

Generative AI and Taxation—From Robot Taxation to AI Applications*

WATANABE Tetsuya

Professor, School of Law, Waseda University

Abstract

This paper analyzes the impact of the evolution of robots and generative AI on taxation from various perspectives as society becomes more digitized after the COVID-19 Pandemic. Specifically, in addition to the pros and cons of taxation on robots and generative AI themselves, I will examine what kind of use AI can be for tax authorities and taxpayers (including practitioners such as tax accountants); in other words, in terms of how all parties are affected by the emergence of generative AI, and how they should interact with it in the future.

Taxation on robots has been proposed as a response to changes in the labor market associated with the evolution of these machines. Its main purpose is to tax as a proxy or for regulatory purposes. However, it is difficult to define the terms of “robot” or “automation,” etc. Even if the definition is successfully clarified, taxation may be avoidable without international coordination, while the promotion of technology in countries where robot taxation is introduced might be hindered. Regarding the possibility of taxing AI itself, there are some proposals to give AI a taxable personality in certain cases where it has economic autonomy.

For taxpayers and practitioners, generative AI could be a useful tool. However, from the standpoint of legal liability, it is currently difficult for AI to replace tax accountants in individual specific consultations. In addition, issues related to privacy protection and data collection and management have also been pointed out. In the future, the question of how to utilize AI in the environment surrounding the taxation issue will require deeper consideration.

Keywords: robotic taxation, generative AI, digitalization, innovation, tax administration, disparity

JEL Classification: K34

I. Introduction

The COVID-19 Pandemic in the midst of digitalization has brought about many changes in the world. One of them is online meetings. At universities, many classes and meetings have changed from face-to-face to online, such as Zoom. The off-campus meetings (government council and business meetings) are also increasingly online or a combination of online

* This article is based on a study first published in the Financial Review No. 157, pp. 32-48, Tetsuya Watanabe, 2024, “Generative AI and Taxation—From Robot Taxation to AI Applications” written in Japanese.

and face-to-face meetings. The proliferation of online meetings has made it easier for people living in rural areas to participate, giving the impression that “distance” has been overcome.¹

On the other hand, it is becoming increasingly clear that there are negative aspects to online meetings, or that there are things that are difficult to accomplish without face-to-face meetings. A typical problem in universities has surfaced in the way students are evaluated through examinations. Cheating, for example, has become a major issue. This is where the use of generative AI, such as ChatGPT, becomes a major concern.

Conducting examinations online runs the risk of students submitting questions to a generative AI to be solved out of sight of the supervisor. Even if it is an oral exam, it is possible to operate a computer in a way that is not visible on a screen such as Zoom. In the case of take-home exams or report assignments, the concern is even greater because there is not even a supervisor present. It is very difficult to determine whether the answers submitted are the result of the students’ own research and thinking, or whether they are the product of a generative AI (or a mixture of the two).²

These are pressing issues at universities,³ but a completely different view emerges when viewed from the perspective of the taxpayer or taxing authority in tax law. One of the aspects of AI is that it contributes to proper tax returns. The question is not whether the taxpayer has thought up the contents of the tax return, but whether the contents of the return are correct under the tax law. If the taxpayer’s transactions are examined by the AI before or after those transactions, and as a result, the taxpayer is able to file an appropriate tax return, this is desirable for both the taxpayer and the tax agency (there is no problem of cheating in this case).

However, it is conceivable that AI will cause people to lose their jobs. There are issues such as unemployment problems caused by the spread of AI or measures to prevent people from losing their jobs (e.g. reskilling⁴). There is also the aspect of generative AI having

¹ While it is still difficult to say that the COVID-19 Pandemic has finally ended, it is probably true that society is returning to its earlier days. However, the online method remains prevalent and continues to this day.

² One of the most recent examples of the misuse of generative AI to generate text and images is the issue of fraud. “Fraudsters are really generative AIs,” the Nihon Keizai Shimbun morning edition (December 31, 2023, page 1) reported, “In an experiment by IBM, the percentage of people deceived by fraudulent emails created by humans and AIs was 14% for humans versus 11% for AIs. 5 minutes compared to 16 hours for humans. The ‘efficiency’ of fraud is greatly enhanced with AI,” he said, noting that “efforts to prevent abuse have only just begun” as the global market for generative AI expands rapidly.

³ There are descriptions of generative AI from various perspectives on the websites of universities and other institutions. For example, Waseda University has a notice titled “Use of Generative AI, etc.” <<https://www.waseda.jp/top/news/89507>>, and Osaka University has a notice titled “Influence of Generative AI in Assessment” <https://www.tlsc.osaka-u.ac.jp/project/generative_ai/assessment_ai.html> and other announcements. In addition, the website of the Japan Association of Private Universities has an article by Toru Iiyoshi (Professor, Academic Center for Computing and Media Studies/Graduate School of Education, Kyoto University) titled “What Does Generative AI Ask of Universities as Educational Institutions?” <<https://www.shidaikyo.or.jp/rii/research/753.html>>, and on YouTube, there is a video titled “The Influence of Generative AI on Grading in Universities” <https://www.youtube.com/watch?v=2KhIbcUJ_30> by Sachiko Kimura, Professor of German, Faculty of Foreign Languages, Dokkyo University. These are a select few examples of what universities and faculty members have been saying about generative AI.

