Testimony of Harry J. Holzer before the Joint Economic Committee of the US Congress

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The Effects of Automation on US Labor Markets and Policy

I'd like to make a number of points about how technology and automation will affect the US labor market, and the implications of those effects for a range of labor market policies.

1. *Fears of how automation eliminates jobs have historically been greatly overblown.*

As far back as the Luddites in Britain, and at other times in the US, workers have feared that technology would eliminate millions of jobs and cause mass unemployment. This has never turned out to be true. Markets have ways of adjusting to technology that create new jobs – specifically, as worker productivity rises and prices decline, consumers' real incomes rise, and they spend more on other goods and services, creating new jobs in these sectors. Indeed, a century of dramatic productivity growth from the late 19th through the late 20th century in the US generated no aggregate job loss in the long run.[i] But workers in the specific jobs and sectors directly affected by technology often are displaced from those jobs, and experience lengthy periods of unemployment and reduced wages when they ultimately become employed.

2. *While technology hasn't eliminated large numbers of jobs in the aggregate, it can reduce earnings among large groups of workers.*

Even among workers who are not directly displaced by technology in the workplace, labor market demand for their skills can be reduced. In the past 35 years, the digital revolution – among other factors, such as globalization and weakening institutions like unions – has reduced employment in many good-paying job categories (or reduced wages in those that remain) for workers with high school or less education. The jobs affected have been mostly in goods production among men and clerical work among women, since these involve routine tasks that are most easily replaceable by the new technologies; unfortunately, the new jobs available to them in the service sector pay considerably less than those eliminated.

At the same time, wages and jobs increase for workers with the technical skills to use the new technology (such as engineers, machinists and other technicians) or other skills that complement the new machines - including analytical, communications or creative skills. In other words, technical change has a "skill bias" in the labor market, with relatively unskilled workers hurt by it while more skilled workers are helped. In addition, there seems to be a "capital bias" as well, with the owners of businesses that use the new technologies enhancing their share of national income at the expense of workers more broadly.

Within the labor market, the skill bias in technical change causes growing "polarization" of jobs between the low-paying and high-paying sectors. The middle of the job market is not really disappearing; but newer middle-paying jobs - like those in health care, IT, advanced manufacturing and many parts of the service sector – require more postsecondary education or training (though short of a BA) than did the earlier production and clerical jobs.

And the growth in this "newer middle" is not sufficiently large to offset the decline in the "older middle" of production and clerical jobs, leading to some "hollowing out" of the middle of the labor market overall. Specifically, between 2000 and 2013, the share of all jobs accounted for by the "older middle" shrank from 24.3 to 21 percent while those of the "newer middle" grew from 14.8 to 15.6 percent. Thus, the shares of all jobs in the middle-paying category shrank from 39.1 to 36.6 percent.[ii]

The polarization in the job market has contributed to stagnating or declining real wages for unskilled workers, plus dramatic increases in earnings inequality. For instance, real earnings for American men with high school diplomas or less declined by over 10 percent between 1979 and 2012, while those for workers with BA and graduate degrees increased by about 20 and 70 percent respectively. Stagnant or declining wages of less-educated men, in turn, reduce their labor force participation as well as their marriage rates, thereby hurting not only the overall economy but also families and communities.[iii]

3. *The future effects of "artificial intelligence" and robotics in the workplace are very hard to predict, though the breadth and pace of labor market dislocations could grow.*

It will be a long time before we know the labor market effects of the next generation of robots and other digital technologies in the workplace, as it often takes decades for employers to figure out how to use them efficiently. At least in theory, the threats of job displacement could widen over time, and threaten millions more workers than it has so far; and large-scale displacement could potentially overwhelm the market adjustment mechanisms described above, creating years of sluggish demand in the labor market. At least to date, we have seen little evidence of this, outside a few key sectors (like manufacturing); if anything, US labor markets have become *less* fluid and dynamic over the past few decades, and our productivity growth in the past decade has sagged.[iv] But, over the next few decades, the pace and breadth of dislocations could grow, as new technologies are generated and employers gradually learn how to use them in the workplace more effectively. Though productivity and therefore worker incomes will grow as a result, jobs could become more unstable and harder to find among workers of all skill levels than before.

4. *Future automation should NOT become an excuse to avoid or eliminate a sensible and moderate set of worker supports and services that help them address the labor market challenges described above.*

The skill bias of new technologies means that workers will need to gain new skills to improve their wages and reduce inequality, while we also try to "make work pay" somewhat more for unskilled workers to keep them in the labor force. The capital bias might also imply a need to raise or supplement wages more broadly. Rising displacements and job instability create a need for important benefits like health care and family/medical leave to be portable across jobs and available during period of unemployment. And, if displacements outpace the new job creation rate in the future, we might need policies to spur labor demand and create more jobs.

