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Taxing Artificial Intelligence: Whether and How the Tax System Should Respond

Introduction

This policy memo explores one set of potential government responses to a major challenge facing United States economic policy: the rising prevalence of artificial intelligence (AI) and other automation technologies. When societal dislocations, particularly economic ones, happen, governments can use tax policy as a lever to smooth transitions and reduce harms.[1] Much has been written about potential "robot taxes," taxes on physical automation that have been proposed or considered by multiple entities in the last decade.[2] With increasing concerns about artificial intelligence following OpenAI's launch of ChatGPT in November 2022,[3] similar questions have arisen as to whether the tax system needs to respond to automation more broadly, especially new trends related to AI.[4] This memo argues that the US government should reduce the impact of depreciation and increase capital tax rates in order to remove existing incentives to overinvest in automating jobs where human labor is at a comparative advantage. Rather than implementing tax measures that specifically target AI, we should instead focus on broader changes to resolve inefficient tax policies that impact all industries and are felt acutely in over automation. Although enacting structural tax changes may be challenging under current political circumstances, leaps in artificial intelligence and corresponding economic disruption could provide an opening to adopt significant broader tax improvements.

[1] *See, e.g., Tax policies for inclusive growth in a changing world*, OECD, July 2018, https://www.oecd.org/g20/Tax-policies-for-inclusive-growth-in-a-changing-world-OECD.pdf.
[2] *See* discussion of the EU's proposed "robot tax" *infra* ___.
[3] *Introducing ChatGPT*, OpenAI, Nov. 30, 2022, https://openai.com/blog/chatgpt.
[4] This question is relatively closely related to similar tax questions about physical automation (i.e. robots) and draws on that literature throughout.

Goals

Before considering whether a particular tax proposal can be effective in addressing changes due to automation and artificial intelligence, we need to first identify potential goals for such proposals and decide whether any of these goals are meritorious. I argue that the primary goal of any tax response to increasing automation should be aligning incentives to minimize distortion away from socially optimal levels of investment, those that maximize whatever the political system determines to be society's objectives.[5] I also consider several other, more policy-specific goals but argue that these are either components of a broader incentives goal or otherwise less useful for evaluating policy responses.

Aligning tax incentives to encourage socially beneficial behavior is a broader goal that applies beyond the automation and AI space, and it provides a rigorous framework that we can use to evaluate various automation-related tax policy proposals. This framework is particularly relevant given the tradeoffs and investment decisions made in the automation space between capital and labor, which might be distorted by inefficient incentive systems. There seems to be general agreement among economists that the current tax system places distorting incentives on investment in the capital and labor markets, heavily favoring capital investment.[6] Acemoglu, Manera, and Restrepo find that the US Tax Code significantly favors automation today through lower-than-efficient effective tax rates on capital investment and higher-than-efficient taxes on

[5] Throughout this paper, I assume that these objectives are designated and fulfilled through regulatory policy and markets, and that the goal of the tax system is to raise revenue in a way that does not create hidden distortions away from explicitly stated regulatory policies.

[6] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233-234 (2020); Robert Seamans, *Tax not the robots*, BROOKINGS INST., Aug. 25, 2021, https://www.brookings.edu/articles/tax-not-the-robots/.

labor.[7] They argue that over time, this has led to "excessive automation" and even to socially inefficient innovation that has been too concentrated in capital-benefiting rather than labor-benefiting technologies.[8] These problems may become even more acute as the current wave of AI automation continues, with overinvestment, excessive automation, and inefficient technological development potentially compounded as new technologies make automation cheaper and more accessible. For purposes of this paper, I adopt the position that reducing incentives to overinvest in capital to the detriment of labor should be our primary goal. Moving to a more optimal tax system could have major economic benefits, in addition to fulfilling the goal of reducing incentive distortion.[9]

However, no consensus exists about the exact parameters of this distortion or how to correct it.[10] In addition to top-level effective tax rates on capital and labor, specific provisions of the tax code also create incentives that may be problematic when reexamined in the light of AI. For example, depreciation and other investment deductions might be reevaluated in some cases as over incentivizing the use of capital.[11] Although identifying the need to address problems in

[7] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 234 (2020).
[8] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231 (2020) ("The labor share in non-farm private businesses declined from 63% in 1980 to 56% in 2017, while median real wages grew only by 16% (as compared to GDP per capita which doubled during the same period) and the real wages of male workers with a high school diploma fell by 6% between 1980 and 2017. In the meantime, production processes have become increasingly automated, as computerized numerical control machines, industrial robotics, specialized software and lately artificial intelligence technologies have spread rapidly throughout the economy."); *id.* at 235 ("We consider endogenous development of automation technologies, which come at the expense of other types of innovations that are more beneficial for labor.")
[9] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 234 (2020) ("Moving from the current tax system to optimal taxes would reduce the range of automated tasks by 4.1% and increase employment by 4.02% and the labor share by 0.78 percentage points.")
[10] *See, e.g.*, Robert Seamans, *Tax not the robots*, BROOKINGS INST., Aug. 25, 2021, https://www.brookings.edu/articles/tax-not-the-robots/. (comparing Acemoglu, Manera, & Restrepo proposal to set tax rates based on inverse elasticities with Mazur's flat tax across both capital and labor and non-tax proposals such as better job opening matching and reduced enforcement of non-competes).
[11] Depreciation and other deductions have a large and sometimes dominant effect on effective tax rates on capital. *See* Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233-234 (2020) (discussing the impact of the 2017 TCJA on

incentive structures is not an answer in itself, socially optimal incentive structures provide a helpful orienting principle as we attempt to determine whether the tax system needs to adjust to the challenges created by AI. By focusing on reducing inefficiencies from taxation, we can more effectively make tradeoffs between "apples and oranges" policy priorities like employment, innovation, and revenue.

As alternatives to our primary goal of reducing incentive distortions, I identified four potential policy-oriented goals that we might pursue through an automation-motivated change in the tax system and that are sometimes referenced in policy discussions:

Goal 1 (Luddite): Reduce or slow automation.

Goal 2 (Employment): Prevent or slow job losses.

Goal 3 (Revenue): Prevent or reduce declines in tax revenue.

Goal 4 (Acceleration): Build a strong automation technologies industry by accelerating the industry's growth.

