AI and the Future of Tax Avoidance

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In this article, Alarie predicts that artificial intelligence will be able to analyze the intricacies of tax legislation, exploit the trends it spots, and recommend tax minimization strategies to taxpayers, and he advocates for international cooperation regarding the development of tax avoidance AI.

I. Introduction

For centuries, tax avoidance has involved a dynamic tension between taxpayer ingenuity and the complex defenses of tax legislation.[1] While conceptually distinct from the illegality of tax evasion, tax avoidance — and particularly abusive tax avoidance — raises significant moral and fiscal concerns.[2] For the tax practitioner, mastering tax avoidance is a complex undertaking, characterized by advanced tax planning strategies developed through a deep, nuanced, and expert understanding of the tax law. Tax avoidance capitalizes on the existence of mostly unanticipated combinations of legal ways to navigate the detailed provisions of tax statutes, tax treaties, and associated regulations, often simultaneously involving the laws of several sovereign jurisdictions.[3] Until now, tax avoidance has been the exclusive preserve of the creative, dedicated, and ingenious human tax expert, often working in teams of like-minded tax specialists to create plans that crack the tax code through clever tax avoidance strategies.[4] The emergence of ever more competent artificial intelligence is set to revolutionize tax avoidance — for good or for ill.

AI will increasingly offer the potential to radically optimize tax planning for minimizing liabilities within the bounds of the law. Simultaneously, AI will equip tax administrators with increasingly sophisticated tools for identifying and addressing tax avoidance. At the same time, algorithms are poised to bring unprecedented clarity to the often ambiguous distinction between competent strategic tax planning and abusive tax avoidance.[5]

I predict that the influence of AI in tax avoidance will be deeply transformative for our tax and legal systems, demarcating a shift to algorithms capable of interpreting the intricacies of tax legislation worldwide, spotting and exploiting trends in legislation and adjudication, and recommending tax minimization strategies to taxpayers and legislative patches to lawmakers. Our future tax avoidance AI systems, underpinned by vast amounts of data and advanced AI analytics, will be particularly adept at discovering opportunities for tax avoidance in the interstices between domestic tax regimes that

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[1] *See* Nigel Tutt, *The History of Tax Avoidance* (1989).

[2] Serious tax avoidance cases have a long history in Anglo-American tax litigation. The most famous are two that arose during the Great Depression. In the United Kingdom, see the House of Lords decision in *Inland Revenue Commissioners v. Duke of Westminster* [1936] A.C. 1 (H.L.). In the United States, see *Gregory v. Helvering*, 293 U.S. 465 (1935).

[3] *See* David G. Duff, "Tax Avoidance in the 21st Century," SSRN (Oct. 1, 2009).

[4] *See, e.g.*, Benjamin Alarie and Bettina Xue Griffin, "Using Machine Learning to Crack the Tax Code," *Tax Notes Federal*, Jan. 31, 2022, p. 661.

[5] *See, e.g.*, Alarie and Abdi Aidid, "Predicting Economic Substance Cases With Machine Learning," SSRN (Oct. 13, 2020).

can be recruited for cross-border tax planning purposes. These kinds of new AI systems will generate increased pressure for multilateral responses to tax avoidance — like those of the OECD — because domestic patches to tax law will often prove to be insufficient to protect tax bases.[6]

The transformative power of AI in the context of tax avoidance will extend far beyond the applicability or inapplicability of current tax laws. It will also involve forecasting future legislative changes and understanding the effects of ostensibly remote socioeconomic developments, thereby enabling tax professionals to design more effective, more future-proof strategies. The adoption of AI in tax planning will thus raise important considerations about the future social roles of tax professionals. Will we be seen as defenders of fiscal responsibility and restraint or as enablers of ruinous advanced tax avoidance techniques? The answer will be shaped by the future path of AI tax avoidance technologies and the legal and ethical standards that we choose to guide their use.

