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Addressing Automation in the Twenty-First Century

KEVIN REDDEN*©

INTRODUCTION

A decade ago, warehouses throughout the United States housed thousands of workers who created, packaged, and shipped finished goods to customers throughout the world. Now, the factories that are left contain an army of robots which do the same job at a fraction of the cost.¹ The replacement of human labor with cheap and efficient robots is the natural consequence of a decade of rapid technological innovation coined the *Fourth Industrial Revolution*.² As a result of cheaper and more readily available technologies such as artificial intelligence and advanced robotics, the United States currently finds itself in the midst of an economic transformation. Like most change, this revolution

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¹ See Paul Davidson, *More Robots Coming to U.S. Factories*, USA TODAY (Feb. 9, 2015 7:10 PM), <https://www.usatoday.com/story/money/2015/02/09/bcg-report-on-factory-robots/23143259/> (articulating that a robot can create the same output at four dollars an hour compared to twenty-four dollars an hour for a human).

² See generally Klaus Schwab, *The Fourth Industrial Revolution* Dec. 12, 2015, <http://vassp.org.au/webpages/Documents2016/PDevents/The%20Fourth%20Industrial%20Revolution%20by%20Klaus%20Schwab.pdf>.

will come with growing pains, many of which can already be seen today.³

Unlike other periods of economic disruption, technology is no longer supplementing labor but supplanting it completely.⁴ The rapid pace of technological growth has enabled those with capital and education to prosper disproportionately due to increased productivity and lower labor costs.⁵ The increased efficiency usually comes at the cost of labor which is often displaced by more efficient technology.⁶ This dichotomy has widened the divides in society and fueled animosity between the classes.

The increased gap in wealth will continue to grow exponentially as those who previously relied on low skilled jobs struggle to adapt to the ever-changing demands of a high tech economy.⁷ Already, increased inequality has fueled social, political, and economic upheaval.⁸ Americans' anxiety

³ Wolfgang Lehmacher, *Don't Blame China for Taking U.S. Jobs*, FORTUNE (Nov. 8, 2016), <http://fortune.com/2016/11/08/china-automation-jobs/>.

⁴ See Dennis Green, *Adidas Just Opened a Futuristic New Factory – and it will Dramatically Change how Shoes are Sold*, FORBES (Apr. 25, 2018 9:00 PM), <https://www.businessinsider.com/adidas-high-tech-speedfactory-begins-production-2018-4/> (discussing a shoe factory opened by Adidas that is completely automated).

⁵ See generally David Rotman, *Technology and Inequality*, MIT TECH. REV. (Oct. 21, 2014), <https://www.technologyreview.com/s/531726/technology-and-inequality/>.

⁶ See Noah Smith, *The End of Labor: How to Protect Workers from Rise of Robots*, THE ATLANTIC (Jan. 14, 2013), <https://www.theatlantic.com/business/archive/2013/01/the-end-of-labor-how-to-protect-workers-from-the-rise-of-robots/267135/> (explaining the decrease in labor's share of income since 2000).

⁷ Cf. *supra* note 1 (exemplifying how technology has stagnated wages for low skilled workers and exacerbated the gap in wealth equality in the United States).

⁸ See generally Francis Fukuyama, *American Political Decay or Renewal: The Meaning of the 2016 Election*, 95 FOREIGN AFF. 58 (2016) (discussing the reason for political infighting and decay in the 2016 election).

about the future will only increase as the majority of people find themselves with less job security, less income, and less hope for a better life.

Society's trepidation about the future of the economy is not misguided. Recent studies suggest that as much as forty seven percent of the American workforce will be automated in the next two decades.⁹ Internationally, job displacement could account for a fifteen trillion dollar loss in wages for those who are no longer needed to work.¹⁰ While low skilled labor will be the most drastically affected by the rise of automation, no job is safe. Technologies such as artificial intelligence and machine learning pose a threat to jobs once traditionally thought of as safe from automation.¹¹

While the final impact of the *Fourth Industrial Revolution* cannot be predicted, it is almost certain that America's economy and labor market will undergo drastic changes in the next decade.¹² The federal government has an obligation to proactively prepare for this shift in order to ensure America's long-term vitality. This article will explore recent trends in American employment and labor law from the past two decades.¹³ It will then survey the international

⁹ Carl Benedikt Frey & Michael A. Osborne, *The Future of Employment: How Susceptible Are Jobs To Computerisation?* 41 (Oxford Martin Programme on Technology and Employment, Working Paper, Sept. 2013).

¹⁰ James Manyika et. al., *Harnessing Automation for a Future That Works*, MCKINSEY & CO. (Jan. 2017), <https://www.mckinsey.com/featured-insights/digital-disruption/harnessing-automation-for-a-future-that-works>.

¹¹ *Id.*; see generally Dan Mangan, *Lawyers Could be the Next Profession to be Replaced by Computers*, CNBC (Feb. 17, 2017), <https://www.cnbc.com/2017/02/17/lawyers-could-be-replaced-by-artificial-intelligence.html>.

¹² See *Will Robots Really Steal Our Jobs?*, PRICE WATERHOUSE COOPERS (2018), https://www.pwc.com/hu/hu/kiadvanyok/assets/pdf/impact_of_automation_on_jobs.pdf (outlining the positives and negatives of increased automation in the next three decades).

¹³ See *infra* Part III.

community's reaction to recent labor trends by examining prominent European and Asian regulatory regimes.¹⁴ Lastly, it will scrutinize the framework currently in place in the United States,¹⁵ and will conclude by urging the federal government to make comprehensive reforms to update the workforce for a twenty-first century economy.¹⁶

II. AMERICAN LABOR IN THE LAST TWO DECADES

A. Recent Trends in American Labor

The surge in technological implementation over the past two decades has driven significant increases in labor productivity.¹⁷ In the past, increased productivity has typically led to higher standards of living for laborers and increased the overall wealth of society. America's most recent disruption has broken that rule. The increase in labor productivity has not translated into a higher standard of living for workers in the past decade.¹⁸ Despite the increase in productivity, employee compensation for private sector employees has stayed the same, if not decreased over the past several decades.¹⁹ This means employers are paying their

¹⁴ See *infra* Part IV.

¹⁵ See *infra* Part V.

¹⁶ See *infra* Conclusion.

¹⁷ See Mark Muro & Scott Andes, *Robots Seem to Be Improving Productivity, Not Costing Jobs*, HARVARD BUS. REV. (June 16, 2015), <https://hbr.org/2015/06/robots-seem-to-be-improving-productivity-not-costing-jobs>.

¹⁸ Labor productivity is defined as "a measure of economic performance that compares the amount of goods and services produced (output) with the number of hours worked to produce those goods and services." BUREAU OF LABOR STATISTICS, <https://www.bls.gov/lpc/> (last visited Oct. 6, 2018).