Although pursuing Goal 1 may seem somewhat absurd on its face, a reaction to AI like that of the Luddites to automated machinery in the 19th century textile industry is not outside of the realm of the possible. As Kyle Chayka notes in his piece on Luddites and AI, AI "threatens new categories of jobs" and raises similar quality issues to those raised by machine-made stockings in the Luddite era.[12] If certain experts are to be believed, the uncertainty and risks around AI are even

reducing effective tax rates on capital); Vikram Chand, Svetislav Kostić, & Ariene Reis, *Taxing Artificial Intelligence and Robots: Critical Assessment of Potential Policy Solutions and Recommendation for Alternative Approaches*, Nov. 2020 WORLD TAX J. 711, 731 (2020).

[12] *See* Kyle Chayka, *Rethinking the Luddites in the Age of A.I.*, THE NEW YORKER, Sept. 26, 2023, https://www.newyorker.com/books/page-turner/rethinking-the-luddites-in-the-age-of-ai.

greater than 19th century mechanization, with some AI industry leaders signing a statement in 2023 arguing that AI poses a "risk of extinction" for humans and "should be a global priority alongside other societal-scale risks, such as pandemics and nuclear war."[13] Given these uncertainties and concerns, we might think it reasonable to simply say, "enough," and try to slow or stop development of artificial intelligence in specific areas.[14] This debate is not one-sided, and there is no single right answer as to the risks of AI, leaving whether to select Goal 1 as a policy goal open for dispute.[15] However, I argue that even a government that believes Goal 1 is a worthwhile policy goal with respect to AI would likely not see tax policy as the right tool for achieving this goal. Although a tax impacting AI would likely slow the development of AI technologies, direct regulation would likely be more effective at addressing Luddite priorities like existential risk, abuse, quality, or use of specific technologies.

Goal 2 reflects a real government interest that may be raised by AI. Should AI allow businesses to substitute computer programs for human workers in a range of jobs (something that is already happening),[16] democratic governments will have an interest in responding to their constituents who have lost wages or employment because of new automation. Indeed, this pressure already exists in its early stages. From 2016-2017, the European Union (EU) considered enacting a "robot tax" in response to concerns about the substitution of robots for human employees.[17]

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[13] Kevin Roose, *A.I. Poses 'Risk of Extinction,' Industry Leaders Warn*, THE NEW YORK TIMES, May 30, 2023, https://www.nytimes.com/2023/05/30/technology/ai-threat-warning.html.

[14] Some experts have suggested doing so. *See Pause Giant AI Experiments: An Open Letter*, FUTURE OF LIFE INSTITUTE, Mar. 22, 2023, https://futureoflife.org/open-letter/pause-giant-ai-experiments/.

[15] *See, e.g.*, Zoe Kleinman & Chris Vallance, *AI 'godfather' Geoffrey Hinton warns of dangers as he quits Google*, BBC NEWS, May 2, 2023, https://www.bbc.com/news/world-us-canada-65452940 (arguing that AI will do more good than harm in the short term if developed responsibly).

[16] *See* Chayka, *supra note* ____. The exact degree to which this is likely to happen is uncertain. *See Impact of automation on the number of jobs*, EUR. COMM., July 23, 2019, https://knowledge4policy.ec.europa.eu/visualisation/impact-automation-number-jobs_en. *See also infra note* _____ (giving estimates of the share of hours and jobs that are at risk of automation by AI).

[17] Robert J. Kovacev, *A Taxing Dilemma: Robot Taxes and the Challenges of Effective Taxation of AI, Automation and Robotics in the Fourth Industrial Revolution*, 9(2) CONTEMPORARY TAX J. 23, 31 (2020) (citing European Civil

Although employment is an issue with high political salience, and thus protecting against job losses may be a political goal, it is not clear whether slowing the development of AI will help in achieving this goal. Analysts note that the impact of AI on the labor market is as yet highly uncertain,[18] and that the history of automation technologies suggests that increases in automation may actually lead to increases in labor demand and thus employment and wages.[19] As a result, the economic merits of assessing AI tax proposals based on an employment goal are mixed and uncertain, but the clear political merits of considering employment and the effects that taxes can have on it make Goal 2 worth considering as a component of broader incentive structures.

Finding new ways to raise revenue (Goal 3) is likely to be both economically and politically necessary if AI leads to a significant shift in productivity. Such concerns are commonly mentioned both by commentators and politicians in proposing new taxes on automation.[20] Any declines in labor market demand impacting employment and wages would reduce government revenue given the United States' reliance on payroll and non-capital income taxes to generate a dominant share

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Law Rules in Robotics: Study of the Legal Affairs Committee, PARL. EUR. DOC. PE 571.379, 8 (2016), https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf).

[18] *See, e.g.*, James Broughel, *Beware The Coming Artificial Intelligence Tax*, FORBES, Jan. 16, 2024, https://www.forbes.com/sites/jamesbroughel/2024/01/16/beware-the-coming-artificial-intelligence-tax/ ("projections of massive job losses stemming from AI are highly speculative").

[19] *See* Daron Acemoglu & Pascual Restrepo, *Automation and New Tasks: How Technology Displaces and Reinstates Labor*, 33(2) J. ECON. PERSPECTIVES 3, 4 (2019) ("The history of technology is not only about the displacement of human labor by automation technologies. If it were, we would be confined to a shrinking set of old tasks and jobs, with a steadily declining labor share in national income. Instead, the displacement effect of automation has been counterbalanced by technologies that create new tasks in which labor has a comparative advantage."); Robert Seamans, *Tax not the robots*, BROOKINGS INST., Aug. 25, 2021, https://www.brookings.edu/articles/tax-not-the-robots/ ("Over the past couple of years there have been several firm-level studies on the effects of robot adoption in industrial settings. These papers all find that firms that adopt robots see an increase in employment."). *See also id.* (suggesting that potentially firms and countries leading in automation technology might be increasing employment at the expense of others, creating a tragedy of the commons-type competition where technological leadership or cooperation is required to maintain employment).