Indeed, as AI looks set to transform the world's tax avoidance practices, it is critical to revisit the fundamental principles that govern tax policy. These principles, mirroring societal values, will be put to the test by algorithms that operate without ethical judgment. There is a need for proactive engagement in this conversation: Constructive dialogue is essential among policymakers, tax practitioners, and technology experts to ensure that the benefits of AI are realized while preserving the integrity of tax laws and promoting fiscal fairness.

But all is not necessarily doom and gloom. The path ahead for tax avoidance, as it merges and converges with the development of AI, may lead to a future of more effective, insightful, and equitable tax planning. Alternatively, it could precipitate a future in which the divide between taxpayers and tax authorities grows, driven by

unequal use of AI. The choices we and our governments make now and in the near future will have the potential to chart the fiscal narrative for years to come.

II. The Role of AI in the Tax Avoidance Cycle

AI will soon be emerging as a significant force in revolutionizing tax avoidance strategies. Its unparalleled computational capabilities position it as a catalyst for converting data of all kinds into actionable insights for minimizing tax liabilities legally. Although it is not yet true today, I expect that AI's role in this process in the relatively near term will be essentially comprehensive, influencing every stage of the tax planning process from its inception to the final analysis, implementation, and refinement of tax strategies.

A. Planning and Prediction

Naturally, tax avoidance begins with planning, in which AI's predictive capabilities can be leveraged significantly. The realm of tax planning, up until now completely dominated by human expertise, will increasingly be augmented by algorithms that can sift through vast amounts of legal data from tax statutes, revenue rulings, policy documents, case law, and taxpayer records to pinpoint tax reduction opportunities. There is no reason in principle why AI systems will not be able to model a vast array of tax planning scenarios extremely rapidly, quickly testing vast combinations of strategies for their effectiveness and legal defensibility. This kind of predictive AI tax planning would allow for the anticipation of future changes in tax laws and a sensitivity testing of their potential effect on current tax avoidance strategies, offering a level of foresight previously unattainable, if not unthinkable.

B. Strategy Formulation

The ability of AI to process and analyze massively large datasets with exponentially more powerful computation will continue to transform the formulation of tax strategies. These increasingly powerful tax avoidance systems will enable richly detailed and comprehensive approaches to tax strategy formulation, creating tailored strategies to fit the specific family, business, and financial profiles of taxpayers. It is only a matter of time before AI will be able to

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[6]On the OECD's multilateral approaches to combat base erosion and profit shifting, see OECD, "Understanding Tax Avoidance" (2023).

reliably uncover effectively all the subtle tax savings opportunities that may exist across different jurisdictions and regimes, the vast majority of which would almost certainly be overlooked by human analysis because of real resource limitations in terms of time and information. Also, in principle, AI systems could be used to adapt tax mitigation strategies in real time in response to shifting business and financial circumstances, ensuring tax efficiency and compliance even as tax laws evolve more rapidly than ever before.

C. Execution and Compliance

In the execution phase, AI systems will increasingly be used to help refine the implementation of newly invented tax avoidance strategies. Automated systems (in the form of tax and legal software agents) will be able to help execute complex plans across multiple accounts and transactions, optimizing each step for tax efficiency within the prevailing — and the future expected — relevant legal frameworks.[7] AI's role in compliance is also pivotal, as ongoing transaction analysis can affirm adherence to the current tax laws and interpretations.

D. Analysis and Adjustment

Post-implementation tax avoidance plan analysis is essential to gauge the success of tax avoidance strategies. AI systems can be expected to offer retrospective assessments, comparing projected benefits to actual outcomes. These could prove invaluable for refining future strategies. The systems can predictably also be used to project the effective longevity of various tax strategies, assessing risks and potential regulatory responses, empowering taxpayers and advisers to proactively adjust their methods. We can expect that these emerging AI systems will be backtested against historical tax avoidance

strategies, the responses to them in the past, and so on. As a result, there is a rich history to this kind of analysis, and adjustment is not simply prospective from 2023 onward, but will benefit from many decades of taxpayer and tax administrator interactions.

