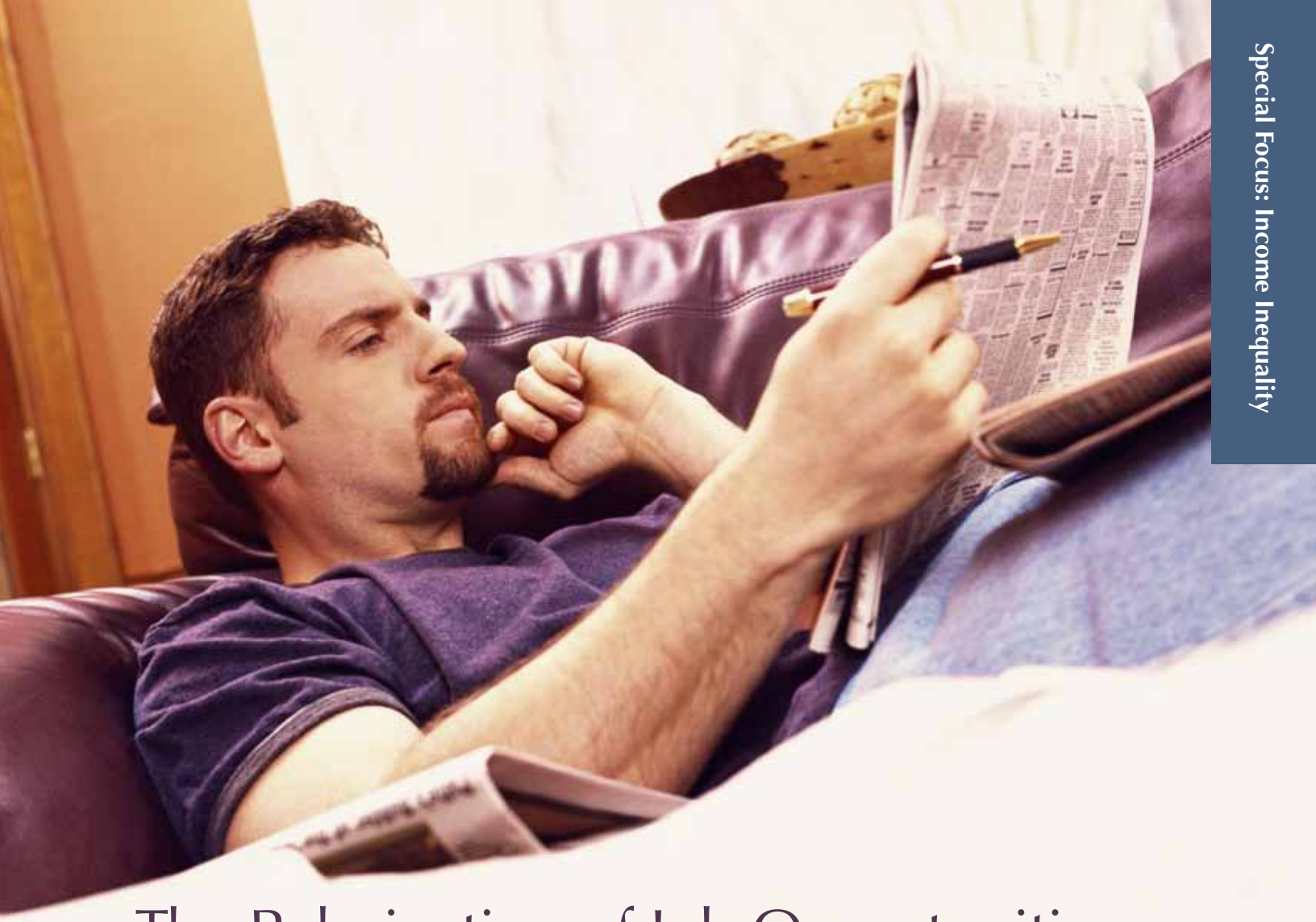


The Polarization of Job Opportunities in the U.S. Labor Market:

Implications for Employment and Earnings

By David Autor

Between December 2007, when the U.S. housing and financial crises became the subject of daily news headlines, and July 2011, the civilian unemployment rate nearly doubled, to 9.1 percent from 5.0 percent, while the employment-to-population ratio dropped to 58.1 percent from 62.7 percent—the lowest level seen in more than 25 years.