[20] *See, e.g., supra note* _____ (EU "robot tax" proposal was in part meant to address risks of revenue declines); Sami Ahmed, *Cryptocurrency & Robots: How to Tax and Pay Tax on Them*, 69 S.C. L. REV. 697, 710 (2018) ("If artificial intelligence is not correctly taxed, a severe problem might exist, which is that the traditional tax base of workers may either make less money or may shrink to the point that less total taxes are collected. In order for the government to balance itself and appropriately incentivize corporations to use robotic labor over human labor, it must carefully develop standards for taxing artificial intelligence.").

of government revenue.[21] More broadly, any decline in labor productivity caused by a shift from labor to capital would likely lead to a significant decline in government revenues based on the much lower effective tax rates on capital rather than labor (5% versus 25.5-33.5%).[22] As in the employment case, uncertainty about the effects of AI on labor markets and productivity militate caution when considering whether to set a goal of raising revenue. Should AI developments increase the relative value of labor by creating new tasks with a labor comparative advantage as suggested by Acemoglu and Restrepo,[23] raising AI-related taxes and thereby lowering investment in AI technologies might hurt total revenue. Given the uncertainty of the effects of AI on the structure of the economy and potential sources of tax revenue, it may not make sense to try to predict the future with our tax system, but rather to defer any changes motivated by revenue considerations until this uncertainty begins to clear.

Much has been made of the potential strategic importance from an economic and national security perspective of being at the forefront of innovation in artificial intelligence (Goal 4).[24] AI

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[21] As of 2019, "35.9% of US federal revenue was derived from payroll taxes," which would be at risk if wages were to decline if labor demand reduced. Vikram Chand, Svetislav Kostić, & Ariene Reis, *Taxing Artificial Intelligence and Robots: Critical Assessment of Potential Policy Solutions and Recommendation for Alternative Approaches*, Nov. 2020 WORLD TAX J. 711, 718 (2020). Additional income is derived from labor via individual non-capital income taxes. *C.f. id.* (51.7% of EU revenues in 2018 came from taxing wages).

[22] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233-234 (2020) ("We find that labor is much more heavily taxed than capital, and this difference has increased in recent years. Effective labor taxes in the US are in the range of 25.5–33.5%. Effective capital taxes on software and equipment, on the other hand, are much lower, 10% in the 2010s and 5% after the 2017 tax reforms, though they used to be about 20% in 2000.").

[23] *See supra note* _____.

[24] *See, e.g.*, Barry Pavel, Ivana Ke, Michael Spirtas, James Ryseff, Lea Sabbag, Gregory Smith, Keller Scholl, & Domenique Lumpkin, *AI and Geopolitics: How Might AI Affect the Rise and Fall of Nations?*, RAND CORPORATION, Nov. 3, 2023, https://www.rand.org/pubs/perspectives/PEA3034-1.html ("Nations across the globe could see their power rise or fall depending on how they harness and manage the development of artificial intelligence… U.S. superiority in AI is largely the result of its superiority in innovation. To maintain this lead, the U.S. government should continue to support innovation by funding national AI resources."). Jared Cohen & George Lee, *The generative world order: AI, geopolitics, and power*, GOLDMAN SACHS, Dec. 14, 2023, https://www.goldmansachs.com/intelligence/pages/the-generative-world-order-ai-geopolitics-and-power.html ("The US is the world's preeminent AI power, thanks to its world-leading universities and companies… Washington is concerned with keeping its advantages and accelerating the pace of domestic AI innovation. American industry leaders warn of the potential perils if the US were to 'slow down American industry in such a way that China or somebody else makes faster progress.'").

will unlock new types of weapons and tactics for the military,[25] and leading countries in the space will reap significant economic benefits from broad-based productivity increases and competitive advantage in international production and trade.[26] The United States has already taken steps to invest in Goal 4 with the passage of the 2022 CHIPS Act, which put substantial government resources towards enabling greater US participation in the hardware portion of the AI supply chain.[27] Although building a world-leading AI industry is not determined solely by a nation's tax regime, tax rules might encourage or restrict the United States' ability to maintain its technological leadership.[28] However, like its opposite Goal 1, Goal 4 may be best achieved through other policy tools like direct investment in AI through grants or contracts or changes to regulations impacting the sector rather than tax responses.

How should we choose amongst these five potentially viable goals? I advocate choosing one primary goal and then potentially considering others as guardrails. As one essay on choosing goals notes: "The more metric goals you have, the more complicated it is to weigh them all and make trade-offs against them. Keep it simple."[29] I would suggest that our overarching goal should be ensuring that incentives distort behavior away from the socially optimal as little as possible in

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[25] *See, e.g.*, Daniel M. Gerstein & Erin N. Leidy, *Emerging Technology and Risk Analysis: Unmanned Aerial Systems Intelligent Swarm Technology*, RAND CORPORATION (2024), https://www.rand.org/pubs/research_reports/RRA2380-1.html (discussing "intelligent swarm" technologies involving attacks by networked drones controlled by AI).

[26] *See* Jacques Bughin, Jeongmin Seong, James Manyika, Michael Chui, & Raoul Joshi, *Notes from the AI frontier: Modeling the impact of AI on the world economy*, MCKINSEY & CO. (2018), https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-AI-frontier-modeling-the-impact-of-ai-on-the-world-economy.

[27] CONGRESSIONAL RESEARCH SERVICE, FREQUENTLY ASKED QUESTIONS: CHIPS ACT OF 2022 PROVISIONS AND IMPLEMENTATION 2-3 (2023) ("Some Members of Congress and other U.S. policymakers have expressed concerns about the economic and military implications of a loss of leadership of U.S. firms in the semiconductor sector… U.S. national defense systems are highly reliant on semiconductors—including state-of-the-art chips used in leading edge applications such as… artificial intelligence based systems").

[28] Tax changes cannot be considered in a vacuum as increases in taxes may lead to an international competition to lure AI innovation, potentially boosting strategic rivals. *See* XAVIER OBERSON, TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL INTELLIGENCE 31 (2019).

