacred about the 50% figure. It is chosen to be sizable, but to leave part of the responsibility for higher wages on employers of low-skilled labor.

Provision 1: The tax credit would apply fully to workers employed at the new minimum wage and would phase out at a rate of 50% for wages above the new minimum wage. For example, if the minimum wage increases from \$8 to \$10, and the average wage of workers paid between \$8 and \$10 per hour was \$9, the credit for each hour worked would equal 50 cents for workers employed at \$10 per hour, 25 cents for workers employed at \$11 per hour, and zero for workers employed at \$12 per hour higher.

Rationale: Tying the credit to the difference between the new minimum wage and the average wage of directly affected workers ensures that the credit would be larger where the new minimum wage increases low-wage labor costs more, and smaller where the new minimum wage increases low-wage labor costs less. The phase-out of the HWTC would avoid a large discontinuity in the hourly cost of labor to firms at the minimum wage, which could otherwise discourage firms from raising wages above the minimum or hiring workers at wages just above the minimum.

Provision 2: In years after a minimum wage increase, the credit would be reduced by the overall rate of labor cost inflation, as measured by the Average Hourly Earnings (AHE) series for private nonfarm payrolls.^{7,8}

For example, suppose a state increases its minimum wage to \$10 in 2019, and that increase results in a maximum credit, in 2019, of \$1 (assuming an average wage of affected workers of \$8). If the AHE increases by 5% from 2019 to 2020, the maximum HWTC in 2020 would be \$.95 (5% less than the initial \$1 credit) and would phase out at a 50% rate from there.

Rationale: The adjustment of the HWTC for inflation ensures that the credit would diminish as general wage inflation eroded the value of the nominal minimum wage.

Provision 3: In the event that a jurisdiction with a credit already in place increases its minimum wage again, the maximum credit paid at the new minimum wage would reset to 50% of the difference between the new minimum wage and the average wage of affected workers, plus the prior credit based on Provision 2.

For example, suppose a state increases its minimum wage from \$8 to \$10 in 2019, with the average wage of affected workers equal to \$8, and from \$10 to \$12 in 2021, with the average wage of affected workers equal to \$10. The maximum credit in 2021 would be \$1 (based on the \$2 increase in 2021), plus the \$1 credit for the \$2

7 See Bureau of Labor Statistics (n.d.a.).

8 Presumably the HWTC would be adjusted once per year, based on measured wage inflation up to a recent prior date for which data are available. There are not reliable data on wage inflation at the city level, so it would be necessary to use the state-level data.

increase in 2019, adjusted downward for cumulative wage inflation in the AHE from 2019 to 2021.⁹

Rationale: The adjustment of the HWTC for new minimum wage increases ensures that the HWTC would respond to new increases but remain simple to compute as jurisdictions raise their minimum wages at different frequencies (or index their minimum wages).

Provision 4: The credit would apply only to workers with at most a high school degree.

Rationale: The application of the credit only to workers with at most a high school degree increases the likelihood that the credit would be paid for a worker more likely to be hired at a wage near the old minimum wage than at a wage near the new minimum wage. This is intended as a simple mechanism to reduce the extent to which the credit is large relative to the difference between the new minimum wage and the wage a worker would otherwise be paid. This provision could have the added benefit of helping mitigate the costs of a higher minimum wage for workers more likely to be in families with lower incomes (explored below), and hence could improve targeting of the HWTC and perhaps induce some substitution towards these workers. On the other hand, policymakers might choose to forego this provision because there are some more educated workers who earn low wages.

For example, when the minimum wage goes from \$8 to \$10, a current worker or a new hire might, absent the minimum wage, have been paid \$9.75. If they now earn \$10—the new minimum wage—the increase in cost to employers is only \$.25 per hour, but the credit would pay \$1. In principle, the credit could be based on a current employee’s prior wage, or the prior wage at a previous employer for a new hire (if previously employed). That, however, is administratively complex and infeasible for newly hired workers not working recently. The application of the credit to those with at most a high school degree is a simple way to help ensure that the credit would be paid for workers whose wages are increased more because of the higher minimum wage.¹⁰

Provision 5: The tax credit would be either fully refundable or could be carried over to future years.

Rationale: The refundability of the HWTC, and the ability to carry it forward, would help ensure that the HWTC remains valuable to firms even during cyclical or firm-

9 The phase-out rate could be adjusted downward as the credit gets larger, to avoid a larger kink in the relationship between wages and the credit, but this would increase the cost of the HWTC by extending the credit higher up in the wage distribution.

10 One could also have a less generous credit—rather than no credit—for more educated workers. Minorities and women are also paid lower wages. But it would likely be illegal to base the credit (or the credit amount) on race or gender.

specific downturns that reduce taxable income. (This does, though, make the credit more expensive.)

Provision 6: The government expenditure to finance the HWTC would be at the level of the jurisdiction at which the minimum wage is being increased.

Rationale: Financing the HWTC at the level of the jurisdiction at which the minimum wage is being increased makes for a tighter link in policy discussion and decisions between the costs of minimum wage increases and taxpayers' willingness to pay for redistribution.

3. Advantages, Disadvantages, and Costs

ADVANTAGES

- The key advantage of the HWTC is that it would reduce the incentive for employers to substitute away from low-skilled workers in the face of minimum wage increases. While the evidence on the employment effects of minimum wage hikes is contested, there is a good deal of evidence pointing to net job loss among the less skilled. There is also compelling evidence of labor-labor substitution so that even if net changes are small, the least skilled among the affected workers suffer job loss.¹¹

Even if one views the evidence on the employment effects of the modest minimum wage increases the United States has experienced in the past as inconclusive, there is a much greater likelihood that the larger minimum wage increases now being implemented (and contemplated) could have more deleterious employment effects. With a much higher minimum wage, a far greater share of workers is affected, which can make it harder for firms to implement other adjustments that could mitigate employment effects—such as reducing benefits, training, or customer service, or increasing prices.¹² The HWTC would reduce the extent to which higher minimum wages increase the cost of the least skilled workers, reducing the incentive for employers to substitute away from these workers.