¹⁹ See Drew DeSilver, *For Most U.S. Workers, Real Wages Have Barely Budged in Decades*, PEW RESEARCH CTR. (Aug. 7, 2018), <http://www.pewresearch.org/2018/08/07/real-wages-have-barely-budged-in-decades/>.

employees less while getting more in return. The lack of wage growth cannot be blamed on a recovering economy or the Great Recession and subsequent rebound. Nearly a decade after the height of the recession, unemployment is objectively low while wages continue to stagnate.²⁰ The average American is not falling behind because of the economy, but in spite of it.

B. What it Could Mean

Numerous individuals believe that the technological revolution will create as many, if not more, jobs than it destroys.²¹ However, this belief is not universally held. Several studies predict automation will result in a net decrease in available jobs in the labor market.²² These predictions are given legitimacy when considering that only five percent of jobs generated between 1993 and 2013 came

pewresearch.org/fact-tank/2018/08/07/for-most-us-workers-real-wages-have-barely-budged-for-decades/ (exemplifying the lack of change in purchasing worker purchasing power over the past forty years).

²⁰ Jeff Stein & Andre Van Dam, *For the Biggest Group of American Workers, Wages aren't Just Flat. They're Falling*, THE WASHINGTON POST (Jun. 15, 2018), https://www.washingtonpost.com/news/wonk/wp/2018/06/15/for-the-biggest-group-of-american-workers-wages-arent-just-flat-theyre-falling/?utm_term=.d1dabd25f2f0. These “production and nonsupervisory” positions include positions in manufacturing and construction, among other things; wages fell for workers in those positions from May 2017 to May 2018 despite low unemployment numbers. *Id.*

²¹ See, e.g., Klaus Schwab, *The Future of Jobs Reports*, WORLD ECON. FORUM 3, http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf (predicting that job creation due to automation will outpace job destruction in the next ten years).

²² See generally Erin Winick, *Every Study We Could Find on What Automation Will do to Jobs, In One Chart*, MIT TECHNOLOGY REVIEW (Jan. 25, 2018), <https://www.technologyreview.com/s/610005/every-study-we-could-find-on-what-automation-will-do-to-jobs-in-one-chart/>.

from sectors involving computing, software, and telecommunications.²³ When also considering that nine out of ten workers today are in occupations which existed one hundred years ago, it seems the job creating capabilities of new technologies could be overstated.²⁴

The jobs which are created will put a premium on highly skilled, highly educated workers who will compete for a small amount of coveted positions overseeing and tending to robot laborers.²⁵ Increased productivity combined with the demand for a small group of elite workers could result in less demand for low skilled workers who have historically supported themselves through labor.²⁶ As these individuals fall out of demand, their bargaining power will dwindle leaving them helpless to fight wealthy corporations seeking to cut costs through mass layoffs of human labor in favor of more reliable, less needy robots.²⁷

It is clear the *Fourth Industrial Revolution* could lead down several distinct paths.²⁸ Recent trends in labor indicate that the next several decades will be rife with economic upheaval inherently present in any period of economic

²³ Derek Thompson, *A World Without Work*, THE ATLANTIC (Jul. 2015), <https://www.theatlantic.com/magazine/archive/2015/07/world-without-work/395294/>.

²⁴ *Id.*

²⁵ *See infra* note 35.

²⁶ Martin Neil Baily & Barry P. Bosworth, *US Manufacturing: Understanding Its Past and Its Potential Future*, 28 J. Econ. Perspectives 3, 3 (2014).

²⁷ *See* Katherine Peralta, *The Fall of Unions from Power*, U.S. NEWS & WORLD REPORT (Jan. 2, 2015), <https://www.usnews.com/news/articles/2015/01/02/workers-weakened-bargaining-power-fuels-income-inequality> (examining unions' loss of power in the United States over the past three decades). Only 11 percent of wage and salary workers were members of unions in 2013, down 20 percent from 1983, and at the lowest levels since the 1930s, when the New Deal gave unions legal legitimacy. *Id.*

²⁸ *See supra* notes 20, 21.

transformation, regardless of the final outcome.²⁹ With this reality in mind, the United States can mitigate growing pains by creating a robust policy response to increased automation which will modernize the labor force to meet the needs of the future.

III. INTERNATIONAL RESPONSES TO THE FOURTH INDUSTRIAL REVOLUTION

The United States is not alone in facing the creeping labor issues brought on by automation.³⁰ Industrial nations from all areas of the globe are starting to realize the potential implications of a highly automated workforce and have confronted the issue with varying strategies. This section will look at the approaches that China and several European countries have implemented, while exploring the impact and success of those policies in their respective economies.

A. China

China views automation from a unique perspective. Due to decades of adhering to the One Child Policy,³¹ China's workforce is disproportionately old and rapidly shrinking.³²

²⁹ See *supra* note 26.

³⁰ See Will Knight, *China is Building a Robot Army of Model Workers*, MIT TECH. REV. (Apr. 26, 2016), <https://www.technologyreview.com/s/601215/china-is-building-a-robot-army-of-model-workers/> (discussing the rise of automation in China and the difficulties associated with increased automation).

³¹ In an effort to control population growth, China's One Child Policy restricted families from having more than one child. Feng Wang et. al, *The End of China's One Child Policy*, BROOKINGS INSTITUTE (Wed. Mar. 30, 2016), <https://www.brookings.edu/articles/the-end-of-chinas-one-child-policy/>.

³² See *China Working-Age Population Shrinks, Presenting Pitfall for Pension Plans*, REUTERS BUS. NEWS (Feb. 28, 2018), <https://www.reuters.com/article/us-china-economy-population/china-working-age->

The Chinese government not only accepts automation as a reality, but encourages it as a necessity of a modern economy, making automation of their workforce a core tenant of China's industrial plan, "Made in China 2025."³³ Because of the perceived necessity to modernize the labor force, much of Chinese law surrounding technologies, such as robotics and artificial intelligence, revolves around protecting Chinese patents.³⁴

Consequently, the Chinese private sector has been keen on replacing human labor in favor of cheaper, often government subsidized robots.³⁵ The push for automation has created a new type of workspace dynamic. Rather than a bustling open space filled with conveyor belts and humans running from place to place, warehouses now house hundreds of robots and employ only one individual who oversees production.³⁶ While this type of large-scale automation is startling from an American perspective, for many Chinese businessmen it is still not enough. It is not uncommon for

population-shrinks-presenting-pitfall-for-pension-plans-idUSKCN1GC18C (discussing China's aging population and declining labor market).

³³ "Made in China in 2025" is China's comprehensive plan to modernize the manufacturing sector of their economy through increased implementation of robotics in order to compete with America's economy on a broader scale. See generally Kristen Hopewell, *What is 'Made in China 2025' – and Why is it a Threat to Trump's Trade Goals?* WASH. POST (May 3, 2018), https://www.washingtonpost.com/news/monkey-cage/wp/2018/05/03/what-is-made-in-china-2025-and-why-is-it-a-threat-to-trumps-trade-goals/?utm_term=.7508513cf998.