[29] *Defining Product Success: Metrics and Goals*, SEQUOIA CAPITAL, https://articles.sequoiacap.com/defining-product-success-metrics-and-goals. *See also id.* (suggesting to "Consider counter-metrics if needed" in addition to one main goal if single-minded pursuit of the main goal is likely to lead to adverse outcomes).

the context of AI and automation. Goals 1 and 4 (Luddite and Acceleration) are potentially better suited to other types of policy tools (direct regulation restricting some types of AI development, regulatory incentives or direct payments promoting innovation), but might be affected by tax changes, and we would want to avoid creating new harms through any changes. As a result, we can treat Goals 1 and 4 as potential outer boundaries for acceptable policies, but neither should be the primary objective of tax changes. Goal 2 (Employment) can be seen as a more politically salient but less economically nuanced version of optimizing incentive structures, focusing on short-run employment impacts rather than overall social welfare (which might be enlarged and redistributed to greater societal gain even in the presence of wage losses).[30] Goal 3 (Revenue), while important generally, is not specific to automation taxes. To address Goal 3, we should choose a method of raising revenue that creates reasonable incentive structures and a desired overall revenue target and set tax rates accordingly. If tax rates must be higher to raise the desired revenue target in the presence of AI, that calls for a system-wide adjustment rather than a tax specifically on AI, which would only serve to distort incentives. Successfully addressing incentive structures ensures that the preferred style of raising revenue adequately addresses economic and social changes created by AI, making addressing Goal 3 a straightforward question of selecting the appropriate numerical tax rates. Having established the benefits of pursuing a primary goal of minimizing distortion of incentive structures, the remainder of this paper focuses on the incentive structures created by current taxes and potential tax responses to artificial intelligence, with some checks against other objectives to ensure we are not obviously failing on other dimensions.

[30] We also might believe that pursuit of an employment maximization goal is impractical given significant uncertainties and disagreements among experts regarding the impact of automation on employment. *See supra note* _____.

Proposed Tax Responses to AI

Commentators and governments have called for a variety of changes to the tax system in response to vast improvements in robotics and artificial intelligence and associated automation for many types of jobs.[31] In general, these proposed taxes come in three flavors: (1) a direct excise tax on the automation itself, (2) an indirect excise tax on some input required for automation, and (3) broader reforms to the way the tax system handles capital and labor taxation. The remainder of this memo addresses each type of tax proposal in turn through the lens of our goal of minimizing incentive distortion, as well as the ability to effectively define and administer a particular tax, concluding that taxes specific to automation would be problematic and that broader reforms to the tax system are the only responses worth serious consideration. In all cases, the potential upheaval that a major tax change might cause should be weighed against making changes that are suboptimal.

Direct Tax on Automation

Many early proposals for taxing automation have taken the form of direct taxes on the means of automation, such as the European Union's proposed "robot tax" in the mid-2010s.[32]

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[31] *See* Ben Ryder Howe, *The Robots We Were Afraid of Are Already Here*, THE NEW YORK TIMES, July 29, 2023, https://www.nytimes.com/2023/07/29/business/robots-workers-future.html; David Rotman, *ChatGPT is about to revolutionize the economy. We need to decide what that looks like.*, MIT TECHNOLOGY REVIEW, Mar. 25, 2023, https://www.technologyreview.com/2023/03/25/1070275/chatgpt-revolutionize-economy-decide-what-looks-like/. *See, e.g.*, Robert J. Kovacev, *A Taxing Dilemma: Robot Taxes and the Challenges of Effective Taxation of AI, Automation and Robotics in the Fourth Industrial Revolution*, 9(2) CONTEMPORARY TAX J. 23, 27 at fn. 25 (2020) (citing Report with Recommendations to the Commission on Civil Law Rules on Robotics, PARL. EUR. DOC. A8-0005/2017 (2017), http://www.europarl.europa.eu/doceo/document/A-8-2017-0005_EN.pdf); *id*. at 28-29 (discussing debate around EU proposal); *The robot that takes your job should pay taxes, says Bill Gates*, QUARTZ, Feb. 17, 2017, https://qz.com/911968/bill-gates-the-robot-that-takes-your-job-should-pay-taxes.

[32] *See supra note* _____.

Although superficially enticing as a way of encouraging investment in human labor and replacing lost payroll and income tax revenues,[33] attempting to directly tax automation is inefficient and ineffective because of challenges distinguishing tax-worthy automation from broader technological productivity gains and administrative challenges in quantifying automation.

Defining the boundary of taxable automation without also including many positive productivity gains from technology that society relies on is nearly impossible.[34] This is because, at its core, today's automation, including AI, is the next part of a long history of technological improvements that make it possible to substitute capital for labor in the productive process or reduce the amount of labor required to reach a similar level of productivity. Without being able to cordon off a specific subset of "bad" automation, an automation tax would simply be a tax on productivity writ large. The historical example of Luddite reaction to now-commonplace (and crucial) technologies serves not only to inform a potential policy goal but also as a cautionary tale in trying to distinguish innovations based on their novelty rather than on some more meaningful metric. Past technological advances like tractors (which automate farm work that would have originally required the labor of many) to accounting spreadsheets (which reduce the number of human accountants required to manage an enterprise) might be caught up in an over-broad automation definition and raise the foundational problem of distinguishing today's automation from past improvements.[35]

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[33] *See* Robert Seamans, *Tax not the robots*, BROOKINGS INST., Aug. 25, 2021, https://www.brookings.edu/articles/tax-not-the-robots/ ("The basic idea behind a robot tax is that firms pay a tax when they replace a human worker with a robot. Such a tax would in theory have two main purposes. First, it would disincentivize firms from replacing workers with robots, thereby maintaining human employment. Second, if the replacement were made anyway, a robot tax would generate revenues for the government that would cover the loss of revenue from payroll taxes.").

[34] *See* Robert J. Kovacev, *A Taxing Dilemma: Robot Taxes and the Challenges of Effective Taxation of AI, Automation and Robotics in the Fourth Industrial Revolution*, 9(2) CONTEMPORARY TAX J. 23, 30-33 (2020) (identifying defining robots as the fundamental problem faced by robot tax proponents).

[35] This is the practical effect of one highly problematic set of proposals for an automation tax, which would punish companies for hiring more productive workers or using efficient new technologies. *See* Xavier Oberson, *How taxing*

Targeted definitions of automation are nearly impossible to craft in a way that they are useful. As part of its robot tax studies, the European Union found that "defining robots is no easy task in the absence of any real consensus within the global scientific community."[36] Even the development of a consensus would not fix the line drawing problem. Using the EU's draft definition for robots,[37] we might find a robot tax to be both overinclusive (covering autonomous vehicles for private use that are not displacing paid labor) and underinclusive (excluding "dumb" technologies that might significantly displace human workers as we have seen in the logistics industry) of automation technologies that are replacing human labor. Definitions of other types of automation suffer many of the same problems the EU faced when defining "robots." As with any highly complex definitional issue, an automation definition also would be at high risk of being targeted for interest-group-specific carveouts or being overtaken by continued improvements in automation technology, weakening its effectiveness.