- The HWTC would mitigate these adverse effects of higher minimum wages without reducing the payment of the higher legislated wage levels to employees. This helps preserve a benefit perceived by some minimum wage advocates—that a higher wage increases the dignity of workers. That is, as far as workers are concerned, the higher minimum wage—coupled with the

¹¹ See Neumark (2018) for a discussion of the literature.

¹² For evidence from Seattle's high minimum wage, see Jardim et al. (2017).

HWTC moderating the disemployment effect—would increase the number of people who work and increase workers' take-home pay from working.

- Some argue that a higher minimum wage is needed to offset the negative effects on market wages of the increase in labor supply induced by the EITC. As I discuss above, this argument is flawed—combining a higher minimum wage (to offset the negative effects of the EITC on wages) with the HWTC (to mitigate the job loss from a higher minimum wage) might better align the combined effects of the EITC and the minimum wage.
- Higher minimum wages can increase prices. There is some evidence that these price increases are regressive because minimum wages are more likely to increase prices of goods and services bought by lower income families (MaCurdy, 2015). Because the HWTC would lessen cost increases for firms, it would also mitigate price increases in industries that use low-skilled labor.
- The minimum wage is, in part, a response to widening inequality. Hence, at its core, the minimum wage is a redistributive policy. Most redistributive policies transfer money from high-income families to low-income families, via the tax system. The minimum wage, instead, transfers money from owners of businesses that employ minimum wage workers (and from others, like those who pay higher prices) to minimum wage workers and their families.¹³ We have no information on the family incomes of the owners of businesses who employ minimum wage workers, but there is good reason to believe that many of them do not have high incomes. Transferring some of the financial costs of higher minimum wages to taxpayers will do more to redistribute income from high-income families, which pay the most taxes, to low-income families. As an example, the HWTC would shift some of the costs of higher minimum wages from the owners of child care centers and diners to investment bankers, doctors, and lawyers. This is how other redistributive policies, such as the EITC, operate.
- The HWTC might generate more-reasoned debate about higher minimum wages by making it clearer to voters and policymakers that higher minimum wages do impose some costs. Ideally, the HWTC would shift some of the debate about minimum wages to our willingness to redistribute income through the tax system, as we do with other policies targeting poverty and inequality. The HWTC would help present policymakers and voters with more accurate comparisons of the costs of alternative redistributive policies—this may lead policymakers to focus on identifying the policy that is the most effective at accomplishing redistributive (and other) goals, rather than choosing a policy solely to avoid direct government expenditure.

¹³ Draca, Machin, and Van Reenen (2011) show that a higher minimum wage reduces firm profitability.

- The HWTC—coupled with high minimum wages—would likely appeal to a broader spectrum of policymakers than other proposals to counter inequality and low incomes because it relies on the private sector and is a more pro-work policy than other alternatives. Universal Basic Income policies could have strong negative labor supply effects,¹⁴ and certainly are not designed to encourage work. And a universal guaranteed jobs program (Colander, 2016; Lowrey, 2017)—while having the potential virtue of increasing the link between income and work—would involve the government in the creation of potentially millions of jobs.
- With a standard hiring credit, there is the potential that the incidence falls on employers more than workers. In particular, if labor supply is quite elastic, then wages do not rise much, and employment expands more—so the employers capture the credit. The coupling of minimum wage increases with the HWTC would give policymakers more direct control over wage effects, even if employers capture most of the credit.

DISADVANTAGES

- The HWTC could be viewed as a cynical ploy to make it less likely that higher minimum wages will be adopted, because it creates a link to government spending and, hence, taxes. But it would be hard to fault the HWTC for slowing the rate of minimum wage increases if this happens because the public and policymakers better understand and weigh the costs of these increases.

Moreover, it is not clear that this change would make minimum wage increases less likely. Currently, higher minimum wages impose large costs on a subset of businesses, which may lobby hard to prevent minimum wage increases. The HWTC might encourage more employer buy-in by sharing the costs of minimum wage increases with taxpayers demanding income redistribution. Finally, if voters and policymakers ultimately select a different policy solution—for example, an expansion of the EITC—because the HWTC made the costs of minimum wage increases clearer, this is likely because the policy is a better choice.

- The HWTC would increase government expenditure. However, a large share of the costs of the HWTC are borne anyway, but by employers (and others, like consumers) rather than taxpayers. Thus, the net cost of the program would be considerably lower than the gross cost.

¹⁴ However, recent evidence from Alaska's Permanent Fund argues that this may not always be true (Jones & Marinescu, 2018).

- The need to phase out the HWTC at wages above the minimum wage would raise the cost of the credit, as it applies to more workers. On the other hand, the phase-out is important to avoid strong labor market distortions. Moreover, this spending would not be all a windfall for employers, as there is some evidence that higher minimum wages force up the wages of workers paid slightly more than the minimum (Neumark, Schweitzer, & Wascher, 2004).
- The HWTC might be viewed as “corporate welfare” because it gives a credit to employers who hire low-wage labor. This same criticism is often leveled at the EITC. However, the criticism is misplaced—the point of such policies is precisely to subsidize the hiring or employment of low-skilled workers, which happens by lowering the labor costs paid by firms. Moreover, the credit rate would be set at 50% so that the responsibility for higher wages is shared by taxpayers and employers of low-skilled labor.
- Administering the HWTC would require that firms report not just earnings but hourly wages (or hours, from which wages can be computed) to claim the credit. This would likely not be a very large administrative burden, and some states’ unemployment insurance systems already gather this information (i.e., Washington). There would be a potential issue of collusion, as firms would have an incentive to say to a worker: “I’ll report a lower wage and higher hours, keeping your pay the same. This will enable me to get more from the credit, which I will share with you.” In contrast, when quarterly earnings are reported, there is no such incentive for collusion.