³⁴ See Javier C. Hernandez, *Seeking Greater Global Power, China Looks to Robots and Microchips*, N.Y. TIMES (Aug. 14, 2017), <https://www.nytimes.com/2017/08/14/world/asia/china-trump-us-trade-intellectual-property-technology.html> (reporting China's recent inclination to rigidly enforce patent laws to protect Chinese made robotics).

³⁵ Danielle Paquette, *Alone in a Chinese Warehouse with Only Robots for Company*, PRESS HERALD (Sept. 10, 2018), <https://www.pressherald.com/2018/09/10/alone-in-a-chinese-warehouse-with-only-robots-for-company/>.

³⁶ *Id.*

Chinese businesses to have a stated goal of a completely automated supply chain.³⁷ These businesses sell the idea by convincing their labor force the resulting jobs will be more enjoyable and less dangerous.³⁸ It is important to note that the few jobs which are available require a relatively high degree of education, a fact that is offset by a movement to include relevant skills, such as coding to students as young as six years old.³⁹

China's push for automation has kept the country competitive internationally in spite of their current labor shortage; however, the long term effects of China's policy have yet to be seen.⁴⁰ The declining cost and increased efficiency of robots over time will likely create a hypercompetitive job economy where Chinese efforts to modernize education will fall short.⁴¹ Once the current labor shortage comes to an end, widespread automation coupled with the lack of protection for Chinese labor could result in societal unrest.⁴² Instead of bringing society closer to true equality, China's drive for automation, coupled with their

³⁷ *Id.*

³⁸ *Id.*

³⁹ See Lulu Yilun Chen, *Latest Craze for Chinese Parents: Preschool Coding Classes*, BLOOMBERG (Nov. 17, 2015), <https://www.bloomberg.com/news/features/2015-11-17/latest-craze-for-chinese-parents-preschool-coding-classes> (discussing a new movement in China which requires coding to be taught to children).

⁴⁰ See David Z. Morris, *iPhone Manufacturer Foxconn Aims for Full Automation of Chinese Factories*, FORTUNE (Dec. 31, 2016), <http://fortune.com/2016/12/31/foxconn-iphone-automation-goal/> (showing that while specific companies have benefitted from automation, the long-term impact of widespread automation is unknown).

⁴¹ Ben Bland, *China's Robot Revolution*, FIN. TIMES (June 6, 2016), <https://www.ft.com/content/1dbd8c60-0cc6-11e6-ad80-67655613c2d6>.

⁴² James Fallows, *China's Great Leap Backward*, THE ATLANTIC (Dec. 2016), <https://www.theatlantic.com/magazine/archive/2016/12/chinas-great-leap-backward/505817/>.

current legal regime, or lack thereof, will exacerbate the already existing inequalities in Chinese society.⁴³

B. Europe

1. Sweden

While most workers in the United States consider “automation” a dirty word, Swedish workers welcome automation with open arms.⁴⁴ Swedish confidence in their job prospects stem from an economic system revolving around strong unions, government support, and trust between employees and their employers.⁴⁵ This feeling of trust originates from strong federal involvement and statutorily mandated labor protections. From 2010–2016 the Swedish government spent an average of two percent of annual GDP per year on labor markets.⁴⁶ This money is spent on a robust social safety net which includes training programs, hiring subsidies, apprenticeship programs, and placement services directed at helping people recently laid off update their skills and find new jobs.⁴⁷

While the federal government invests in public programs handsomely, they are not the only actors within the country dedicated to labor. The Swedish government works

⁴³ Gabriel Wildaug & Tom Mitchell, *China Income Equality Among World's Worst*, FIN. TIMES (Jan. 14, 2016), <https://www.ft.com/content/3c521faa-baa6-11e5-a7cc-280dfe875e28>.

⁴⁴ Peter S. Goodman, *The Robots are Coming, and Sweden is Fine*, N.Y. TIMES (Dec. 27, 2017), https://www.nytimes.com/2017/12/27/business/the-robots-are-coming-and-sweden-is-fine.html?_r=0.

⁴⁵ *Id.*

⁴⁶ *Public Spending on Labour Markets*, OECD, <https://data.oecd.org/socialexp/public-spending-on-labour-markets.htm> (last visited Oct. 29, 2018). During the same time period the United States spent just over a half percent of annual GDP per year on labor markets. *Id.*

⁴⁷ *See supra* note 44.

in tandem with labor unions and employers who do more than just engage in collective bargaining.⁴⁸ Under what is called a “Ghent system,” Swedish unions administer publicly subsidized insurance funds to those who have lost work, while also participating in unemployment insurance policymaking.⁴⁹ Swedish unions actively track which jobs and skills are most in demand, allowing them to quickly react to changes within the job market.⁵⁰ This data is then used by Job Security Councils which provide training and transition services for individuals who have been recently laid off.⁵¹ The Councils help eighty percent of individuals gain employment within eight months of losing their jobs, with many of those individuals obtaining jobs which pay as much as, or more than, their previous jobs.⁵²

Close partnership between unions and the Swedish government gives unions stability within the nation. Unions and their members understand that technologies save time and improve safety for workers, making increased automation a goal for both employees and employers.⁵³ The dynamic between government, unions, and private industry has resulted in meaningful cooperation between the parties and has helped Sweden stay competitive in the international

⁴⁸ *Id.*

⁴⁹ Matthew Dimick, *Labor Law, New Governance, and the Ghent System*, 90 N.C. L. REV. 319, 323 (2012).

⁵⁰ Thomas K. Grose, *The Worker Retraining Challenge*, U.S. NEWS & WORLD REPORT (Feb. 6, 2018), <https://www.usnews.com/news/best-countries/articles/2018-02-06/what-sweden-can-teach-the-world-about-worker-retraining>.

⁵¹ *Back to Work Sweden: Improving the Re-Employment Prospects of Displaced Workers*, Organization for Economic Co-Operation and Development (2015), <https://www.oecd.org/employment/emp/Sweden-BTW-DocsPress-ENG.pdf>.

⁵² *Id.*

⁵³ *See supra* note 44.

economy.⁵⁴ Due to state mandated cooperation, unions and industry leaders do not view each other as adversaries to be defeated but colleagues to be consulted.

The robust unemployment scheme implemented in Sweden enables workers to quickly find new jobs, while also encouraging those who have been laid off to take entrepreneurial risk without fear of being left destitute should their enterprise fail.⁵⁵ Despite relatively large expenditures of public money on the labor force, Sweden has become a force in the world economy, ranking sixth in competitiveness.⁵⁶ Sweden further disproves economic orthodoxy by touting one of the highest labor force participation rates in the world at seventy-four percent; nearly ten percentage points higher than the United States'.⁵⁷

Public support of retraining programs stems from an understanding that automation will inevitably replace some workers. These programs instill confidence in the average Swedish worker that they will not only land on their feet but will find a new job within months. The Swedish model is not defined by governmental oversight, rather governmental foresight.⁵⁸ By predicting the prevalence of technology in the workplace and creating a robust unemployment system

⁵⁴ Klaus Schwab, *The Global Competitiveness Report*, World Economic Forum (2016-2017), <http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf>.