Even if one can define the exact type of activities or technologies that are meant to be targeted by an automation tax, administering such a tax remains impractical. The primary issue is how to determine the relevant tax base for a tax targeting automation. Bill Gates's early support of a "robot tax" in 2017 was light on specifics,[38] as was the proposed "robot tax" that was under

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robots could help bridge future revenue gaps, OECD, 2017, https://www.oecd.org/employment/how-taxing-robots-could-help-bridge-future-revenue-gaps.htm ("[S]ome scholars have advocated an 'automation tax'… based on the ratio of a company's revenues (total sales) to their numbers of employees. The higher the ratio of robots to sales, the higher the tax.").

[36] Robert J. Kovacev, *A Taxing Dilemma: Robot Taxes and the Challenges of Effective Taxation of AI, Automation and Robotics in the Fourth Industrial Revolution*, 9(2) CONTEMPORARY TAX J. 23, 31 (2020) (citing European Civil Law Rules in Robotics: Study of the Legal Affairs Committee, PARL. EUR. DOC. PE 571.379, 8 (2016), https://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_STU(2016)571379_EN.pdf).

[37] *Id.* (defining a "smart autonomous robot" as one that "acquires autonomy through sensors and/or by exchanging data with its environment (inter-connectivity) and trades and analyses data; is self-learning (optional criterion); has a physical support; [and] adapts its behaviours and actions to its environment.").

[38] *The robot that takes your job should pay taxes, says Bill Gates*, QUARTZ, Feb. 17, 2017, https://qz.com/911968/bill-gates-the-robot-that-takes-your-job-should-pay-taxes ("There are many ways to take that extra productivity and generate more taxes. Exactly how you'd do it, measure it, you know, it's interesting for people to start talking about now. Some of it can come on the profits that are generated by the labor-saving efficiency there. Some of it can come directly in some type of robot tax."). I do not want to view this off-the-cuff set

consideration by the European Union around the same time.[39] The wide variety of automation technologies defy any simple method of taxation because they contribute wildly different levels and types of productive value,[40] and it is impossible to count them directly in a manner that is not subject to abuse.[41] The best proposal for solving the direct automation tax base issue seems to be one where robots (or other elements of automation) earn actual or imputed income, which is then subject to tax.[42] However, generating the actual or imputed income attributable to robots would be an administrative nightmare and highly vulnerable to manipulation, as unlike in the case of human wages, automation technologies do not negotiate or receive payments on their own behalf.[43] Accounting for implicit automation payments would be complex, although might be somewhat easier in a value-added tax (VAT) system where some types of automation-related expenses might receive reduced credits against a VAT.[44] However, in the United States, we generally do not apply taxes based on a factor's value add but rather based on its cost, and the complexity of the additional recordkeeping and administrative challenges of a direct robot tax make such a tax impractical, even independent of other problems.[45]

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of remarks as a strawman argument about administrability challenges. As I discuss in this paragraph and section, I believe Gates's answer is vague not only because he has not thought through the issue in detail but because coming to a clear answer to automation tax administrability questions is difficult or impossible.

[39] *See supra note* _____.

[40] For example, a customer service chatbot and a mechanical robot working on an automobile assembly line.

[41] In the same way that it is impossible to determine a simple definition of what is a robot and what is not, it is nearly impossible to determine where one robot ends and another begins (and even if possible, businesses may be able to react in response by changing their use of technologies in the productive process). *See World Robotics Federation IFR: Why Bill Gates' robot tax is wrong*, INTERNATIONAL FEDERATION OF ROBOTICS, Feb. 27, 2017, https://ifr.org/ifr-press-releases/news/world-robotics-federation-ifr-why-bill-gates-robot-tax-is-wrong ("To tax production tools instead of their profits would have a negative impact on competitiveness and employment.").

[42] *See* XAVIER OBERSON, TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL INTELLIGENCE 33 (2019).

[43] XAVIER OBERSON, TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL INTELLIGENCE 33 (2019).

[44] While relatively easier, this would remain incredibly challenging to implement.

[45] Compare with income or payroll taxes which are applied to the cost of labor rather than to labor's (generally higher) value add. Corporate income taxes tax corporate profits which might be seen as a form of value add.

Although we can therefore reject the idea of a direct tax on automation even without reference to our main goal, it is worth briefly noting that direct automation taxes also risk creating major incentive distortions, thus frustrating our primary goal as well. Because creating a meaningful automation definition is challenging, technologies subject to the automation tax would see investment and use discouraged, while technologies outside the tax would be relatively boosted. A direct tax on automation would also potentially distort marginal investment decisions on similar technologies and industries that fall just inside or outside of the definition.[46] Combined, these effects could cause significant deviations from socially beneficial behavior depending on the size of the tax and the nature of the automation definition, potentially harming entire industries.[47] If it were possible to create a coherent automation definition and an administrable tax, a direct tax on automation might provide a way of mitigating (though not entirely solving) incentive problems elsewhere in the system creating over automation. However, I do not believe such a defined administrable tax to be possible and do not like the imprecision and inefficiency within the tax system created by two counterbalancing tax principles: low capital tax rates leading to over automation and high automation tax rates reducing this over automation. Instead, we should think about the tax system holistically and attempt to identify tax policies that work together to maintain efficient levels of automation.[48]

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[46] *See* XAVIER OBERSON, TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL INTELLIGENCE 27 (2019) ("Taxing robots… would thus create distortions and… there is no reason to give a preference to other kinds of capital assets."); [46] Robert Seamans, *Tax not the robots*, BROOKINGS INST., Aug. 25, 2021, https://www.brookings.edu/articles/tax-not-the-robots/ ("This example points to a big danger with a robot tax: depending on how a 'robot' is defined, it may create disproportionate burdens on some industries and not others.").