Job losses of this magnitude cause enormous harm to workers, families, and communities.[1] For instance, a classic study by economists Lou Jacobson, Robert LaLonde, and Daniel Sullivan found that workers involuntary displaced by plant downsizings in Pennsylvania during the severe recession of the early 1980s suffered annual earnings losses averaging 25 percent, even six years following displacement.[2] Studying the same group of workers with the benefit of 15 more years of data, labor economists Daniel Sullivan and co-author Till Von Wachter[3] show that the nonmonetary consequences of job losses are also severe; involuntarily job displacement approximately doubled the short-term mortality rates of those displaced and reduced their life expectancy on average by one to one and a half years. These studies suggest that the costs of the Great Recession will be multifaceted and persistent.

Moreover, the key challenges facing the U.S. labor market—almost all of which were evident prior to the Great Recession—will surely endure. These challenges

are two-fold. The first is that for decades now, the U.S. labor market has experienced increased demand for skilled workers. During times like the 1950s and 1960s, a rising level of educational attainment kept up with this rising demand for skill. But since the late 1970s and early 1980s, the rise in U.S. education levels has not kept up with the rising demand for skilled workers, and the slowdown in educational attainment has been particularly severe for males. The result has been a sharp rise in the inequality of wages.

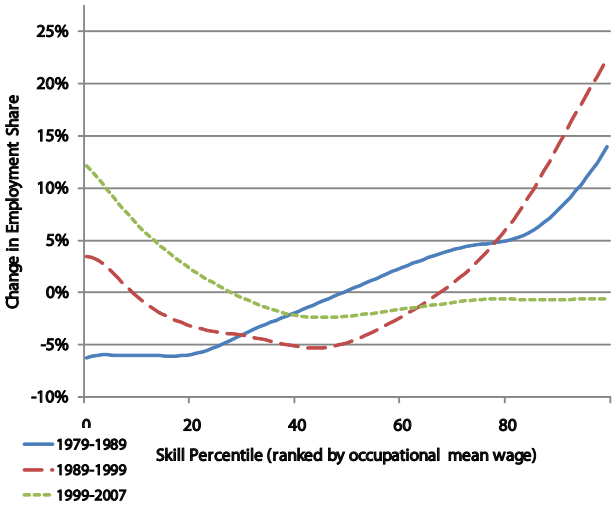
A second, equally significant challenge is that the structure of job opportunities in the United States has sharply polarized over the past two decades, with expanding job opportunities in both high-skill, high-wage occupations and low-skill, low-wage occupations, coupled with contracting opportunities in middle-wage, middle-skill white-collar and blue-collar jobs. Concretely, employment and earnings are rising in both high-education professional, technical, and managerial occupations and, since the late 1980s, in low-education food service, personal care, and protective service occupations. Conversely, job opportunities are declining in both middle-skill, white-collar clerical, administrative, and sales occupations and in middle-skill, blue-collar production, craft, and operative occupations. The decline in middle-skill jobs has been detrimental to the earnings and labor force participation rates of workers without a four-year college education, and differentially so for males, who are increasingly concentrated in low-paying service occupations.

This article is a summary of an in-depth analysis of the state of the U.S. labor market over the past three decades, commissioned by the Hamilton Project at the Brookings Institution and the Center for American Progress.[4] This analysis revealed key forces shaping the trajectory of the polarization of the U.S. job market, including: the slowing rate of four-year college degree attainment among young adults, particularly males; shifts in the gender and racial composition of the workforce; changes in technology, international trade, and the international offshoring of jobs, which affect job opportunities and skill demands; and changes in U.S. labor market institutions affecting wage setting, including labor unions and minimum wage legislation. The causes and consequences of these trends are discussed below and have important implications for the U.S. labor market, and income inequality more broadly, as the nation works towards economic recovery.