⁵⁵ Alana Semuels, *Why Does Sweden Have so Many Start-Ups*, THE ATLANTIC BUS. (Sep. 28, 2017), <https://www.theatlantic.com/business/archive/2017/09/sweden-startups/541413/>.

⁵⁶ *See supra* note 54 (ranking Sweden as the sixth most competitive economy in the world).

⁵⁷ TRADING ECON., Sweden Labor Force Participation Rate, <https://tradingeconomics.com/sweden/labor-force-participation-rate> (last visited Nov. 10, 2018).

⁵⁸ *See supra* note 55 (explaining Swedish economic reforms which occurred in the 1990's).

focused on retraining individuals Sweden has become an economic powerhouse and one of the best places for businesses in the world.⁵⁹

2. Germany

In spite of recent global trends, the German manufacturing machine is thriving.⁶⁰ Much like Sweden, German laborers benefit from a holistic approach to unemployment including robust unemployment insurance and laws guaranteeing severance packages.⁶¹ The key to Germany's ability to mitigate job losses caused by automation is several institutional mechanisms put in place to balance the power disparity between employer and employee.⁶²

A prime example of the mechanisms in place are Germany's Labor Courts.⁶³ Labor Courts are on equal footing with other courts in the German Judiciary system but are

⁵⁹ See *Best Countries for Business*, FORBES <https://www.forbes.com/best-countries-for-business/list/> (last visited Apr. 16, 2019) (ranking Sweden fourth in the world for best places for business); see also *How Stockholm Became a 'Unicorn Factory'*, FORBES (Nov. 11, 2015), <https://www.forbes.com/sites/knowledgewharton/2015/11/11/how-stockholm-became-a-unicorn-factory/#1e947a786576> (citing government infrastructure aimed at bolstering labor as a contributor to the overwhelming amount of billion-dollar tech companies originating from Sweden).

⁶⁰ See Roger Yu, *Here's Why Germany's Trade Surplus with the U.S. is so Big*, USA TODAY (Jun. 2, 2017), <https://www.usatoday.com/story/money/2017/06/01/heres-why-germanys-trade-surplus-us-so-big/102349370/> (identifying Germany's efficiency and quality of work as a key reason for the trade surplus between Germany and the United States).

⁶¹ Samuel Estreicher & Jeffrey M. Hirsch, *Comparative Wrongful Dismissal Law: Reassessing American Exceptionalism*, 92 N.C. L. REV. 343, 399 (2014).

⁶² See Manfred Weiss, *Dispute Resolution in German Employment and Labor Law*, 34 COMP. LAB. L. & POL'Y J. 793, 794-7 (2013) (detailing institutional structures within the German labor market which empower labor to adjudicate labor disputes).

⁶³ *Id.*

tasked with the sole purpose of resolving labor disputes between employees and employers at a lower cost than traditional Civil Courts.⁶⁴ The low costs associated with bringing a labor suit encourage laborers to proactively attack improper dismissals and unjust employment practices, such as mass replacement of labor in favor of automation.⁶⁵ Because a wronged employee is more likely to bring a suit, companies are more conscious of their business practices out of a desire to avoid litigation.

Labor disputes are heard in front of a three-judge panel who preside over the case.⁶⁶ The panel consists of one professional judge, appointed by the federal government, who presides over the case in unison with two lay judges.⁶⁷ The two lay judges are appointed for five year terms; one is appointed by the employer and the other is appointed by employee representatives.⁶⁸ While the addition of two judges appointed by the parties seems counterintuitive to independence of the judiciary, the lay judges often have first hand knowledge of the workplace and the issue in question.⁶⁹ The diversity of experience and perspective allows the judges to freely exchange ideas in order to give greater context and nuance to their opinions while increasing the likelihood of a fair decision for both parties.⁷⁰

In addition to the presence of a separate judiciary system for labor disputes, the structure and role of German

⁶⁴ *Id.*

⁶⁵ See Samuel Estreicher & Jeffrey M. Hirsch, *Comparative Wrongful Dismissal Law: Reassessing American Exceptionalism*, 92 N.C. L. REV. 343, 398 (2014) (discussing the relatively low cost of adjudication in German Labor Courts in comparison to German Civil Courts).

⁶⁶ See *supra* note 62.

⁶⁷ *Id.*

⁶⁸ *Id.* at 796.

⁶⁹ *Id.* at 797.

⁷⁰ See *id.* at 798-99 (discussing the dynamic between the three judges appointed to any given labor court).

labor representation further negates the power imbalance.⁷¹ German workers are represented by three distinct entities with distinct responsibilities: work councils, worker representatives, and unions.⁷² Of these entities, Work Councils are among the most important.⁷³ Work Councils are firm-level representatives of employees that wield a statutorily mandated right to be consulted by the employer before any layoffs, terminations, or other ground level decisions.⁷⁴ Much like the lay judges appointed to the Labor Courts, worker representation at the firm level balances the power disparity by giving laborers a voice in managerial decisions. Employees can exercise this power to veto abhorrently anti-labor firm practices and slow the pace of automation. The balance of power leads to not only increased worker rights and advocacy but decreased tension between the two parties leading to more efficiency and transparency.⁷⁵

Worker Representatives have a similar role as Work Councils and act as a voice for employees on the executive level.⁷⁶ Worker representatives advocate for the needs of laborers when the firm makes macro level decisions.⁷⁷ Because worker representatives sit on supervisory boards in equal numbers with shareholder representatives, employees

⁷¹ See Cara Waldman, *The Future of German Labor Relations: Lessons German Unions Can Learn from American Failures*, 19 CONN. J. INT'L L. 689, 693-95 (2004) (comparing the structure of German labor unions to American unions).

⁷² *Id.* at 693 (opining that employers are represented by a traditional union, work councils, and worker representatives and that each party has a distinct role in worker representation).

⁷³ See Estricher & Hirsch, *supra* note 65, at 403-05 (discussing the role of German work councils in the context of unemployment law).

⁷⁴ *Id.* at 404.

⁷⁵ *Id.* (listing the options unions can take to protest wrongful dismissals before adjudication).

⁷⁶ See Wilmdan, *supra* note 71, at 693-94.

⁷⁷ *Id.*

have a powerful voice in company decisions regarding the hiring of directors, declaring dividends, and the right to influence certain investment decisions.⁷⁸ Similar to work councils, worker representatives are able to slow the march of automation without judicial intervention by dictating the policy of firms regarding labor practices on a macro level.

The German system protects labor holistically through institutional mechanisms which contribute to Germany's strong economy supported by skilled labor.⁷⁹ Germany's success can be attributed to the large share of power that labor holds regarding workplace decision making. By mandating dialogue between employees and employers, Germany effectively mediates labor crises before they arise. The constant communication between the two parties replaces the concept of two adversaries engaged in a zero-sum game. Instead the two parties are required to work together to gain any progress for themselves.