[47] *See supra note* _____ (discussing distortion from definitions).

[48] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233 (2020) ("[I]f a tax system is biased against labor and in favor of capital [as Acemoglu et al. find]—i.e., taxes on labor are too high and taxes on capital are too low—then reducing automation at the margin improves welfare. We show that this reduction can be achieved with an automation tax, which is an additional tax on the use of capital in tasks where labor has a comparative advantage. An automation tax is beneficial because reducing automation below its equilibrium level has second-order costs and first-order benefits."); XAVIER OBERSON, TAXING ROBOTS: HELPING THE ECONOMY TO ADAPT TO THE USE OF ARTIFICIAL

Taxes on Inputs

A second potential policy approach for addressing AI dislocations is to tax input goods that are heavily used in AI production.[49] Such taxes would have particular political appeal if applied to specific uses of resources that are used both by automation industries and the general public, such as water and electricity, as proponents could argue that they are protecting consumers from business overconsumption.[50] So far, these taxes do not appear to have had much public consideration, and writing on them has been largely limited to fearmongering by the anti-tax right.[51] As potentially effective means to address externalities, there are several reasons to consider direct taxes on inputs as a potential response to the automation boom, and to think it likely that governments might consider them as well.

One reason governments might consider them is that automation input taxes have a close cousin in current public discourse: cryptocurrency electricity taxes. Cryptocurrency has faced similar criticisms to AI for its heavy usage of computing power (and through that, electricity). The Biden Administration proposed a 30 percent tax on electricity used by cryptocurrency "miners"

INTELLIGENCE 28-29 (2019) (discussing whether direct taxation would be distortionary or correct for remove distortion from a lack of taxes on wages of robots).

[49] "Production" is complicated to think about in the case of intangible software such as AI but here I mean anything that is used to train or run models including semiconductor hardware, electricity, water, land, labor, etc.

[50] *See, e.g.*, William McCurdy, *How AI tools like ChatGPT are causing water usage to skyrocket*, THE STANDARD, Sept. 13, 2023, https://www.standard.co.uk/news/tech/ai-chatgpt-water-power-usage-b1106592.html ("[A] scientist told AP News he estimates that GPT uses around 500 millilitres of water whenever you ask it between five to 50 questions."); Delger Erdenesanaa, *A.I. Could Soon Need as Much Electricity as an Entire Country*, THE NEW YORK TIMES, Oct. 10, 2023, https://www.nytimes.com/2023/10/10/climate/ai-could-soon-need-as-much-electricity-as-an-entire-country.html ("[B]y 2027 A.I. servers could use between 85 to 134 terawatt hours (Twh) annually. That's similar to what Argentina, the Netherlands and Sweden each use in a year, and is about 0.5 percent of the world's current electricity use.").

[51] *See* James Broughel, *Artificial Intelligence Electricity Use Is In The Crosshairs*, FORBES, Jan. 10, 2024, https://www.forbes.com/sites/jamesbroughel/2024/01/10/artificial-intelligence-electricity-use-is-in-the-crosshairs/; Ari Patinkin, James Broughel, & John Berlau, *Don't Depower Crypto*, COMPETITIVE ENTERPRISE INST., Jan. 9, 2024, https://cei.org/studies/dont-depower-crypto/.

(electricity used to power computers used in the cryptocurrency process) as part of its 2024 budget plan.[52] In the crypto case, the proposed tax was justified based on environmental concerns rather than one of our listed goals above. Similar environmental concerns are also relevant in the AI space.

In the crypto-electricity tax's favor is that it would be relatively easy to administer: firms spending large amounts on electricity are easy to identify, and the government could force those firms to disclose whether they are using the electricity to mine cryptocurrency. Some of these benefits translate to the automation space. Input usage is relatively easy for the government to identify and could be a hook to allow the government to latch on to tax certain types of automation. However, a basic input tax would not entirely solve the definitional problem highlighted above,[53] as it would only be applied to consumption of the input put towards a specific goal, the definition of which would present the same issues.[54] Additionally, taxing an input such as electricity would distort incentives among different types of automation technologies and firms by penalizing those technologies and firms that use the taxed input more. For example, a tax on electricity or water might penalize technologies like AI that use large datacenters and computing power, but leave relatively untouched other automation technologies like robotics.

Depending on the goal of the input tax, this distortion may be good or bad. If we are to take our primary goal (incentive structures that create socially optimal behavior), an input tax would

[52] *See The DAME Tax: Making Cryptominers Pay for Costs They Impose on Others*, THE WHITE HOUSE, May 2, 2023, https://www.whitehouse.gov/cea/written-materials/2023/05/02/cost-of-cryptomining-dame-tax/; Kelly Phillips Erb, *White House Proposes 30% Energy Tax To Address Environmental Crypto Mining Costs*, FORBES, May 4, 2023, https://www.forbes.com/sites/kellyphillipserb/2023/05/04/white-house-proposes-30-energy-tax-to-address-environmental-crypto-mining-costs/. *See also* Anna Gronewald, *Hochul signs partial cryptocurrency mining ban into New York law*, POLITICO, Nov. 22, 2022, https://www.politico.com/news/2022/11/22/cryptocurrency-mining-ban-new-york-00070613 (state-level ban on cryptocurrency mining for similar reasons).

[53] *See supra* ____, discussing challenges defining "automation for the purposes of taxation.