E. Challenging Ethical Boundaries

The increasing proficiency of AI in tax avoidance will raise correspondingly serious ethical concerns. The widespread availability of AI tools could lead to the increased use of aggressive avoidance tactics, prompting discussions on the equitable nature of tax systems. As tax avoidance AI systems become more accessible to sophisticated taxpayers, from the perspective of distributive justice it will be essential to balance legal tax avoidance with the ethical responsibility of contributing to public finances. Navigating this ethical terrain demands concerted efforts to develop tax avoidance AI systems within frameworks that emphasize transparency and fairness.

The role of AI in tax avoidance is a microcosm of a broader trend in which technological advances outpace regulatory and ethical guidelines. Consequently, the advent of AI in tax strategy requires both technological adaptation and a reevaluation of the underlying principles of tax law and fiscal ethics. The future of tax avoidance, increasingly driven by and influenced by AI, will compel policymakers, tax authorities, and society to critically evaluate the use of these powerful tools, ensuring they serve the collective interest over individual gain.

III. Using AI to Combat Avoidance

The availability of increasingly sophisticated tax avoidance AI for tax administration presents a paradox. While these kinds of tax avoidance AI systems will equip taxpayers with advanced tools for legally minimizing their tax burdens, the systems will also simultaneously empower tax authorities with powerful tools to detect and challenge these tax avoidance strategies. The following section explores tax avoidance AI's role from the vantage point of tax authorities, considering its effect on the detection, prevention, and challenging of tax avoidance.

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[7]*See* Bill Gates, "AI Is About to Completely Change How You Use Computers and Upend the Software Industry," GatesNotes blog, Nov. 9, 2023.

A. Detection and Identification

The primary benefit of sophisticated tax avoidance AI for tax authorities will be its unparalleled pattern recognition capabilities, which will prove essential for detecting signs of avoidance. The digital trails left by sophisticated taxpayers in modern financial systems are data-rich, providing a fertile ground for tax avoidance AI systems to unearth anomalies, identify unusual transactions, and uncover complex patterns indicative of tax avoidance. For example, machine learning algorithms are now routinely trained to identify and flag departures from normal transactional behaviors across industries. Future AI tax avoidance detection systems will be orders of magnitude more sophisticated.

B. Enhanced Analytical Capabilities

Tax-avoidance-detecting AI systems will equip tax authorities with the ability to dissect complex financial transactions that span global markets. It is already the case that algorithms have shown themselves to be instrumental in unraveling the structures of shell companies, tracing the flow of funds — even in the context of cryptocurrencies like bitcoin — and revealing beneficial ownership, cutting through the layers that have traditionally shielded aggressive tax planning. When these AI systems integrate new and varied data sources, not only banking details and public records, but more discreet and hidden sources as well, they will increasingly provide a comprehensive view of even the most sophisticated taxpayer's business and financial dealings.

C. Predictive Enforcement

Beyond identifying current schemes, AI will increasingly assist authorities in anticipating new trends in avoidance, enabling a proactive approach to patching tax legislation rather than the relatively plodding and reactive approach that has characterized responses to date. Predictive models will increasingly highlight how taxpayers might be expected to exploit new tax laws or international agreements, allowing tax authorities to coordinate with each other and update their strategies. This shift will increasingly transform

tax law enforcement from its historically reactive posture to a strategic, anticipatory one.

D. Real-Time Compliance and Adaptive Regulation

The advent of the use of ever-more-sophisticated AI in tax systems will continue to facilitate a move toward real-time compliance monitoring, enabling authorities to detect and address noncompliance as it happens, rather than relying principally on retrospective tax audits. Also, AI will be able to support the development of new, machine-generated regulations that rapidly adapt to the ever-evolving strategies of tax avoidance, fostering a more resilient and responsive legal framework.