Of course, many government programs have the potential for dishonest reporting, so the mere possibility of this does not discredit the proposal. Moreover, this kind of behavior might be particularly easy to monitor. The incentive for this kind of misreporting would increase immediately following a minimum wage increase. That should make it relatively easy to monitor for upward changes in hours and downward changes in wages after a minimum wage increase. It is also the case that the minimum wage itself provides a floor that limits this kind of collusion, since there would be no reason (and it would be a violation of minimum wage law) to report a wage below the minimum. The potential cost of this collusion is also low because the only profitable collusion would be for wages between the new minimum wage and the wage at which the credit phases out.

- The HWTC is more complicated than a general hiring credit, but it has a couple advantages in comparison to a general credit. It is not tied to hiring per se, which we know creates complications for these kinds of credits. It is tied directly to the minimum wage; it is triggered by minimum wage increases; and it fades away if minimum wages do not increase. It also is designed to

interact with policy, so that if the minimum wage went up faster, the HWTC would become more generous to help offset the costs and better target the benefits, and to help policymakers and the public understand the costs of higher minimum wages.

ESTIMATED COSTS AND BENEFITS OF THE HWTC

I have used data from the Current Population Survey to estimate the direct government costs of the HWTC and how the benefits would be distributed across the family income distribution. There are a few key points to make about the cost estimates.

First, the estimates are suggestive, not decisive, as there are several decisions I made about how to use the data that impact the exact estimates. The notes to Tables 1 and 2, which present information on these costs, explain the calculations in detail.

Second, I do the estimation for an assumed increase in the federal minimum wage to \$10. This impacts some states and not others, depending on their minimum wage.

Third, I assume no behavioral responses to either the new minimum wage or the HWTC. Rather, I simply assume workers previously paid less than the new minimum wage are paid the new minimum, and the credit—the value of which depends on how much this raises average wages below the new minimum—is then paid according to the parameters of the policy. The assumption of no behavioral responses does not mean I believe there would be no behavioral responses, but it allows me to avoid wading into the debate on what those behavioral responses are. In actual fact, I believe the true cost of the HWTC would be somewhat lower than my estimates below due to the disemployment (and lower hours) effects of the minimum wage. (I expect the HWTC would partially offset some of these effects.)

Fourth, I do not include in the main calculation workers who, according to the data, are paid less than the minimum wage. I use data on hourly wages whenever possible (from the Current Population Survey Outgoing Rotation Groups) to maximize the accuracy with which hourly wages are measured, but some of the recorded or estimated low wages may still be in error. And some workers do legally earn less than the stated minimum wage—for example, tipped workers in tip credit states. There are potentially complicated ways to estimate what a higher minimum wage and the HWTC might do to wages below the minimum, but it is difficult to calculate accurately, so I omit this from my calculation.

Note that the measurement of hourly wages in my calculation would also underlie actual implementation of the HWTC, since the policy would have to specify how the value of the credit is determined based on a new minimum wage and the wage distribution. I would advocate doing the calculation this way, based on recent Current Population Survey data at the time of a minimum wage change.

Finally, it is important to keep in mind that the estimated cost of the HWTC is for the most part not a *new* cost. Rather, it is largely a shift in cost from employers to the government associated with the HWTC offsetting some employer costs of a higher minimum wage. The cost is likely somewhat higher than what employers would pay absent the HWTC, because the HWTC would mitigate the employment or hours reductions from the higher minimum wage. But again, in that case, the cost should be thought of more as a shift in costs from workers to the government. The policy would also entail enforcement costs, which I have not tried to estimate. Overall, however, the cost estimate is most relevant as an estimate of how much the HWTC would raise government expenditure; the true social cost may be quite small.¹⁵

Table 1 shows the estimated cost of the HWTC. It first reports estimated costs for some sample states. In Alabama, the federal minimum wage of \$7.25 binds, whereas Maryland has a higher minimum wage (\$9.25), so only the new federal minimum wage of \$10 would bind. Because of this, and because of higher wages in Maryland, the average wage between the prevailing state minimum and the new \$10 minimum is much higher in Maryland (\$9.85 vs. \$8.36—see column (2)).¹⁶ This makes the value of the HWTC in Maryland much smaller, and so the wage at which the HWTC fully phases out is also much lower (\$10.16 vs. \$11.64—see column (5)). Thus, the total number of hours covered by the HWTC is much higher in Alabama—for both workers above and below the new minimum (see columns (3) and (6)). Finally, because of this, the HWTC costs considerably more in Alabama than in Maryland—about \$350 million vs. \$7 million (see column (8)). The next row is for Oregon. Because Oregon’s minimum wage is above \$10, there is no cost of the HWTC associated with Oregon.

The remainder of Table 1 reports similar estimates for the United States as a whole from raising the federal minimum wage to \$10. These costs come from all states with a current minimum wage below \$10. The estimate of the total cost for the United States is about \$9.5 billion. Excluding those with more than a high school degree drops the cost to \$7.4 billion.

Finally, the last row shows the estimated cost if I assume the new minimum wage would apply to all workers paid below \$10, regardless of whether they are currently paid below the prevailing minimum wage. For the average wage calculation, workers currently paid below the prevailing minimum are assumed to be making the minimum wage.¹⁷ The estimated cost calculated under this assumption is about \$15.5 billion.

15 There are both distortion costs from the minimum wage and from the taxation to fund the HWTC that would mitigate the effects of the minimum wage. I do not have reliable evidence on the magnitudes of these, but to a first order they seem likely to be largely offsetting.