IV. UNITED STATES

A. American Workers as Free Market Actors

The federal government's approach to labor protection can best be described as *laissez-faire*.⁸⁰ Workers are given few statutory protections and interact with employers as free market actors.⁸¹ The National Labor Relations Act of 1935⁸² is the preeminent law outlining worker's modern rights giving workers the statutory right to unionize, bargain

⁷⁸ *See id.* at 710.

⁷⁹ *See Weiss, supra* note 62.

⁸⁰ *See* William C. Green, *Negotiating the Future: The NLRA Paradigm and the Prospects for Labor Law*, 21 OHIO N. U. L. REV. 417, 423 (explaining the limited role of government in labor relations).

⁸¹ *See id.* at 423-24 (articulating that the NLRA views unions as a distinct entity in the labor market).

⁸² Hereinafter referred to as the NLRA.

collectively, and take action to advance the union's interests.⁸³ While workers have the ability to unionize, it is common for companies to actively impede unionization efforts in order to stymie organized demands for higher pay and better working conditions.⁸⁴ Non-unionized workers are often forced into arbitration agreements as a result of their lack of bargaining power. If workers successfully unionize, the NLRA and subsequent worker legislation creates few, if any, avenues outside of good faith bargaining which unions can employ for effective advocacy of laborers' demands.

The NLRA also created the National Labor Relations Board (NLRB) which functions as a mechanism to adjudicate labor disputes; however, it has failed to adequately protect labor's interests since its inception.⁸⁵ While the NLRB is meant to be independent it has become politicized, resulting in inconsistent rulings since its creation.⁸⁶ The NLRB's decisions are subject to review by the Federal Judiciary, yet Federal Judges rarely overturn the NLRB's initial decision.⁸⁷ Federal Judicial review of NLRB decisions primarily serves to clog the Federal Judiciary and rarely serves a check on the power of the NLRB.

⁸³ See generally National Labor Relations Act, 29 U.S.C. §§ 151-169 (1935).

⁸⁴ See Verne Kopytoff, *How Amazon Crushed the Union Movement*, TIME (Jan. 16, 2014), <http://time.com/956/how-amazon-crushed-the-union-movement/> (detailing Amazon's efforts to curtail workers' attempts to unionize in order to avoid worker demands for higher wages).

⁸⁵ See generally Andrew Strom, *Rethinking the NLRB's Approach to Union Recognition Agreements*, 15 BERKELEY J. LAB. L. 1 (1994).

⁸⁶ Zev J. Eigan & Sandro Garofolo, *Less is More: A Case for Structural Reform of the National Labor Relations Board*, 98 MINN. L. REV. 1879, 1884 (2014).

⁸⁷ See generally Urusula M. McDonnell, *Deference to NLRB Adjudicatory Decision Making: Has Judicial Review Become Meaningless?* 58 U. CIN. L. REV. 653 (1989).

The lack of federal oversight of the relationships between laborers and employers force the entities to interact as actors within the free market. This inevitably leads to adversarial confrontation between the two actors as they are forced to view negotiation through the lens of a zero-sum game. Predictably, negotiations are often confrontational and favor employers who have more resources and are able to hire replacement workers.⁸⁸ This power disparity is compounded by the lack of a statutorily protected right to participate in either firm level or executive level decisions. Consequently, most deals only incrementally improve conditions for laborers and can often fall flat of expectations.

The Supreme Court's ruling in *Janus v. AFSCME*⁸⁹ will likely further exacerbate the power disparity. By articulating that agency shop agreements infringe upon the First Amendment rights of their members, the Court effectively put the financial livelihood of unions in danger.⁹⁰ Without sufficient financial resources, unions face an uphill battle when advocating against corporations and companies with vast resources at their disposal.

⁸⁸ It is common for these confrontations to result in prolonged worker strikes as both sides avoid compromise. *See, e.g.,* Karen Schwartz, *Deal in San Francisco Ends Nationwide Marriot Strikes*, N.Y. TIMES (Dec. 3, 2018), <https://www.nytimes.com/2018/12/03/travel/san-francisco-marriott-strike-over.html> (chronicling the two-month long strike of nearly 8,000 Marriot workers who demanded increased wages and better working conditions).

⁸⁹ *Janus v. AFSCME*, 138 S. Ct. 2448 (2018).

⁹⁰ *See id.* Union shop agreements enable unions to collect dues from employees who are not members of the union but receive the benefit of the union's representation. *Aboud v. Det. Bd. of Educ.*, 431 U.S. 209, 209 (1977).

B. Current Unemployment Programs

The two primary unemployment programs in the United States are the Federal Unemployment Tax Act⁹¹ (FUTA) and the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA).⁹² FUTA is a joint program between state and federal governments, which levies a six percent tax on the first seven thousand dollars of an employee's taxable income, and state government which levies the tax based on the company's historical employee turnover rate.⁹³ The tax is administered quarterly and the federal government will give a credit for up to five and a four tenths of a percent of a company's state tax.⁹⁴ Employees laid off without cause are given cash stipends for several weeks so long as they are applying for new work.⁹⁵ The size of the stipend an individual receives is based on their earning power at their previous job.

COBRA mandates that employers with more than twenty employees who also sponsor group health insurance plans must extend that health insurance plan to a recently laid off employee for up to 18 months.⁹⁶ While employers are required to extend the coverage to laid off employees, they are not required to continue paying for it. The cost of the health care plan is then transferred to the laid off employee

⁹¹ 26 U.S.C. § 23 (2018) (hereinafter referred to as FUTA).

⁹² 29 U.S.C. § 1132 (2018) (hereinafter referred to as COBRA).

⁹³ Kirsten Harrington, *Employment Taxes: What Can Small Businessmen Do?*, 10 AKRON TAX J. 61, 62 (1993).

⁹⁴ See Kimberly A. Kline & Jeffery E. Letzkus, *D.I.Y. Business Entities for Solos (& Small Firms)*, 45 MD. BUS. J. 4 (2012) (explaining that employers need to make FUTA payments quarterly regardless of the size and form of a firm).

⁹⁵ Chad Stone & William Chen, *Introduction to Unemployment Insurance*, CENTER ON BUDGET AND POLICY PRIORITIES 1, 2 (Jul. 30, 2014), <https://www.cbpp.org/sites/default/files/atoms/files/12-19-02ui.pdf>.