Employment growth is "polarizing" into relatively high-skill, high-wage jobs and low-skill, low-wage jobs

Long-term shifts in labor demand have led to a pronounced "polarization" of job opportunities across occupations, with employment growth concentrated in relatively high-skill, high-wage and in low-skill, low-wage jobs—at the expense of "middle-skill" jobs. This polarization is depicted in Figure 1, which plots the change in the share of U.S. employment in each of the last three decades for 326 detailed occupations encompassing all of U.S. employment.[4]

Figure 1. *Smoothed Changes in Employment by Occupational Skill Percentile, 1979–2007*



Source: Census IPUMS 5 percent samples for years 1980, 1990, and 2000, and U.S. Census American Community Survey 2008.

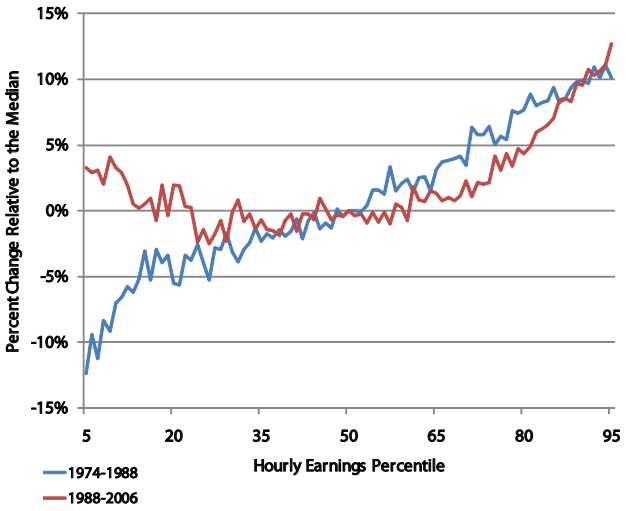
These occupations are ranked on the x-axis by skill level from lowest to highest, where an occupation's skill level (or, more accurately, its skill rank) is approximated by the average wage of workers in the occupation in 1980.[5] The y-axis of the figure corresponds to the change in employment at each occupational percentile as a share of total U.S. employment during the decade. Since the sum of shares must equal one in each decade, the change in these shares across decades must total zero. Consequently, the figure measures the growth in each occupation's employment relative to the whole.

This figure reveals a "twisting" of the distribution of employment across occupations over three decades, which becomes more pronounced in each period. During the 1980s (1979 to 1989), employment growth by occupation was almost uniformly rising in occupational skill; occupations below the median skill level declined as a share of employment, while occupations above the median increased. In the subsequent decade, this uniformly rising pattern gave way to a distinct pattern of polarization. Relative employment growth was most rapid at high percentiles, but it was also modestly positive at low percentiles (10th percentile and down) and modestly negative at intermediate percentiles.

Fast forward to the period 1999 to 2007. In this interval, the growth of low-skill jobs comes to dominate the figure. Employment growth in this period was heavily concentrated among the lowest three deciles of occupations. In deciles four through nine, growth in employment shares was negative. In the highest decile of occupations, employment shares were flat. Thus, the disproportionate growth of low-education, low-wage occupations becomes evident in the 1990s and accelerates thereafter.

Notably, this pattern of employment polarization has a counterpart in wage growth. This may be seen in Figure 2, which plots changes in real hourly wages relative to the median by wage percentile for all U.S. workers over two time periods: 1974 to 1988 and 1988 to 2006.[6] In the 1974 through 1988 period, wage growth was consistently increasing in wage percentile; wages at percentiles above the median rose relative to the median while wages below the median fell. From 1988 forward, however, the pattern was U-shaped. Wages both above and below the median rose relative to the median.

Figure 2. *Percent Changes in Male and Female Hourly Wages Relative to the Median*



Source: May/ORG CPS data for earnings years 1973-2009.