16 All figures are as of March, 2018, based on inflating CPS data from March, 2017.

17 This can be rationalized by assuming that wages below the minimum wage are erroneous. If they are not, then this calculation still makes sense—we would not want to base the credit on the difference between their recorded wages and the new minimum wage, since their wages would be unlikely to rise to the new minimum wage. Rather, the credit is then based on the legislated increase. All in all, this is an illustration of the ambiguity around how to treat wages below the prevailing minimum.

Table 2 shows how the total value of HWTC payments would be “distributed” across the distribution of income relative to needs, which is family income divided by the poverty line (so a value of 1 means the family is at the poverty line). I put distributed in quotes because, unlike with a minimum wage, the HWTC would go to employers, not workers. Still, this calculation provides information on the types of workers—by family income—for which higher minimum wages would be offset by the HWTC. That is relevant, especially if one thinks a higher minimum wage will create some declines in employment or hours worked—evidence that the HWTC would tend to offset a higher minimum wage going to workers in poor or low-income families implies that the HWTC might help preserve jobs (or hours) in poor or low-income families.

Table 2 shows that, in fact, HWTC payments would not be strongly concentrated on workers in low-income families. That is not surprising, because the minimum wage targets low-income families badly, as discussed earlier. More important is the question of how restricting the HWTC to less educated workers would improve the targeting of the credit. Table 2 shows that this restriction would help, but only a little. Without the exclusion, 13.1% of HWTC payments would be for workers in poor families, and 29.2% would be for workers in families below 1.5 times the poverty line (the “near poor”). In contrast, with the education restriction, the corresponding figures are 14.8% and 32.4%. Thus, the restrictions on workers for whom employers can claim the HWTC would do a little to help the targeting of the HWTC’s mitigation effects to lower income families. But the restrictions would not substantially improve the targeting of the credit.¹⁸

Of course, in principle we could restrict the HWTC to workers in low-income families and improve the targeting tremendously. This would likely have the added effect of shifting employment from low-wage workers in higher income families to low-wage workers in lower income families, improving the distributional effects even more. However, this would be a much more complicated policy, and would potentially run into the stigma problems associated with hiring credits focused on the less advantaged, which is something that previous research has documented (see Neumark, 2013). Thus, because the minimum wage does not target low-income families well, it is hard to design a hiring credit based on the minimum wage that targets these families much better. But the types of restrictions I have proposed can improve targeting modestly.

¹⁸ It is conceivable that the restriction of the HWTC to workers with a high school degree or less would improve the targeting of the minimum wage by reducing the relative cost of less educated low-wage workers, who are a bit more likely to be in low-income families than are more educated low-wage workers.

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Table 1: Estimated Costs of the HWTC, for Increase of Federal Minimum Wage to \$10

State examples	State MW, 2018	Avg. wage, \$(2018 MW) ≤ wage < \$10	Total hours, \$(2018 MW) ≤ wage < \$10 (000s)	Tax credit cost, workers below new MW (000s)	Wage at full HWTC phase-out	Total hours, \$10 ≤ wage < full phase-out wage (000s)	Tax credit cost, workers below new MW (000s)	Full tax credit cost (000s)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Alabama	\$7.25	\$8.363	212,571	\$174,037	\$11.637	312,054	\$176,449	\$350,486
Maryland	\$9.25	\$9.845	41,916	\$3,248	\$10.155	96,477	\$3,992	\$7,240
Oregon	\$10.25	--	--	\$0	--	--	\$0	\$0
	Avg. state MW for states with MW < \$10				Avg. wage at full HWTC phase-out			
U.S. total, for states with MW < \$10	\$7.86	\$8.931	10,101,211	\$5,888,998	\$11.069	10,004,792	\$3,566,443	\$9,455,441
Alternative U.S. calculations								
Excluded education > HS degree	\$7.86	\$8.892	7,852,028	\$4,663,566	\$11.108	7,706,837	\$2,724,740	\$7,388,306
Include workers with wage < state MW	\$7.86	\$8.677	15,356,108	\$10,306,652	\$11.354	11,861,899	\$5,146,528	\$15,453,180

Notes: Data from the Outgoing Rotation Groups in the 2017 Current Population Survey March Annual Social and Economic Supplement (ASEC) file. (We use the IPUMS; see Flood et al., 2017.) Hourly wages are either given for hourly workers or constructed from reported weekly earnings divided by usual hours worked, when available (adjusted for inflation from March, 2017 to March, 2018). Observations with wages less than the state minimum wage are excluded, except in the last row. Total hours are annualized and calculated by multiplying the usual hours worked per week last year by the number of weeks worked last year, for each worker. People who do not report usual hours worked are excluded. The hours are then added up for each state, taking into account ORG-specific survey weights as representative of the U.S. population. The average wage for each state is calculated by weighing each individual observation's hourly wage by their survey weights. The average U.S. total is an unweighted average across all states' average wages. (Alaska qualifies for the tax credit, but the average wage was not calculated because the ORG did not have anyone with an hourly wage between \$9.84 and \$10.00, so it is omitted from the cost estimation.) The tax credit cost in column (4) is computed as 50% of the difference between the \$10 minimum wage and the average wage in the state for workers paid between the old and the new minimum (column (2)), multiplied by the total hours for these workers (column (3)). The tax credit cost in column (7) is computed as follows. First, the wage at which the HWTC is fully phased out (column (5)) is computed as \$10 plus twice the difference between the \$10 minimum wage and the average wage in the state for workers paid between the old and the new minimum (from column (2)). Second, the per hour credit for workers with wages between \$10 and this wage is calculated as 50% multiplied by the difference between the individual worker's wage and \$10. This figure is then multiplied by hours worked for these workers. The total credit cost in column (8) is the sum of columns (4) and (6). In the last row, the figures in columns (2) and (3) are computed for all workers paid less than \$10 per hour.