Fear that providing these job market supports might raise costs to employers, and therefore lead to faster mechanization over time, have little merit as long as the supports in question are *moderate* in magnitude, and especially if they are offset by workers whose skills and productivity are enhanced.

The needed range of policies and supports to deal with the potential costs of automation include the following:

A. Raising/Protecting Worker Earnings from Skill and Capital Biases of Technology
   - *Education and Skill Development* - Clearly, support for and reforms in public programs and institutions (like community colleges) are needed to improve the skills of US workers, and help them adapt over time to changes in skill demands in a dynamic labor market. We need more workforce services like career counseling and job search assistance, community college training that is more responsive to the labor market, newer models of high-quality career and technical education plus work-based learning (e.g., apprenticeships), and opportunities for life-long learning that would enable displaced workers to upgrade or change their skill sets over time.
   - *Protecting Worker Rights to Collective Bargaining* – The current legal assault on unions in both the public and private sectors will weaken collective bargaining and further exacerbate wage inequality and earnings stagnation, with its resulting declines in labor force activity and family formation.
   - *Supporting High-Road Job Creation by Private Employers* - Governments at all levels could commit to creating "good jobs" and "high-performance workplaces" by rewarding and assisting employers who invest in skill-upgrading and improving the productivity and compensation of their workers through apprenticeships, incumbent worker training, profit-sharing, and other such mechanisms.[v] This would improve economic productivity in the US while providing important gains to workers and their families, without reducing profits for companies.

B. Making Work Pay for the Unskilled
   - *Wage Insurance against Displacement and the Earned Income Tax Credit (EITC)* - Expansions in wage insurance for displaced workers, and in the EITC for low-income workers in general, would incentivize them to accept newer jobs that pay less. These policies would likely raise labor force participation among those who have been dropping out in recent years.
   - *Minimum Wage Increases* - Increases in the minimum wage would also help to "make work pay" and would reduce reliance on other income supports like food stamps and Medicaid. As long as they are *moderate* in magnitude and introduced gradually, they should not accelerate the potential mechanization of jobs in "fast food" or other retail sectors.

C. Protecting Workers from a More Unstable Job Market
   - *Portable Health/Family Benefits* - The Affordable Care Act helps many millions of low-skill workers obtain health insurance while likely reining in per-capita increases in health care costs. Health benefits are also becoming more portable, so workers retain them even when they lose jobs. In addition, paid family and medical leave – funded through payroll taxes rather than mandates on employers – would help parents of small children (particularly mothers) and care-giving adults remain attached to

their jobs and the workforce while they deal with important personal or family needs. Investments of parental time in their children raises worker productivity over time.

D. Creating More Jobs

- *Public Funds for Public or Private Job Creation* – If/when new technologies lead to large worker dislocations that outpace the labor market's ability to create new jobs, we might need to supplement job creation. For instance, sensible public spending on infrastructure would help fix our crumbling roads and bridges, thus increasing economic productivity growth, while bolstering labor demand when needed. Subsidizing jobs more broadly in the public and private sectors, which we did during the Great Recession, can successfully spur net employment among disadvantaged workers and help meet employer needs as well.[vi]

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[i] Robert J. Gordon, *The Rise and Fall of American Growth: The US Standard of Living Since the Civil War*. Princeton University Press, 2015.

[ii] Harry J. Holzer, *Job Market Polarization and Worker Skills: A Tale of Two Middles*. Brookings Institution, 2015.

[iii] David Autor, "Skills, Education, and the Rise of Earnings Inequality among the "other 99 percent." *Science,* 2014; and David Autor et al. The Labor Market and the Marriage Market: How Adverse Employment Shocks Affect Marriage, Fertility, and Children's Living Circumstances. NBER Working Paper, 2015.

[iv] Raven Molloy et al. "Understanding Declining Fluidity in the US Labor Market." *Brookings Papers on Economic Activity*, forthcoming in 2016.

[v] Isabel Sawhill and Quentin Karpilow, *Raising the Minimum Wage and Redesigning the Earned Income Tax Credit*, Brookings Institution, 2014; Congressional Budget Office, *The Effects of a Minimum Wage Increase on Employment and Family Income*, 2014; Isabel Sawhill, *Paid Leave Will Be a Hot Issue in the 2016 Campaign*, Brookings Institution, 2015; Henry Aaron, *Five Years Old and Going on Ten: The Future of the Affordable Care Act*, Brookings Institution, 2015;and Harry J. Holzer, *Higher Education and Workforce Policy: Creating More Skilled Workers (and Jobs for Them to Fill)*, Brookings Institution, 2015.

[vi] Anne Roder and Mark Elliott. *Stimulating Opportunity: An Evaluation of ARRA-Funded Subsidized Employment Programs*. Economic Mobility Corporation, 2013.