In short, wage gains in the middle of the distribution were smaller than wage gains at either the upper or lower reaches of the wage distribution. This simultaneous polarization of U.S. employment and wage growth suggests an important theme, explored in detail below—labor demand appears to be rising for both high-skill, high-wage jobs and for traditionally low-skill, low-wage jobs.

The Great Recession has quantitatively but not qualitatively changed the direction of the U.S. labor market.

The four major U.S. labor market developments referenced above and documented below—the polarization of job growth across high- and low-skill occupations,

This simultaneous polarization of U.S. employment and wage growth suggests an important theme—labor demand appears to be rising for both high-skill, high-wage jobs and for traditionally low-skill, low-wage jobs.

rising wages for highly educated workers, falling wages for less-educated workers, and lagging labor market gains for males—all predate the Great Recession. But the available data suggest that the Great Recession has reinforced these trends rather than reversing or redirecting them. In particular, job and earnings losses during the recession have been greater for low-education males than low-education females, and these losses have been most concentrated in middle-skill jobs. Indeed, there was essentially no net change in total employment in both high-skill professional, managerial and technical occupations and in low-skill service occupations between 2007 and 2009. Conversely, employment fell by eight percent in white-collar sales, office, and administrative jobs and by 16 percent in blue-collar production, craft, repair, and operative jobs.

Key contributors to job polarization are the automation of routine work and the international integration of labor markets

Measuring employment polarization is easier than determining its root causes, but researchers are making progress in understanding the operative forces behind the data. A leading explanation focuses on the consequences of ongoing automation and offshoring of middle-skilled "routine" tasks that were formerly performed primarily by workers with moderate education (a high school diploma but less than a four-year college degree). Routine tasks as described by economists David Autor, Frank Levy, and Richard Murnane are job activities that are sufficiently well defined that they can be carried out successfully by either a computer executing a program or, alternatively, by a comparatively less-educated worker in a developing country who carries out the task with minimal discretion.[8]

Routine tasks are characteristic of many middle-skilled cognitive and production activities, such as bookkeeping, clerical work, and repetitive production tasks. The core job tasks of these occupations in many cases follow precise, well-understood procedures. Consequently, as computer and communication technologies improve in quality and decline in price, these routine tasks are increasingly codified in computer software and performed by machines or, alternatively, sent electronically to foreign worksites to be performed by comparatively low-wage workers.

After three decades of sustained increases, the return to skills as typically measured by the earnings ratio of college graduates relative to high school graduates is at a historic high.

This process raises relative demand for nonroutine tasks in which workers hold a comparative advantage. As detailed below, these nonroutine tasks can be roughly subdivided into two major categories: abstract tasks and manual tasks. These tasks lie at opposite ends of the occupational-skill distribution.

Abstract tasks require problem solving, intuition, and persuasion. Workers who are most adept in these tasks typically have high levels of education and analytical capability. Manual tasks, by contrast, require situational adaptability, visual and language recognition, and in-person interactions. Examples of workers engaged in these tasks include janitors and cleaners, home health aides, construction laborers, security personnel, and motor vehicle operators. Manual tasks demand workers who are physically adept and, in some cases, able to communicate fluently in spoken language. Yet they appear to require little in the way of formal education, at least relative to a setting where most workers have completed high school.

In brief, the displacement of jobs—and, more broadly, occupations—that are intensive in routine tasks contributes to the polarization of employment into relatively high-skill, high-wage and low-skill, low-wage jobs, with a concomitant decline in middle-skill jobs.

Technology, trade, and offshoring are not by any means the only potential explanation for employment polarization—nor is it necessarily the case that any one explanation accounts for the entirety of the phenomenon. Another frequently discussed explanation for the changing structure of employment and earnings in the U.S. focuses on shifts in labor market institutions, in particular, declining labor union penetration and a falling real minimum wage. There is little doubt that labor unions and the minimum wage contribute to changing employment and wage patterns, but it appears unlikely their role is paramount.