Table 2: Targeting of HWTC by Income-to-Needs of Families

	Total, excluding workers below state MW (000s)	Exclude education > HS degree (000s)	Include workers with wage < state MW (000s)
Income-to-Needs Ratio	Total HWTC	Total HWTC	Total HWTC
Less than 1.00	\$1,240,730	\$1,092,728	\$1,948,415
1.00 to 1.24	\$801,034	\$691,703	\$1,242,679
1.25 to 1.49	\$716,288	\$605,299	\$1,016,041
1.50 to 1.99	\$1,098,517	\$950,112	\$1,762,820
2.00 to 2.99	\$1,779,053	\$1,339,232	\$3,024,895
3.00 or above	\$3,819,819	\$2,709,232	\$6,458,330
Total	\$9,455,441	\$7,388,306	\$15,453,180
	% of HWTC	% of HWTC	% of HWTC
Less than 1.00	13.1%	14.8%	12.6%
1.00 to 1.24	8.5%	9.4%	8.0%
1.25 to 1.49	7.6%	8.2%	6.6%
1.50 to 1.99	11.6%	12.9%	11.4%
2.00 to 2.99	18.8%	18.1%	19.6%
3.00 or above	40.4%	36.7%	41.8%

Notes: Data from the Outgoing Rotation Groups in the 2017 Current Population Survey March Annual Social and Economic Supplement (ASEC) file. (We use the IPUMS; see Flood et al., 2017.) The total HWTC credit is calculated as described in Table 1. The income-to-needs ratio is calculated by dividing family income by the poverty cutoff threshold for an individual's family size (provided in the March file). The tax credit is then grouped into where the worker falls in their family's income-to-needs ratio. Families include subfamilies.

How Minimum Zoning Mandates Can Improve Housing Markets and Expand Opportunity

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ABSTRACT

Dramatic differences in income, productivity, and housing costs within the United States make geographic mobility important for spreading prosperity. But Americans' ability to move to places like San Francisco, Boston, and New York in search of economic opportunities is limited by severe restrictions on new housing supply in these productive places. State-level Minimum Zoning Mandates (MZMs) allowing landowners to build at a state-guaranteed minimum density, even in municipalities resistant to development, would be an effective means of encouraging denser housing development. These MZMs would improve housing affordability, spread economic opportunity more broadly, and limit the environmental impact of new development.

This idea should appeal to voters and policymakers across the political spectrum. For those who are concerned about inequality, improved housing availability has the potential to help the most disadvantaged Americans. By making it easier for disadvantaged workers to access jobs, MZMs should increase employment, worker productivity, and ultimately earnings. Those who care about property rights should welcome a tool to override unnecessary restrictions on those rights. Finally, those who focus on making the best use of limited resources will recognize the benefits of using valuable land more efficiently.

1. Introduction: The Harms of Anti-Development Policies

Municipalities impose a range of creative limits on new housing supply. Policies such as minimum lot sizes, overly strict historic preservation rules, direct prohibitions on multi-family housing, maximum building sizes relative to land area, and parking requirements—together called “exclusionary zoning”—are used to prevent new housing units from being built in high-demand areas. These types of exclusionary zoning rules are often defended on the grounds that they reduce traffic or preserve neighborhood character, but they have a sordid history. In the past, zoning regulations were often used to maintain racial segregation (Rothstein, 2017).¹

To understand the effects of land use regulations, it is helpful to consider the hypothetical outcomes we would observe if the regulations were weakened. In that hypothetical world, the areas where many people want to live—cities or neighborhoods that are close to jobs that pay high wages—would see more development.

Instead of being used for a \$2.5 million single-family home, a plot of land in San Francisco's Sunset neighborhood might be developed into three \$1.5 million

1 For example, Chicago's first comprehensive zoning ordinance was used to concentrate blacks in certain neighborhoods in 1923 (Shertzer, Twinam, & Walsh, 2016). San Francisco's nineteenth-century restrictions on operating a laundry were part of a thinly veiled anti-Chinese legislative agenda (*Yick Wo v. Hopkins*, 1886).

apartments. On its own, rezoning this single lot would not make San Francisco housing much more affordable. But the lot would house 3 times as many people. That means more people would be able to live in the city of San Francisco as opposed to distant suburbs, and more people would be able to live in the overall San Francisco metropolitan area. With enough densification of this sort, housing prices in the region would fall, spreading opportunity more broadly.² All else equal, cheaper housing would increase the real wages of existing residents.

Unfortunately, severe regulations in productive metropolitan areas such as San Francisco, New York, and Boston currently inhibit this process (Gyourko, Saiz, & Summers, 2008). Research suggests that the consequences of these regulations are dramatic.

In studies comparing cities with differing levels of land use regulation, researchers have found that these regulations lead to dramatically higher housing costs (Saiz, 2010). The overall cost of housing in the United States is at least \$3.4 trillion higher than it would be absent zoning regulations.³ These high costs subsequently prevent Americans from moving to productive metropolitan areas where they would find more economic opportunities (Hsieh & Moretti, 2017).

Since major cities are the most productive places (Glaeser & Gottlieb, 2009), artificially constraining population growth in these areas reduces overall production and wages. The sizes of these effects are stunning: U.S. gross domestic product (GDP) is \$2 trillion below its potential as a result of restrictive land use regulations, according to multiple teams of researchers with very different methodologies (Hsieh & Moretti, 2017; Herkenoff, Ohanian, & Prescott, 2017). Wages are \$1.3 trillion below their potential. Research also suggests that by preventing Americans from moving to new opportunities, these restrictions have even stopped the natural process of income convergence across regions, exacerbating income inequality (Ganong & Shoag, 2017).

These policies also push people into suburbs and exurbs, necessitating long, car-

2 Given the high cost of living in places like San Francisco, it is not clear whether high productivity translates into high real incomes for workers there. See Moretti (2013) and Diamond (2016).