⁹⁶ Nora Fitzgerald, *You're Sick? You're Fired! The Case for Eliminating COBRA'S Gross Misconduct Exception*, 80 MINN. L. REV. 197, 202 (1995).

who is required to make monthly payments despite having no income.⁹⁷ To make matters worse, employers are able to charge up to one hundred and two percent of the premium in order to cover administrative costs.⁹⁸

The absence of a robust and effective safety net consisting of health insurance and retraining programs only acts to exacerbate the power disparity between employee representatives and employers. Empowered with the knowledge that the majority of insurance is provided through the workplace, employers leverage the cost of health care in workplace negotiations.⁹⁹ This reality has led to low wages and poor working conditions in several of America's largest employers.¹⁰⁰

While these policies were implemented to give a cushion to recently laid off individuals, they fall short in practice. Without an income people who are eligible for COBRA will find it difficult to pay the monthly premiums and will ultimately lose coverage. It is likely that those who have been recently laid off must choose between spending their FUTA stipend on the insurance premiums or going uninsured in order to cover other costs of living. The conflict created by the two competing and equally important interests forces individuals to do what they can to cover costs,

⁹⁷ *Id.* at 203-04.

⁹⁸ *Id.*

⁹⁹ See Fredric Blavin, Adele Shartzter, Sharon K. Long, and John Holahan, *Employer-Sponsored Insurance Stays Strong, with No Signs of Decay Under the ACA: Findings through March 2016*, URBAN INST. HEALTH POL'Y CTR. (July 13, 2016), <http://hrms.urban.org/briefs/employer-sponsored-insurance-aca-march-2016.html> (showing that employer sponsored insurance is still the dominant way to obtain insurance in spite of the Affordable Care Act).

¹⁰⁰ See generally Jodi Kantor & David Streitfeld, *Inside Amazon: Wrestling Big Ideas in a Bruising Workplace*, N.Y. TIMES (Aug. 15, 2015), <https://www.nytimes.com/2015/08/16/technology/inside-amazon-wrestling-big-ideas-in-a-bruising-workplace.html> (exposing the harsh conditions Amazon employees are required to work in).

inadvertently decreasing the likelihood of finding meaningful, long term employment.

C. Analyzing America's Regime in the Context of Automation

The United States' lack of labor protection and a meaningful safety net for unemployed individuals will lead to bolstered tension in the face of increased automation. Labor leaders in Germany¹⁰¹ and Sweden¹⁰² successfully mitigate the effects of automation because of their government mandated empowerment. The onward march of technological advancement cannot be stopped; however, labor leaders in these countries are able to slow down the replacement of human labor by dictating managerial decisions and negotiating in real time on behalf of workers. Additionally, having a seat at the table not only enables them to foresee labor trends but proactively prepare themselves for a changing economy in order to stay valuable. In contrast, without the right to engage in managerial and executive decisions, American labor leaders will not be able to stymie the process of automation outside of traditional means such as strikes. As labor becomes less in demand due to the viability and practicality of automation, strikes will likely harm workers more than help.

As workers lose jobs their disposable income will dwindle causing individuals to struggle to update their skills for a modern economy. A lack of meaningful dexterity could lead to long term joblessness resulting in a large quantity of uninsured individuals. The loss of jobs for human labor will force people to become dependent on federal unemployment

¹⁰¹ See *infra* Part V.B.2.

¹⁰² See *infra* Part V.B.1.

programs while deteriorating the government's tax base.¹⁰³ More government dependents coupled with less tax revenue will endanger the solvency of the federal government and possibly propel the United States into an economic, social, and political crisis.¹⁰⁴

V. A TWENTY-FIRST CENTURY RESPONSE TO AUTOMATION

The United States will experience growing pains as society acclimates to the reality of next generation technology. Stopping the constant march of technology is not a viable option for the American government as implementing technological innovation in the workplace is a necessity for any country who wants to compete in the world economy. In the face of this reality, the United States federal government needs to implement meaningful responses to the threat of automation. A holistic approach to automation aimed at reducing the adversarial nature of union-employer relationship, creating retraining programs meant to update the skillset of American labor, and funding unemployment health insurance can help the United States prepare for the future.

¹⁰³ The majority of the federal government's tax revenue comes from the taxation of labor income, a shift away from human labor would mean less income to tax resulting in decreased revenues and increased demands on a smaller tax base. Ryan Abbot & Bret Bogenschneider, *Should Robots Pay Taxes? Tax Policy in the Age of Automation*, 12 HARV. L & POL'Y REV. 145, 150. As of 2012, unemployment benefits cost the federal government \$520 billion dollars. Tami Luby, *Unemployment Benefits Cost: \$520 Billion*, CNN MONEY (Nov. 29, 2012), <https://money.cnn.com/2012/11/29/news/economy/unemployment-benefits-cost/index.html>.

¹⁰⁴ See *supra* note 8.

A. Balancing the Power Disparity

Empowering labor by carving out channels for meaningful input into company decisions will be key in avoiding, or at least mitigating, mass layoffs due to automation. As Justice Scalia famously stated, a group whose members are concentrated and have disposable income can obtain disproportionate political power.¹⁰⁵ The wealth and organization common among executives and corporate heads is contrasted by disorganized and relatively poor workers.¹⁰⁶ Corporations and the individuals that run them exercise disproportionate power within the American political system and free market that lead to policies which entrench bargaining power resulting in unchecked power on the firm level. Increasing the channels of communication while giving labor a meaningful role in decision making will diminish the gap in influence over workplace decisions between employer and employee.

1. *Arbitration as a Matter of Public Policy*

Allowing individuals to enter into boilerplate arbitration agreements should be banned as a matter of public policy. In order to save time and money, courts allow employers and their employees to enter into arbitration agreements which unfairly limit workers' right to justice.¹⁰⁷ For most Americans, the choice between unemployment and signing

¹⁰⁵ *Romer v. Evans*, 517 U.S. 620, 645-46 (1996) (Scalia, J., dissenting).

¹⁰⁶ Previously, this power imbalance was somewhat mitigated by the presence of unions; however, in recent decades unions have lost power, wealth, and status in America. *How the Decline of Unions will Change America*, THE ECONOMIST (July 19, 2018), <https://www.economist.com/united-states/2018/07/19/how-the-decline-of-unions-will-change-america>.

¹⁰⁷ See generally *Epic Sys. Corp. v. Lewis*, 138 S. Ct. 1612 (2018) (allowing arbitration clauses which would limit workers' ability to act as a collective).

an unfair arbitration agreement is no choice at all. Unemployment means not only a loss of wages, but a loss of identity, dignity, and most importantly, health insurance. With the cost of health care sky rocketing, employers are able to leverage their health insurance plans in order to compel individuals into signing forced arbitration agreements. The power disparity between the two parties and the consequences of unemployment can equate to undue influence.¹⁰⁸ In every day employment negotiations, most individuals sign their forced arbitration agreements because they have no other viable option.

Even if employees voluntarily enter into arbitration agreements, most of these employees do not understand the full ramifications of those agreements.¹⁰⁹ As such, employees blindly sign away their constitutional right to a jury trial in favor of a professional arbitrator hired and paid for by their opposition. While an individual's signature legally constitutes assent to the terms of the contract, without a basic knowledge of arbitration, and its ramifications, true assent to the employment contract is nearly impossible to obtain.¹¹⁰

In order to save time and money, American courts have turned a blind eye to the realities of forced arbitration

¹⁰⁸ Duress results when undue influence is exerted on a contracting party and may make a contract voidable. RESTATEMENT (SECOND) OF CONTRACTS § 177 (Am. Law. Inst. 1981).