In the case of labor unions, their impact is largely confined to manufacturing and public sector employment, neither of which comprises a sufficiently large share of the aggregate economy to explain the overall polarization phenomenon. Moreover, polarization of employment into high-skill, high-wage and low-skill, low-wage jobs occurs across all sectors of the U.S. economy and is not confined to union-intensive manufacturing industries. This makes it unlikely that de-unionization or the decline of manufacturing employment is primarily responsible for employment polarization.

Nevertheless, the loss of middle-skill, blue-collar jobs in manufacturing—many at unionized firms paying relatively high wages—has likely been particularly harmful to the employment and earnings of less-educated males. The job opportunities available to males displaced from manufacturing jobs, particularly those displaced at midcareer, are likely to be primarily found in lower-paying service occupations. While these job losses may be primarily attributable to automation of routine production work and growing international competition in manufactured goods rather than to de-unionization per se, the magnitude of the income losses for males is surely magnified by the fact that the job losses are in union-intensive industries.

An often-discussed explanation for changes in the structure of U.S. wages and employment is the federal minimum wage. The minimum wage can affect wage inequality by boosting (or failing to boost) wages in low-paying jobs. But changes in the federal minimum wage over the last several decades appear an unlikely candidate for explaining the polarization of employment—that is, the growth of both low-and high-skill jobs—particularly because the timing of this explanation does not fit the main polarization facts. The federal minimum wage declined sharply in real terms (after adjusting for inflation) during the 1980s, which might in theory have led to a rise in low-skill, low-wage employment. Yet, as shown in Figure 1, the opposite occurred. From the late 1980s forward, the real federal minimum wage stabilized and then subsequently rose. We might therefore have expected low-skill employment to stagnate or decline. Instead, it grew rapidly.[9]

The earnings of college-educated workers relative to high school-educated workers have risen steadily for almost three decades

After three decades of sustained increases, the return to skills as typically measured by the earnings ratio of college graduates relative to high school graduates is at a historic high. In 1963, the hourly wage of the typical college graduate was approximately 1.5 times the hourly wage of the typical high school graduate. By 2009, this ratio stood at 1.95. The entirety of this 45 percentage point rise occurred after 1980. In fact, the college-to-high-school earnings ratio declined by 10 percentage points in the 1970s.

Moreover, this simple comparison of the wage gap between college and high school graduates probably understates significantly the real growth in compensation

for college graduates relative to high school graduates in recent decades. College graduates work more hours per week and more weeks per year than high school graduates, spend less time unemployed, and receive a disproportionate share of nonwage fringe benefits, including sick and vacation pay, employer-paid health insurance, pension contributions, and safe and pleasant working conditions. And these gaps in nonwage benefits between high- and low-education workers have each grown over the past several decades.[10]

One important proximate cause for the rising relative earnings of college graduates is the slowdown in the rate of entry of new college graduates into the U.S. labor market starting in the early 1980s. Although this slowdown is by no means the only cause of changes in U.S. employment and earnings patterns—and, moreover, a cause whose genesis is not entirely understood—it is nevertheless a critical and often overlooked factor.

Rising relative earnings of college graduates are due both to rising real earnings for college workers and falling real earnings for noncollege workers—particularly noncollege males

The high and rising wage premium that accompanies a college education conveys the positive economic news that educational investments offer a high wage return. But this trend also masks a discouraging truth: the rising relative earnings of college graduates are due not just to rising real earnings for college workers but also to falling real earnings for noncollege workers. Real hourly earnings of college-educated workers rose anywhere from 10 to 37 percent between 1979 and 2007, with the greatest gains among workers with a postbaccalaureate degree.

Simultaneously, real earnings of workers with high school or lower educational levels either stagnated or declined significantly. These declines were especially steep among males: 12 percent for high school graduates and 16 percent for high school dropouts. The picture is generally brighter for females, but there was essentially no real earnings growth among females without at least some college education over this three-decade interval.