3 This calculation is based on the results of Gyourko et al. (2008) and Saiz (2010), which use data from the 2000 U.S. Census. These numbers have likely increased significantly since 2000, so the \$3.4 trillion total is likely a significant underestimate. I calculated this number as follows: (1) Suppose that the Wharton Residential Land Use Regulatory Index (WRLURI) (from Gyourko et al., 2008) were reduced from its actual value in each MSA to the minimum value observed in the data (obtained from Saiz, 2010). This simulates a dramatic deregulation of housing supply across the United States. (2) Using the empirical relationship between the Saiz (2010) estimate of inverse housing supply elasticity and WRLURI, predict how much the inverse housing supply elasticity would fall due to the reduction in WRLURI. (3) Using the relationship between inverse housing supply elasticity and house prices (from Saiz, 2010, Figure II(a)), predict how much median home prices would fall in each MSA due to the changes in steps (1) and (2). (4) Add up the reduction in median home prices times the number of housing units in the MSA in 2000 (from the 2000 Census).

based commutes.⁴ The effects on commuting obviate one of the principal arguments in favor of zoning—traffic reduction. At best, zoning leads to traffic displacement. In practice, research finds that it leads to longer commutes and more traffic overall (Shoag & Muehlegger, 2015). This extra commuting time costs Americans one billion hours per year and leads to fewer social connections (Putnam, 2000). And longer commutes, of course, imply more pollution (Glaeser & Kahn, 2010).

2. The Policy Proposal: State-Level Minimum Zoning Mandates

In principle, the solution to this problem is clear: cities should relax their zoning rules. But opposition to new development is so powerful that this is often politically impossible. This kind of opposition even has its own famous acronym: NIMBY, shorthand for the usual argument that development should always go somewhere else, i.e., “not in my back yard.”

To circumvent this political hurdle, I propose that state governments adopt *Minimum Zoning Mandates* (MZMs). These MZMs would be explicit zoning codes that provide a baseline minimum density that land owners, such as developers, can invoke when municipal zoning and permitting processes prevent useful development.

The MZMs should provide all land owners with a meaningful right to build housing up to a certain density significantly beyond single-family houses. Medium-density rowhouses and small apartment buildings should be allowed in every location where any sort of development is allowed. This is the type of density that is associated with some of America’s most-loved neighborhoods: Greenwich Village and other parts of Lower Manhattan, Boston’s North End and South End, the Mission in San Francisco, Lincoln Park in Chicago, and much of historic Philadelphia. It meshes well with existing single-family homes, as we see in places like Cambridge, Massachusetts. MZMs need not enable high-rise condo towers that would change the character of leafy, low-density neighborhoods. Even medium-density zoning rules could generate interesting new neighborhoods and resolve the housing shortages in productive cities.

Effective MZMs would provide land owners with the right to build projects that meet the state code without any need for local approval, thus bypassing municipal zoning and other reviews. (If municipalities were granted the opportunity to review MZM projects, they could potentially delay or thwart them, reducing the policy’s effectiveness.)

4 Even if public transit is an option, it can be agonizingly slow. See Dougherty and Burton (2017) about a three-hour commute—each way—from Stockton to San Francisco.

Of course, MZMs should not remove all municipal zoning powers. Cities would still control industrial zoning, for example. It would not be appropriate for MZMs to authorize noisy, polluting industries in residential neighborhoods, but they might allow light retail and restaurants if new residents demanded these sorts of services. Crucially, under these minimums, cities could always allow more flexible development options. If MZMs didn't authorize high-rise towers, cities could still choose whether and where to approve those. But MZMs would provide a guaranteed minimum right to use land effectively.

Perhaps the biggest challenge in developing a MZM would be determining the specifics. A helpful MZM must be powerful enough to meaningfully increase housing availability without sparking too rapid a change in any one neighborhood. A well-designed MZM should also respect legitimate city regulations—such as fire safety codes—and be tailored to address the specific barriers to development in each state.

A detailed framework—the “BUILD” framework—could help states design such effective MZMs. When designing a MZM, states have to make regulatory decisions across five major categories—**B**uildings, **U**se, **I**nvoicing, **L**ocations, **D**elays (i.e., “BUILD”). Thinking about this framework could help a state understand the tradeoffs involved when determining the details of its MZM.

Buildings: What sorts of buildings should the MZM permit? A MZM statute would have to specify what sorts of construction are permitted even over municipal objections. What is the maximum height, and does it vary within the state? Are there any other restrictions that should be imposed, even in the context of an effort to minimize restrictions?

Key Tradeoff: The more flexible the MZM is in terms of what buildings are permitted, the more effective it would be in reducing barriers to new construction.

Use: Who has the right to use MZMs? Does the right belong to an individual land owner? Does the state government need to step in and declare that a locality is subject to the MZM?

Key Tradeoff: The most effective MZMs would allow individual landowners to use this right.

Invoking: For whoever has the right to invoke a MZM, how do they do so? Does the builder have to apply to the local government for a permit, but under the MZM criteria rather than local zoning codes? Do applicants need to undergo an approval process with a state body in order to override local zoning?

Key Tradeoff: The most efficient way to implement a MZM would be to require local governments to approve a building permit that complies with the MZM within a limited time frame. This would save the additional administrative hassle of applying to a state body.

Locations: Where does the MZM apply? Everywhere throughout the state? Only in particular neighborhoods? Only in localities that have excessively restrictive zoning codes to start? If the latter, how are these defined?

Key Tradeoff: It would be challenging to classify each locality's restrictions, in part because some of the techniques municipalities use to restrict housing are delays and bureaucratic inflexibility. So it would be easiest to apply the MZM universally.

Delays: How rapidly can the MZM be invoked and applied? In particular, how will the process be designed to avoid unnecessary delays, either due to a municipality being uncooperative or any relevant state body taking significant time in approving a use of the MZM (if required)?