[54] Relatively easy in the case of cryptocurrency because of clear markers and crypto-specific businesses but potentially harder in the case of AI where businesses include both AI and non-AI components and distinguishing AI from other computing tasks is similarly definitionally challenging.

make sense if we believe there are externalities from consuming (or overconsuming) the input.[55] Indeed, the White House framed its proposed tax in explicitly externality language: "Cryptominers' high energy consumption *has negative spillovers on the environment, quality of life, and electricity grids* where these firms locate across the country" (emphasis added).[56] In a similar externalities case, we could target high-volume consumers through a progressive tax on metered electricity (or another input) with marginal rates that increase at higher levels of consumption to best address the externality.[57] Such systems already exist today for metered rates for the use of utilities like water and electricity. Given that such externalities are not necessarily specific to any one industry, our desire to avoid distorting incentives would suggest that in an externality case, a tax on inputs should be applied to all consumers (or at least all high-volume consumers) of the input rather than just to specific industries like AI or crypto. Biden's crypto-electricity tax proposal also highlights that input taxes may not be the most effective way to raise supplemental revenue in response to automation-driven revenue losses, as the relatively high 30 percent crypto-electricity tax would still only raise $3.5 billion over 10 years.[58]

Considering our goals, a direct tax on inputs only makes sense as a response to AI and automation if high levels of input consumption create some undesirable externality. The existence of externalities is a reasonable possibility, as the AI industry shows many of the same characteristics as the cryptocurrency industry for which the White House has suggested that

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[55] *See supra note* ____.
[56] *The DAME Tax: Making Cryptominers Pay for Costs They Impose on Others*, THE WHITE HOUSE, May 2, 2023, https://www.whitehouse.gov/cea/written-materials/2023/05/02/cost-of-cryptomining-dame-tax/.
[57] This framing would allow policymakers to avoid the challenging industry definition problem and would not require a value judgment about what industries are better or worse for tax imposition purposes.
[58] Although not directly analogous to the AI case, the very small amount raised by a crypto-electricity tax highlights the limitations of taxing an input that may be only a small portion of the costs of some productive process as a way of limiting that process or raising revenue. *See* Kelly Phillips Erb, *White House Proposes 30% Energy Tax To Address Environmental Crypto Mining Costs*, FORBES, May 4, 2023, https://www.forbes.com/sites/kellyphillipserb/2023/05/04/white-house-proposes-30-energy-tax-to-address-environmental-crypto-mining-costs/.

electricity consumption externalities exist. However, if we were to enact an electricity, water, or other input tax, we should not only target the AI industry but all firms creating the externality.

Broader Tax Changes

The most aggressive and unlikely tax response to the rise of artificial intelligence would be a broader reevaluation of the way the tax code treats capital investments. Problems with over incentivizing capital investment at the expense of labor are not new, but political fallout from a large labor market dislocation resulting from increased automation might generate the political will necessary to force change in this space.

Acemoglu, Manera, and Restrepo's analysis of the weaknesses of the current tax system provides clues for how we might move to this more optimal tax system.[59] Recent changes to accelerate depreciation deductions have reduced effective tax rates on automation technologies such as software as low as 5 percent, while the authors' calculations suggest an ideal capital tax rate of around 27 percent.[60] Fixing the system would require changes to depreciation rules to reduce the immediate deductibility of long-term investments in capital, including those that can displace human labor.[61] As discussed above, changes liberalizing depreciation rules have caused at least half of the reduction in the effective capital tax rate since 2000, and reversing these changes would go a long way to returning efficiency to the treatment of capital and labor.[62] Versions of

[59] *See* discussion of Acemoglu, Manera, & Restrepo paper on current tax incentives favoring automation *supra* _____.
[60] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233-234 (2020) (attributing roughly one-half of the decline in effective tax rates from 20 percent in 2000 to 5 percent after the 2017 TCJA to changes to depreciation deductions).
[61] Extremely liberal depreciation rules, which set the effective capital tax rate for applicable expenses to zero, additionally make many other tax policy changes such as increased rates less effective. As a result, I emphasize depreciation rules as the first lever in addressing low effective capital tax rates.
[62] *See supra note* _____.

these changes have already been enacted in South Korea, which has responded to increased automation by reducing the depreciation deduction firms are allowed to take for expenses on automation technologies.[63] As with other tax policies, changes to depreciation should not be specific to some defined automation industry or set of technologies, as limiting them in that way would penalize automation but still favor of other capital investments. In the United States, the 2017 Tax Cuts and Jobs Act (TCJA) rules allowing for much faster depreciation ("bonus depreciation") began to automatically phase out starting in 2022, with bonus depreciation set to expire entirely in 2027.[64] We should allow this expiration to continue without any extensions, which should lead to significant increases in effective tax rates for capital. This offers at least a partial means of addressing our main goal without the need for a policy response.

While changing the treatment of depreciation is the most direct way to increase effective capital tax rates and reduce incentives to overinvest in automation, increases to the corporate tax rate and the capital gains tax rate could also increase the effective tax rate for capital depending on whether the burden of increases falls more on capital or labor. If firms bear the bulk of the cost of corporate tax rates directly, then corporate tax rate increases might be a good way to increase effective capital tax rates relative to labor.[65] However, most recent evidence seems to suggest that labor bears a meaningful share (and potentially even majority) of the costs of higher corporate tax

[63] *See supra note* _____. Vikram Chand, Svetislav Kostić, & Ariene Reis, *Taxing Artificial Intelligence and Robots: Critical Assessment of Potential Policy Solutions and Recommendation for Alternative Approaches*, Nov. 2020 WORLD TAX J. 711, 731 (2020).
[64] *Glossary: Bonus Depreciation*, THOMPSON REUTERS, Jan. 23, 2023, https://tax.thomsonreuters.com/en/glossary/bonus-depreciation.
[65] We might also consider lowering labor tax rates as another lever for achieving such a relative shift. I do not explore such a lever here other than to note that Acemoglu et al. recommend lower effective labor tax rates, though the difference between current and efficient rates is much lower in the labor case. Given that changes to labor tax rates would impact revenue directly while only indirectly impacting relative incentives to invest in automation technologies, I do not explore them further here.

rates.[66] Given the uncertainty and shared incidence of corporate tax increases between capital and labor, the corporate tax is an inefficient if not also ineffective mechanism for correcting current imbalanced incentives identified by Acemoglu et al. Increases to the capital gains rate are another way to potentially increase effective capital tax rates, but as current capital gains taxes are only effective on realized income, such changes would likely have less effect than changes to depreciation, and could further reduce already low realization rates.