Though it is sometimes asserted that the "real" earnings declines of less-educated workers are overstated because they do not account for the rising value of employer-provided in-kind benefits such as healthcare, careful analysis of representative, wage, and fringe benefits data conducted by U.S. Bureau of Labor Statistics economist Brooks Pierce refutes this notion. Net of fringe benefits, real compensation for low-skilled workers fell in the 1980s. Further, accounting for fringe benefits, total compensation for high-skilled workers rose by more than did wages, both in absolute terms and relative to compensation for low-skilled workers.[11]

Gains in educational attainment have not generally kept pace with rising educational returns, particularly for males

Given the steep rise in wages for college graduates relative to noncollege graduates over the past three decades, one might have anticipated a substantial rise in college attainment among young adults. Yet, the actual increase in four-year college attainment was fairly muted, particularly for males. Between 1970 and 2008, four-year college attainment among white male young adults ages 25 through 34 rose only modestly, from 20 percent in 1970 to 26 percent in 2008.[12] Remarkably, among white females of the same age range, college attainment nearly tripled, to 34 percentage points from 12 percentage points. Thus, in three decades the white male-female gap in college attainment went from positive eight to negative eight percentage points.

Among young African-American adults, this picture is also mixed. The proportional gains in four-year college completion between 1970 and 2008 were substantially greater for blacks than for whites. Indeed, college completions rose more than two-fold among black males and more than three-fold among black females. Despite these gains, the levels of college completion for blacks remain substantially below that of whites. The black-white gap in college completion closed by only two percentage points among males in this period, and expanded by six percentage points among females.

The only ethnic category for which gains in educational attainment have been truly spectacular was "other nonwhites," a category that includes many Asian Americans.[13] In 2008, more than half of male and female young adults in this category had completed a four-year college degree. This is an increase since 1970 of 22 percentage points among males and 32 percentage points among females.

Conclusion

Although the U.S. labor market will almost surely rebound from the Great Recession, this article presents a somewhat disheartening picture of its longer-term evolution. Rising demand for highly educated workers, combined with lagging supply, is contributing to higher levels of earnings inequality. Demand for middle-skill jobs is declining, and consequently, workers that do not obtain postsecondary education face a contracting set of job opportunities.

Perhaps most alarmingly, males as a group have adapted comparatively poorly to the changing labor market. Male educational attainment has slowed and male labor force participation has declined. For males without a four-year college degree, wages have stagnated or fallen over three decades. And as these males have moved out of middle-skill blue-collar jobs, they have generally moved downward in the occupational skill and earnings distribution.

The obvious question, as Scrooge asks the Ghost of Christmas Yet to Come is: "[A]nswer me one question. Are these the shadows of the things that Will be, or are they shadows of things that May be, only?" Is the labor market history of the last three decades inevitably our destiny—or is it just that it could end up being our destiny if we do not implement forward-looking policy responses?

While this article is intended as a spur to policy discussion rather than a source of policy recommendations, I will note a few policy responses that seem especially worthy of discussion.

First, encouraging more young adults to obtain higher education would have multiple benefits. Many jobs are being created that demand college-educated workers, so this will boost incomes. Additionally, an increased supply of college graduates should eventually help to drive down the college wage premium and limit the rise in inequality.

Second, the United States should foster improvements in K-12 education so that more people will be prepared to go on to higher education. Indeed, one potential explanation for the lagging college attainment of males is that K-12 education is not adequately preparing enough men to see that as a realistic option.

Third, educators and policymakers should consider training programs to boost skill levels and earnings opportunities in historically low-skilled service jobs—and more broadly, to offer programs for supporting continual learning, retraining, and mobility for all workers.

Finally, another potential policy response is to consider R&D and infrastructure investments that will have broadly distributed benefits across the economy. Examples might include expanding job opportunities in energy, the environment, and health care. The return of the classic manufacturing job as a path to a middle-class life is unlikely. But it may be that various service jobs grow into attractive job opportunities, with the appropriate complementary investments in training, technology, and physical capital. Perhaps these could be the shadows of what is yet to come. CI

David Autor *is a professor of economics at the Massachusetts Institute of Technology and faculty research associate of the National Bureau of Economic Research.*

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CDFI Bond: Opportunity of a Decade

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