Key Tradeoff: The process and associated regulations should be designed to authorize construction as quickly as possible. Permitting delays are a major part of housing supply restrictions, with pernicious consequences for overall housing market dynamics (Paciorek, 2013).

3. Advantages, Disadvantages, and Frequently Asked Questions

ADVANTAGES

- MZMs provide a tool to bypass excessive local housing supply restrictions. If implemented aggressively, they would make housing markets more responsive to local demand. This would improve housing affordability, alleviate commutes, and expand economic opportunity.
- Relative to other proposed solutions, MZMs have the potential to create broad improvements in housing markets. MZMs would not require planners to decide on specific areas to target or identify specific populations who may benefit. Instead, developers could build housing that appeals to the entire population, in the areas where it is in highest demand.
- MZMs also have the potential to spill over into improved municipal zoning codes. If localities didn't change their restrictive zoning, then MZMs would create an opportunity for landowners to override this zoning and develop most areas into medium-density residential neighborhoods. But municipalities may want to encourage other activities, such as retail and restaurants. They therefore would have an incentive to improve their own zoning codes in order to encourage builders to rely on local zoning rather than the statewide MZM minimums. This effectively creates artificial regulatory competition between the locality and the state. This competition could spur localities to relax their own zoning, thus making MZMs a positive force for improving local policies.

- MZMs may have a significant benefit for local labor markets. By making it easier for workers to access jobs, they could increase labor force participation and employment. By allowing workers to move closer to preferred employment centers, they could increase productivity and wages.

DISADVANTAGES

- Adopting a MZM would require the state to decide on a maximum restrictiveness that localities are permitted to enforce. This may be challenging and contentious. The framework outlined above could help lawmakers think about the tradeoffs involved in establishing these statutes.
- MZMs might apply more broadly than necessary—even in areas that are not engaged in exclusionary zoning. Ideally, we might want to leave these areas untouched, but doing so in a systematic way would be challenging. (See Questions and Answer section, below.)

QUESTIONS AND ANSWERS

If this is such an obvious problem, why do states need to step in? Why won't municipalities change zoning on their own?

Land use regulations at the local level only reflect local interests. Each locality that restricts housing pushes people into other areas. These restrictive zoning decisions do not take into account the effects on other areas, and on outsiders. In general, metropolitan areas with more fragmentation of local governments have stricter zoning regulations—when each government controls only a small community, zoning rules tend to be less inclusive (Fischel, 2015).

How can Minimum Zoning Mandates overcome the challenge of these local politics?

It's true that powerful political forces created the current system, and it will be challenging to overcome those forces. But this challenge can be met. Politically, state legislatures and governors should be able to see the broader picture, rather than just the narrow local concerns that breed exclusionary zoning. State budgets currently pay for exclusionary zoning in the form of long commutes that necessitate costly highway construction and repair projects and result in lower productivity for residents (and lower tax revenue). Voters, meanwhile, often complain about the difficulty of finding housing near major employment centers. By alleviating these problems, politicians would reap the benefits of better quality and higher employment in their districts, higher tax revenues, and grateful voters.

State legislatures are less likely than municipalities to be sensitive to complaints from individual neighborhood NIMBY groups. Each of these groups merely wants to push development into someone else's neighborhood. These groups have powerful influence at the municipal level, but state governments have a broader constituency. State legislatures may recognize that their electorate is unhappy with high housing costs, and that everyone needs to live somewhere. Of course, powerful lobbying could lead to exceptions in certain cases, but it will likely be harder to extract meaningful concessions from a state legislature than it is to hold up a local council hearing.

Are states legally allowed to override municipal zoning decisions?

Yes, states have the right to override municipal zoning. Municipalities' powers are all granted by the states, and they can be limited. MZMs fit perfectly within the fundamental state powers; it is a state-level initiative to guarantee property rights. When a land owner—resident, developer, or investor—wants to build dense housing and is prohibited from doing so by zoning, this is an infringement on that land owner's right to use her property. While some such infringements are inevitable, MZMs would restore an element of these rights to the land's actual owner. This is a classic role for state governments.

Can the federal government do anything about this problem?

Glaeser and Gyourko (2008) propose a number of improvements to federal housing policy. These include using federal money to induce overly restrictive areas to permit new construction, by estimating counties' supply restrictions and subsidizing those that improve. They also propose reforms to the mortgage interest deduction, a federal policy that contributes to high house prices in areas with inelastic housing supply. The approach proposed here would make more sense at the state level, since states have complete control over the municipalities that they create, while federal approaches tend to involve subsidies or other fiscal policies.

Are there any precedents for this sort of approach?

Yes. This proposal is in the spirit of previous efforts to use higher levels of government to override restrictive local zoning. Such proposals have included financial inducements to increase zoning (Glaeser and Gyourko, 2008). MZM statutes have the advantage of being more direct and less punitive than withholding funding.

Existing state policies provide precedents in the spirit of this proposal, but they have been more limited in scope. The Massachusetts Comprehensive Permit Act allows developers of affordable housing to override local zoning (Massachusetts Comprehensive Permit Act, M.G.L. Chapter 40B §§ 20-23). A number of recent bills in the California state legislature aim to weaken some of the most egregious

zoning regulations. California Senate Bill 827 (2018) would have restricted some local zoning rules in areas near major transit routes. California's recent Senate Bill 35 (2017) tries to force localities to meet their own building targets. These examples offer precedents for state-level intervention, but they still require action from the underlying municipalities and thus enable municipalities to continue to obstruct some construction (Hamilton & Furth, 2018). MZMs would have the advantage of bypassing municipalities and allowing developers to directly build at reasonable densities, as defined by each state.

Does a judge or regulator have to invoke the MZM to override municipal laws?