E. Ensuring Fair Play and Building Trust

To mitigate the global risks of an imbalanced AI arms race in tax, authorities must promote fair play. This involves not only forging international agreements on substantive tax law, but also facilitating the exchange of technology to distribute AI advancements, expertise, and best practices. That cooperation will help ensure that less affluent nations are not left behind in the global initiative against tax avoidance. Cooperation with less sophisticated states is something that the more affluent nations are likely to find compatible with their domestic self-interest, in any event.

The use of AI by tax authorities also invokes questions about transparency and the right to understand AI-influenced decisions.[8] Ensuring that AI systems are transparent and their decision-making processes explainable, auditable, and understandable is vital for maintaining public trust in the tax system. Tax authorities must balance the advantages of AI with the imperatives of transparency and accountability.

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[8]On the importance of transparency in AI decision-making, see Karl de Fine Licht and Jenny de Fine Licht, "Artificial Intelligence, Transparency, and Public Decision-Making," 35(4) *AI & Soc'y* 917-926 (2020).

IV. AI, Tax Law, and Regulation

The encroachment of AI into the arena of tax avoidance introduces a significant dynamic in the relationship between tax law and regulatory frameworks. The extent of AI's penetration into identifying and exploiting inefficiencies in tax law necessitates a responsive and agile regulatory environment that can keep pace with rapid technological progress.

A. Adapting Legal Frameworks to AI Innovations

The legal system, sometimes slow to respond to technological change, is particularly challenged by the advent of AI in tax avoidance. Legislators find themselves tasked with comprehending the breadth of AI's capabilities and crafting laws that proactively address the potential for innovative tax avoidance strategies that AI could facilitate. This task is anticipatory by nature, requiring lawmakers to predict AI's trajectory and the novel challenges that tax avoidance AI systems will inevitably present.

To accommodate the swift changes brought about by AI, tax laws may need to incorporate a level of adaptability. This could include adopting principles-based legislation, which articulates broader goals and values for tax strategies to align with, rather than detailing prescriptive rules. This approach allows for a more dynamic application of tax laws, staying relevant as AI technology evolves. It could also mean retrospective formal validation of machine-generated regulations in real time as a way of stemming losses from newly invented and detected AI-generated tax avoidance strategies.

B. Closing Loopholes With AI-Informed Legislation

The data processing powers of AI also present an opportunity for strengthening tax law. By scrutinizing tax data and compliance results, tax avoidance AI can identify trends that suggest when tax laws are most susceptible to circumvention. This information can guide legislators to focus efforts on closing gaps and crafting more resilient laws that withstand avoidance strategies.

Other AI-based systems could also be used to simulate the economic effect of proposed tax laws before they are enacted. This would enable policymakers to design legislation that is effective in achieving fiscal objectives while minimizing negative repercussions, such as impeding economic activity or disproportionately affecting certain taxpayer demographics.

C. The Regulatory Arms Race

The application of AI in tax planning by taxpayers and in enforcement by authorities is shaping up as a regulatory arms race. As each side invests in AI to either discover the most efficient avoidance strategies or to detect and neutralize them, the risk of escalating complexity looms large, potentially making advanced tax planning and enforcement difficult to access for those without significant resources. Regulatory measures may be necessary to limit the use of AI in tax planning, ensuring its role in supporting fair and transparent tax practices rather than enabling a system in which the most sophisticated AI confers an undue advantage. Of course, the same forces are likely to lead to massively more specified and ultimately functionally complete law — a legal singularity, as I have written about elsewhere — and with it, establish the potential for universal legal literacy.[9]

D. International Cooperation and Harmonization

Given the global nature of tax avoidance, international cooperation in the regulation of tax avoidance AI may be beneficial for nation-states and for the continued growth and sustainability of the modern global economy. As AI will increasingly be capable of scrutinizing and exploiting international tax treaties, it is imperative that countries collaborate to protect their collective tax bases. AI systems will almost certainly assist in finding methods for patching these treaties — provided the political will to do so can be mustered. International collaboration

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[9]*See* Aidid and Alarie, *The Legal Singularity: How Artificial Intelligence Can Make Law Radically Better* (2023).

could manifest as shared standards for the application of tax avoidance AI systems in tax planning, collective investment in AI detection capabilities, and coordinated responses to AI-driven avoidance strategies, among others.[10]

V. Ethical, Legal, and Social Impact

The integration of AI into tax avoidance strategies extends beyond technological innovation, encompassing profound ethical, legal, and social dimensions.