Would structural changes to increase effective capital tax rates through either reducing depreciation or increasing nominal rates be feasible? Either would likely be relatively easy to administer as any structural changes would follow a relatively similar format to current or historical taxes. To begin with, the ongoing 2022 to 2027 expiration of bonus depreciation rules should approximately double effective tax rates to around their level prior to the 2017 TCJA.[67] Despite political pressure to extend the depreciation rules, allowing them to expire appears to offer the most likely opportunity for reducing distortion between capital and labor incentives. Further changes, either to depreciation or to corporate or capital gains tax rates, may be more difficult to enact politically unless as part of a bundled response to one of two scenarios. First, as Kimberly Clausing and Natasha Sarin note:

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[66] *See, e.g.*, Alex Durante, *Who Bears the Burden of Corporation Taxation? A Review of Recent Evidence*, TAX FOUNDATION, June 10, 2021, https://taxfoundation.org/blog/who-bears-burden-corporate-tax/ (reviewing studies finding significant impact on wage earners and tax progressivity from corporate tax increases); Stephen J. Enten, *Labor Bears Much of the Cost of the Corporate Tax*, TAX FOUNDATION, Oct. 24, 2017, https://taxfoundation.org/research/all/federal/labor-bears-corporate-tax/ ("[S]tudies appear to show that labor bears between 50 percent and 100 percent of the burden of the corporate income tax, with 70 percent or higher the most likely outcome."); Benjamin H. Harris, *Corporate Tax Incidence and Its Implications for Progressivity*, TAX POLICY CENTER, Nov. 2009, https://www.taxpolicycenter.org/sites/default/files/alfresco/publication-pdfs/1001349-Corporate-Tax-Incidence-and-Its-Implications-for-Progressivity.PDF. *C.f. Who Pays the Corporate Tax?*, CONGRESSIONAL RESEARCH SERVICE, Sept. 29, 2021, https://crsreports.congress.gov/product/pdf/IF/IF10742 (providing a counterpoint to other studies suggesting that capital pays most or all of increases to the corporate income tax).

[67] Daron Acemoglu, Andrea Manera, & Pascual Restrepo, *Does the US Tax Code Favor Automation?*, Spring 2020 BROOKINGS PAPERS ON ECON. ACTIVITY 231, 233-234 (2020).

> Many provisions in the 2017 Tax Cuts and Jobs Act (TCJA) are scheduled to expire at the end of 2025. Policymakers will face significant pressure to extend at least some of the expiring TCJA provisions, and will encounter important fiscal trade-offs. Beyond these trade-offs, the reopening of the tax code in 2025 is also an enormous opportunity to rethink tax policy.[68]

Perhaps the best solution to the current system of distorted incentives and "excessive automation" would be to bundle increases to capital tax rates and reductions in depreciation as part of a broader tax reform bill that follows expiration of the TCJA. Nevertheless, whether it would be possible to generate the political will to enact large increases to capital taxes without an exogenous shock is questionable, given existing pressures to extend TCJA provisions and keep taxes low.[69]

The more promising opening for encouraging structural changes to the tax system would be in response a significant exogenous shock to the economy and sudden dislocation. Such a shock and corresponding tax response occurred during COVID,[70] and a similar economic shock, potentially but not necessarily related to automation, would likely inspire similar action. For example, should a relatively large employment sector such as sales (14.5 million), transport (14.3 million), or office and administrative support (19.9 million) experience rapid job loss or declining satisfaction due to automation, those workers might demand significant policy changes (which

[68] Kimberly A. Clausing & Natasha Sarin, *The coming fiscal cliff: A blueprint for tax reform in 2025*, THE HAMILTON PROJECT, Sept. 27, 2023, https://www.brookings.edu/wp-content/uploads/2023/09/20230927_THP_SarinClausing_FullPaper_Tax.pdf.
[69] *See id.* at 1.
[70] *See* IR-2021-106, *IRS offers overview of tax provisions in American Rescue Plan; retroactive tax benefits help many people now preparing 2020 returns*, INTERNAL REVENUE SERVICE, May 11, 2021, https://www.irs.gov/newsroom/irs-offers-overview-of-tax-provisions-in-american-rescue-plan-retroactive-tax-benefits-help-many-people-now-preparing-2020-returns.

could include tax changes) to address their losses.[71] The likelihood of such a shock occurring is uncertain, but the shock would likely need to be of large magnitude or over a short period of time to create a policy response.[72] While relying on an exogenous shock does not allow for proactive policymaking, it does allow policymakers to calibrate any tax response to address the actual economic impact of AI and avoid the risk of overreacting to potentially small economic disruptions.[73]

Conclusion

The current tax system over-incentivizes automation including the use of AI at the expense of labor due to effective capital tax rates substantially below what is socially optimal. The consequences of this distortion are uncertain as are the longer-term effects of automation, and concerns about artificial intelligence cannibalizing jobs may be overblown. If not, the government will likely feel political pressure to respond and protect people hurt by economic changes caused by automation. This will potentially provide an opening to address issues related to AI, as well as broader inequities in the treatment of capital and labor in our current tax system. Policymakers should avoid reinforcing current capital-favoring tax policies that lead to inefficient automation

[71] Note that the highest projected job loss rate for any employment group between 2022 and 2032 is office and administrative workers at 6.2%. A significantly higher loss rate over a shorter period of time might lead to a larger political response. *See Employment by major occupational group*, BUREAU OF LABOR STATISTICS, Sept. 6, 2023, https://www.bls.gov/emp/tables/emp-by-major-occupational-group.htm.

[72] *C.f.* broader drift towards excessive automation discussed in Acemoglu et al., *supra note* ____. Such a shock is possible though, *see* MCKINSEY GLOBAL INSTITUTE, GENERATIVE AI AND THE FUTURE OF WORK IN AMERICA (2023) (estimating that **"**[b]y 2030, activities that account for up to 30 percent of hours currently worked across the US economy could be automated—a trend accelerated by generative AI"); INTERNATIONAL MONETARY FUND, GEN-AI: ARTIFICIAL INTELLIGENCE AND THE FUTURE OF WORK 8 (2024) (suggesting that almost 60 percent of US employment is highly complementary to generative AI and at risk of automation, *see* Figure 1).

[73] This does leave the risk of creeping increases in automation based on distorted investment incentive structures as Acemoglu et al. have highlighted in the historical record, *see supra note* _____.

and seek to use opportunities for tax reform, taking advantage of the pending 2025 debate about whether to extend provisions of the TCJA or a potential dislocation created by rapid automation, to correct deficiencies in the current tax system. Targeted taxes on automation that do not address fundamental flaws in our tax code create as many problems as they solve, indicating that the best solution would be industry-agnostic changes to provisions like depreciation and capital tax rates that would undo current distortions in our system and reduce incentives for over automation.