It would be preferable for any individual landowner to be able to invoke a MZM. Otherwise, the same political apparatus that created the zoning restrictions originally would be in charge of deciding when to override those restrictions. Regulatory capture would likely lead the same interests that currently impose exclusionary zoning to lobby against invoking MZMs. If the goal is to simplify the building process and thus create new housing faster, adding a bureaucratic hurdle to invoking the MZM would defeat the purpose.

Won't MZMs be used just to build unaffordable luxury condos? Why not require these extra units to be subsidized low-income housing?

Allowing market-rate housing to be built more cheaply will enable the housing market to work better for everyone, including low-income Americans. The problems that MZMs address are pervasive throughout the housing market. The distortions that arise when people are prevented from moving to productive areas affect workers at all income levels. So the goal of this policy is to facilitate broad improvement in the housing market.

There are good reasons to design public policies with one specific goal per policy. To the extent that separate problems plague the low-income housing market specifically, other policies should, and do, address those problems. Applying MZMs specifically to low-income housing would risk creating new distortions and may create new inefficiencies in land use arrangements. The goal of MZMs is to reduce problems in the housing market broadly without creating new distortions.

Will MZMs allow developers to build housing for the rich and crowd out land needed for low-income housing?

In the absence of MZMs, land use restrictions frequently prevent the construction of dense housing, such as apartments, in favor of single-family housing, which is artificially expensive. Eliminating these restrictions will increase the supply of land that can be used to support middle- and low-income consumers. Thus, the increased

density resulting from MZMs will not reduce the supply of low-income housing units; in fact, it is likely to increase the supply of these units.

Existing zoning rules often have the explicit goal of keeping low-income residents out of a particular area. Limiting the supply of housing units drives the prices of those units up, making them unaffordable for low-income consumers. By increasing the supply of housing and reducing costs, MZMs will break this dynamic and improve affordability for low-income residents. This would make housing cheaper for those renting on the market and make it easier for the government to provide subsidized housing—if housing is cheaper, then government funds can be used to subsidize more families.

Will MZMs apply everywhere or only affect localities that are excessively restricting housing supply?

While it may be possible to design a MZM that only targets specific localities, this would introduce additional complexity and reduce transparency. An ideal policy might only target municipalities that are imposing unreasonable zoning restrictions and limiting housing supply beyond some reasonable level. The challenge for such a policy would be deciding which municipalities are covered. Since the level of housing demand is very different across places, simply looking at number of housing units built or permitted would not be a good indicator of supply restrictions. In the interest of simplicity, this proposal would apply to all municipalities.

Future research should explore the feasibility of estimating locality-specific housing restrictions. Ideally, this research would entail:

1. documenting legal and regulatory barriers to construction in each municipality in an interested state (as opposed to the samples where this has been documented previously (Gyourko et al., 2008));
2. developing a method to estimate housing supply elasticities in each locality;⁵ and
3. updating the two estimates above every few years.

This is a worthwhile task for future research. But since this work would be quite demanding, it would be easier to apply MZMs everywhere.

5 The most influential set of supply elasticity estimates comes from Saiz (2010). These estimates are at the level of the metropolitan area (MSA), which is appropriate for thinking about overall housing markets. But since MSAs are not political units, these estimates do not provide granular enough information on which to base locality-specific policies.

4. Conclusion

A widespread effort to create more housing in America's most productive and expensive regions has tremendous potential benefits for people, the economy, and the environment. While housing restrictions in any one location might have minimal effects on the national economy, current restrictions are so widespread that they generate major reductions in economic potential.

This situation should be deeply concerning, regardless of one's political or economic perspective. By preventing more people from moving to areas with better opportunities, exclusionary zoning leads to the inefficient use of human capital; it may also generate and perpetuate income inequality. Furthermore, zoning regulations infringe on very reasonable uses of one's own private property.

Historically, narrow local interests have dominated municipal land use policies, but state governments can overcome this challenge by adopting a broader perspective. Minimum Zoning Mandates offer an effective path to overcoming municipal resistance to development and expanding opportunities for all Americans.

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Bruce Reed is CEO and co-founder of Civic LLC., a bipartisan policy ideas company. He is also co-chair of the Aspen Institute Future of Work Initiative. He previously served as President Clinton's chief domestic policy advisor. In the Obama White House, he served as assistant to the President and chief of staff to Vice President Joe Biden, working on economic, fiscal, and tax policy, education, and gun violence. He served as executive director of the Bowles-Simpson deficit reduction commission. He was the first president of the Broad Foundation. Reed began his career as chief speechwriter for Sen. Al Gore, policy director for Gov. Bill Clinton at the Democratic Leadership Council, and deputy campaign manager for policy of the 1992 Clinton-Gore campaign. He is a longtime contributor to *Slate* and the *New Republic* and co-authored *The Plan: Big Ideas for Change in America* with Rahm Emanuel. He graduated from Princeton and Oxford, where he was a Rhodes Scholar.

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Despite a historically long economic recovery, U.S. workers continue to face significant, long-term challenges. Many workers find themselves lacking the requisite skills and training to thrive in the modern economy. Most low- and middle-income workers have not seen meaningful increases in their wages, and many have fallen out of the workforce altogether. Geographic disparities in economic opportunity have become more pronounced: prosperity is increasingly concentrated in certain regions and cities, while other communities, particularly those in rural areas, have fallen further behind. Taken together, these challenges, though vexing and deep-rooted, are not insurmountable.

The Aspen Economic Strategy Group (AESG) invited leading scholars and policy experts—including some of its members—to present innovative, evidence-based, and bipartisan policy ideas to address salient barriers to economic opportunity. The discussion papers and policy memos presented in this volume address three policy goals through a bipartisan lens: (1) developing human capital for the modern, global economy; (2) increasing prime-age labor force participation; and (3) promoting private sector job creation and wage growth.

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