A. Ethical Considerations

The capability of AI to refine tax avoidance strategies prompts significant ethical considerations. While optimizing tax liabilities within legal guidelines is permissible, the aggressive tactics that AI might facilitate among less scrupulous taxpayers and tax professionals raise concerns regarding the collective commitment to public finance. There is likely to be a tension between the impersonal, efficiency-driven decisions of AI and societal expectations of corporate and personal fiscal responsibility. This disparity may call for a reassessment of the ethical frameworks governing AI in the context of taxation.

Indeed, AI's role in tax planning should be evaluated against its broader effect on public services and societal welfare. Software companies, data scientists, tax professionals, and taxpayers alike must ensure that while pursuing tax efficiency, they also contribute to the fiscal health of the communities and countries in which they operate. A strong commitment to ethical standards and corporate social responsibility is crucial in guiding the application of AI in tax planning.

B. Legal Implications and Compliance

The legal landscape also faces significant disruptions with the rise of AI in tax planning. AI-enabled strategies may test the limits of current tax laws, compelling the legal system to adapt and respond effectively. Tax authorities will need to scrutinize the use of AI in tax planning to prevent

it from facilitating illegal activities like tax evasion. Tax professionals using AI systems must exercise due diligence to ensure compliance and avoid legal ramifications.[11]

The innovative tax avoidance strategies discovered by AI may blur the lines between lawful tax planning and illegal evasion, potentially leading to contentious legal disputes and a demand for clearer regulatory guidance regarding AI's permissible use in tax matters.

C. Social Effect of AI-Enabled Tax Avoidance

The social implications of AI-facilitated tax avoidance are potentially quite profound. If AI allows a significant segment of taxpayers to substantially reduce their tax contributions, the fiscal burden may shift to those without access to those technologies — to the extent that they can bear it, intensifying social inequalities. Thus, the perceived social contract risks being destabilized, predicated as it is on the perception of a reasonably fair distribution of tax obligations. Widespread use of tax avoidance AI by the most sophisticated taxpayers could foster increased public distrust in the tax system and governance structures.[12] Moreover, the effect on public finances could be stark. A decrease in tax revenue caused by AI-assisted avoidance might challenge governments' abilities to fund essential services, affecting the quality of life and economic opportunities for all citizens.

VI. Conclusion

From the perspective afforded us here at the beginning of the AI revolution, technological forces associated with tax avoidance AI systems are obviously set to redefine the contours of fiscal strategy and compliance. The various plausible potential futures of tax avoidance, influenced by AI, are many and challenging to distinguish the likelihood of, as each possible future is deeply intertwined with the ethical, legal, and social fabrics of society. This exploration of AI's role in

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[10]The OECD BEPS project is an early, relatively modest collaboration in this mold.

[11]*See* Alarie, Rory McCreight, and Cristina Tucciarone, "Automated Tax Planning: Who's Liable When AI Gets It Wrong?" *Tax Notes Federal*, Sept. 25, 2023, p. 2297.

[12]*See* Alarie, "The Challenge of Tax Avoidance for Social Justice in Taxation" in *Philosophical Explorations of Justice and Taxation*, at 83-98 (2015).

tax avoidance has highlighted the multifaceted challenges and opportunities that await us.

Indeed, AI's integration into tax planning represents a significant paradigm shift, necessitating a recalibration of our current systems of tax policymaking and lawmaking. Its predictive and data processing capabilities hold the promise of developing incredibly complex and regenerative tax systems that are not only more efficient and strategic but, if guided correctly, more equitable as well. This potential, however, is accompanied by the responsibility to ensure that innovation is matched with ongoing responsible ethical stewardship. ■