¹⁰⁹ See generally Jeff Sovern et al., "Whimsy Little Contracts" With Unexpected Consequences: An Empirical Analysis of Consumer Understandings of Arbitration Agreements, 75 MD. L. REV. 1 (2015). While the article discusses arbitration agreements in the context of consumer contracts, the principle can be extended to arbitration agreements between employees and their employers.

¹¹⁰ Assent would not be present when the drafting party does not have reason to believe that the non-drafting party would not have accepted the agreement if they had known the full ramifications of the term. See Stephen J. Ware, *Employment Arbitration and Voluntary Consent*, 25 HOFSTRA L. R. 83 (1996).

by citing legal technicalities regarding assent. In the context of employment contracts, arbitration creates an uneven playing field which consistently disadvantages one party over the other.¹¹¹ Because freedom of contract is stifled, Congress must eliminate forced arbitration for the public good.¹¹²

2. *A Separate Court System*

Creating a separate judiciary system whose sole purpose is the adjudication of labor disputes will enable Congress to achieve the goals of cutting costs and time usually pursued by arbitration agreements while ensuring that labor disputes are heard in a neutral manner.¹¹³ These courts should be set up in similar fashion as their German counterparts, with one presiding judge and one judge appointed by each party. By doing so, Congress could create a mechanism for adjudication which is comprised of industry representatives who are forced to preside over an issue in good faith.

Creating an alternative system will enable wronged individuals to bring action in front of a neutral panel without over burdening the civil court system. While this system could make laborers overeager to sue for employment practices, the neutral nature of the labor courts would spurn both labor and employers equally. If neither side has an advantage when taking an issue to the court system, employers and labor may be more likely to compromise on

¹¹¹ In early 2018, Google's employees refused to work as a way to protest Google's forced arbitration policy resulting in the termination of the policy. Madison Malone Kircher, *Tech Workers are Fed Up With Forced Arbitration*, N.Y. MAG. (Dec. 10, 2018), <http://nymag.com/intelligencer/2018/12/google-employees-demand-end-to-forced-arbitration.html>.

¹¹² See generally *West Coast Hotel Co. v. Parrish*, 300 U.S. 379 (1937).

¹¹³ Congress is given the right to create "tribunals inferior to the Supreme Court." U.S. CONST. art. 1, §8, cl. 9.

labor practices prior to adjudication. More agreement would result in less issues to adjudicate, ensuring that the Labor Courts will not be overburdened and rendered ineffective.

The demand on American Labor Courts could be lessened by mandating pre-trial mediation in an effort to encourage settlement between the two parties. Obligatory mediation, which already exists in some states, would keep minor disputes from adjudication and diminish demand on the court system by encouraging settlement.¹¹⁴ Even if a full settlement of the dispute at hand is unobtainable, partial settlement of the disagreement is more likely after mediation and will further ease the burden on the court system.¹¹⁵

3. Statutory Empowerment of Labor

Mandating employee participation in firm level and executive level decision making by statutorily empowering labor, like in Germany's work councils and worker representatives, will decrease the likelihood of the parties resolving disputes in any type of tribunal.¹¹⁶ Labor's increased power in decision making will result in fairer business decisions between the two parties resulting in less disputes requiring adjudication. Worker and union input in company decisions will enable labor representatives to dictate the number of robots a company will employ and how fast they will be implemented. Labor will also be able to demand more complete severance packages for those displaced by technology when that time inevitably comes.

¹¹⁴ See NEB. REV. STAT. § 25-2902 (1993).

¹¹⁵ See Christy L. Hendricks, *The Trend Toward Mandatory Mediation in Custody and Visitation Disputes of Minor Children: An Overview*, 32 U. LOUISVILLE J. FAM. L. 491, 494 (1994) (discussing the effectiveness of court mandated mediation in bringing about pre-trial settlement in custody disputes).

¹¹⁶ See *supra* note 72.

The German practice of creating a space for labor representatives on the board of executives would also go hand in hand with the American ideal that a board's duty is to maximize profits for their shareholders. A worker representative would increase the likelihood of sound labor decisions and decrease the likelihood of worker strikes and bad press which could lead to a drop in share price.¹¹⁷ Furthermore, it is common for employees to hold a relatively large share of a companies stock because of the common practice of giving stock bonuses.¹¹⁸ Creating a seat for labor would create an opportunity for shareholders to have a direct say in management decisions which are often kept form the purview of the average person.

By encouraging cooperation between the two parties through legislation, Congress will link their destinies together and ultimately force both sides to come to the negotiation table in good faith. By doing so, the likelihood and cost of labor disputes will drop due to higher rates of meaningful compromise within the labor market. Increasing interaction between the two parties will encourage just decisions by ensuring mutual destruction while also encouraging mutual prosperity.

¹¹⁷ See John Rosevear, *Why Shares of General Motors Dropped 12% in December*, THE MOTLEY FOOL (Jan. 5, 2019), <https://www.fool.com/investing/2019/01/05/why-shares-of-general-motors-dropped-12-in-decembe.aspx> (explaining that General Motor's plan to close several factories resulted in labor unrest and decreased share prices).

¹¹⁸ See Nick Bastone, *Snap Employees Will Not Receive Cash Bonuses for the Second Straight Year*, BUS. INSIDER (Dec. 20, 2018), <https://www.businessinsider.com/snap-employees-no-bonus-2018-12> (discussing Snap's decision to give bonuses via stock option in order to save money).

B. Re-envisioning the Government's Role in Unemployment

The lack of robust unemployment health insurance and meaningful retraining programs stifles workers' ability to update their skillset for the modern economy.¹¹⁹ Creating a robust system of unemployment health insurance will protect individuals who have lost their job while encouraging workers to proactively update their skillset through higher education. Retraining programs which are run in tandem between the government and private sector firms will help ensure that workers learn valuable skills while ensuring a smooth transition into a new position. As with all government programs, the question is how to pay for it. By exercising their tax powers and combining the regulatory regime implemented in FUTA and the Affordable Care Act, Congress could create unemployment insurance and retraining programs without the fear of going insolvent.¹²⁰

1. Revenue Sources

a. 21st Century FUTA

An employer's quarterly FUTA contribution is based on their annual employee turnover rate.¹²¹ The sliding scale allows each employer to contribute to the unemployment fund in proportion to the number of their former employees who will use the fund's resources.¹²² By carrying this principal over into a new piece of legislation aimed at raising revenue and

¹¹⁹ Michael Hiltzik, 'Job-Lock' and the Republican Dilemma over Obamacare, L.A. TIMES (Feb. 5, 2014), <http://www.latimes.com/business/hiltzik/la-fi-mh-job-lock-20140205-story.html>.

¹²⁰ See U.S. CONST. art. 1, § 8, cl. 1.

¹²¹ See *supra* note 97.

¹²² *Id.*

stifling the speed of automation, the government can ensure that the companies with the highest turnover rates pay their fair share. However, instead of creating a joint program such as that implemented by FUTA, the federal government should take on the responsibility of health insurance on its own. The federal government would be able to set the appropriate tax rate necessary to meet the needs of the program. FUTA's rate of six percent of the first thousand dollars could be expanded to ten percent of the first ten thousand dollars which would equate to one thousand dollars of tax revenue per person.¹²³

This revenue could be pooled together and used solely for the purpose of health insurance for the unemployed or used to fund retraining programs. If used to fund insurance, the revenue per person would be higher than the revenue created by the Affordable Care Act's individual mandate, enabling the federal government to cover individuals for upwards of twelve months.¹²⁴ Furthermore, the larger revenue would allow the government to create a capital cushion in anticipation of large losses stemming from individuals who have traditionally been considered high risk.¹²⁵ As the average age of unemployed individuals goes down over time the government pool will get less risky and

¹²³ *Id.*

¹²⁴ In comparison, the individual mandate for the Affordable Care Act was roughly seven hundred dollars per person per year or two and a half percent of average income, whichever is greater. *See Nat'l Fed'n Indep. Bus. v. Sebelius*, 567 U.S. 519, 539 (2012).

¹²⁵ Laurie McGinley & Amy Goldstein, *What are High-Risk Pools for Health Insurance?*, WASH. POST (Jan. 25, 2017), https://www.washingtonpost.com/national/2017/live-updates/health-care/obamacare-affordable-care-act-definitions/what-are-high-risk-pools-for-health-insurance/?utm_term=.f6f80ab0d0da (explaining that individuals who are considered "high risk" are those with pre-existing conditions or at a higher risk of illness than the average population).

more efficient, lowering the cost of insurance to the government.¹²⁶

This policy would be favorable at the beginning stage of nationwide automation but has two distinct drawbacks. First, passing a bill is inherently arduous. The debate and political maneuvering surrounding this bill up until its passage would give firms an opportunity to accelerate termination of employees in order to avoid the tax. Second, once a firm's supply chain is fully automated, there will be no employee turnover to tax. For these reasons it would be best to couple this policy with a more comprehensive approach.

b. Robot Tax

Because robots are not taxed for their output and employers do not need to pay for insurance and other costs associated with labor, current tax policy favors automation.¹²⁷ One way to balance this disparity is to implement a robot tax.¹²⁸ Ideally, this policy would require companies who employ a certain number of robots to pay a dollar amount per robot employed. This would not only increase federal tax revenue and enable the government to create and maintain insurance and retraining programs but would also deter firms from

¹²⁶ See Thomas K Grose, *The Worker Retraining Challenge*, U.S. NEWS & WORLD REPORT (Feb. 6, 2018), <https://www.usnews.com/news/best-countries/articles/2018-02-06/what-sweden-can-teach-the-world-about-worker-retraining> (discussing how the average age of individuals needing retraining due to displacement from automation is in the mid-30s and is steadily declining).

¹²⁷ See *supra* note 102.

¹²⁸ The Robotics Industries Association defines a robot as “a programmable, mechanical device used in place of a person to perform dangers or repetitive tasks with a high degree of accuracy. *Defining the Industrial Robot Industry and All it Entails*, ROBOTICS INDUS. ASS'N (last visited Mar. 20, 2019), <https://www.robotics.org/robotics/industrial-robot-industry-and-all-it-entails>.

automating instantaneously by making it cost effective to keep human labor.¹²⁹

Unfortunately, this policy comes with its own downside. A tax on automation has the potential to drive firms to international competitors who have not yet implemented a tax regime on automation. However, as countries understand the realities of automation, a robot tax will become the international norm.¹³⁰ At that point companies will settle in the country which is most beneficial to them, making the amount taxed per robot a key statistic.¹³¹

c. Progressive Corporate Brackets

Overregulating the free market via taxes can stifle innovation and cripple job creation making tax incentives a viable way to encourage companies to create and pay for retraining and insurance programs. Coupling tax incentives with a progressive corporate tax bracket would sufficiently encourage firms to create their own programs while simultaneously increasing revenue for the federal government. Constructing a progressive corporate tax regime, while keeping the current base tax rate of twenty one

¹²⁹ *Id.*

¹³⁰ Countries who do not wish to lose a significant portion of revenue will need to implement some form of automation tax to stay solvent, if a county decides not to it will become incapable of funding governmental programs. *Id.*

¹³¹ Countries compete for companies' tax revenue through competitive corporate tax rates and tax benefits, companies pick and choose which country to locate a large manufacturing base after evaluating which country is the most financially beneficial. *See generally* Mihir A. Desai et. al., *Do Tax Havens Divert Economic Activity*, 90 *ECON. LETTERS* 219 (2005) (noting that the tax burden on corporate income has barely fallen over the past 25 years despite incentives to compete for business investment through corporate tax rates).

percent, would enable the federal government to generate revenue based on the size of the company and the likelihood of firmwide automation.¹³² Taxing mid cap¹³³ companies at twenty three percent and large cap companies¹³⁴ at twenty five percent will create new revenues enabling the federal government to create new worker programs without unfairly hurting small companies¹³⁵ who cannot bear the burden of taxation or are unlikely to automate.

Ideally, firms would participate in the creation and oversight of insurance and retraining programs to lessen the burden on the federal government and make the programs more meaningful. To encourage participation, companies that choose to fund workers' health insurance for not less than a year and create their own worker retraining program will receive tax benefits. Companies who operate their own programs should be allowed to deduct expenses incurred from the programs from their corporate tax rate until those expenses enable the company to pay below the base tax rate of twenty one percent.

CONCLUSION

The United States' response to automation over the next ten years will be crucial in determining its strength, both at home and abroad. America tends to do what is necessary to

¹³² Dan Caplinger, *How do the New US Corporate Tax Rates Compare Globally? A Foolish Take*, USA TODAY (July 10, 2018), <https://www.usatoday.com/story/money/taxes/2018/07/10/how-new-us-corporate-tax-rates-compare-globally/36561275/>.

¹³³ Mid Cap Companies are companies valued from \$2 billion to \$10 billion. Mid-Cap, INVESTOPEDIA, <https://www.investopedia.com/terms/m/midcapstock.asp>.

¹³⁴ Large Cap Companies are companies valued over \$10 billion. Large-Cap, INVESTOPEDIA, <https://www.investopedia.com/terms/l/large-cap.asp>.

¹³⁵ This regime could keep the corporate tax rate for small cap companies at 21%, mid cap companies at 23%, and large cap companies at 25%.

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stay competitive in the global economy, but the challenge of molding the American workforce for the demands of an ever-changing economy is a job that will never truly be finished. The *Fourth Industrial Revolution* has the potential to cause societal upheaval and the potential for great societal advancement, neither of which are mutually exclusive. By proactively confronting the challenges technology poses to the American workplace and worker, the United States will be poised to navigate the pitfalls posed by automation while stoking progress for society.