The last check dates for all of the links cited in this paper are January 23, 2024.

⁴ The April 24, 2023 Asahi Shimbun digital edition of “What You Should Learn Before AI Takes Your Job” (April 24, 2023 Asahi Shimbun) features an interview with sociologist Daisaburo Hashizume, who says that the reason workers are now being driven to reskilling is that “employees can no longer rely on companies.” The article introduces Hashizume’s view that “you have to adapt to the situation, use your brain and human networks to find the work you need to survive,” and that “your life can be made as rich as you want it to be depending on the meaning you give it.” <<https://digital.asahi.com/articles/ASR4N4J58R-4FUCVL00Q.html>>

evolved by using nearly unlimited information available on the Internet for free. In this regard, in December 2023, the New York Times (NYT) filed a lawsuit against OpenAI, a US company involved in generative AI, and Microsoft, which has investments in OpenAI. The reason for the lawsuit is that the NYT's articles were used without permission for training AI, infringing on copyright.⁵

In the following, this paper will focus on the taxation of generative AI, based on the above-mentioned current conditions. Specifically, in addition to the pros and cons of taxation on generative AI itself, I will consider what kind of existence AI can be for both taxation authorities and taxpayers, in other words, how both parties are affected by the emergence of generative AI and how they should interact with it in the future. For example, from the government's perspective, generative AI is a tool that can be used for efficient tax enforcement,⁶ but from the taxpayer's perspective, it has the potential to be used not only for proper tax returns but also for tax saving and tax avoidance purposes.

Both perspectives are likely to change significantly with the development of AI technology. Therefore, the discussion in this paper must also be tentative and transitional, but it may be worthwhile just to identify the issues at this stage and highlight future challenges.

II. Taxing Robots and Their Challenges

II-1. Background to the Discussion of Robot Taxation

The rapid digitization of recent years has had profound effects for society and the state. One policy argument in response is the issue of taxing robots.⁷ Here, I will focus on the taxation of robots, which has been discussed comparatively earlier than generative AI, to get some implications.

Many of the arguments for taxing robots are premised on the impact of the development

⁵ See "NY Times Sues OpenAI," Dec. 28, 2023, Nihon Keizai Shimbun evening edition, page 1.

⁶ From the government's perspective generative AI could be used not only for efficient tax enforcement, but also in the legislative process, and furthermore, AI could be a powerful tool in court cases.

⁷ See generally Xavier Oberson, Taxing Robots? From the Emergence of an Electronic Ability to Pay to a Tax on Robots or the use of Robots 9 World Tax Journal 247(2017), Ryan Abbott & Bret Bogenschneider, Should Robots Pay Taxes, Harvard Law & Policy Review, Vol. 12 (2018), Ryan Abbott, The Reasonable Robot : Artificial Intelligence and the Law, 36 (Cambridge University Press, 2020), Rita de la Feria & María Amparo Grau Ruiz, Taxing Robots, in A. Grau (ed.), Interactive Robotics: Legal, Ethical, Social and Economic Aspects (Springer Nature, 2022), Ch 17. Available at SSRN: <https://ssrn.com/abstract=4045532>.

This paper reviews the taxation of robots, mainly as a summary of the above-mentioned previous works. In Japan, the above Oberson paper is introduced in Akiyuki Asatsuma, "Should AI and Robots be Taxed: An Introduction to the Oberson Paper," Zeikeitsushin, Vol. 73, No. 2, p. 2 (2018). Also, as relatively early discussions, Shigeki Morinobu, "Considering Taxation in the AI Era: Reducing Inequality and Robot Taxes," Digital Economy and Taxes: The Attack on Wealth in the AI Era, p. 239 (2019, Nikkei Publishing); Koichi Iwamoto, "Will a Robot Tax Save Jobs?" Zeimukoho, Vol. 68, No. 12, p. 2 (2020); Masaki Noda and Takamasa Nishihara, "On AI and Robot Taxation," in Minoru Nakazato et al. (eds.), Frontiers of Taxation on Digital Economy, p. 224 (2020, Yuhikaku); and as a relatively recent discussion, Junya Izumi, "Let's Start a Discussion on AI/Robot Taxes—From 'Job-Killing AI/Robots' to 'Feral AI/Robots'," The Journal of Chiba University of Commerce, Vol. 59, No. 1, p. 25 (2021), and Shigeki Morinobu, "Development of AI and Robot Taxes: Public Policies to Avoid the Fragmentation of Digital Society," Tokyo Foundation Institute for Policy Studies HP (May 23, 2022) <<https://www.tkfd.or.jp/research/detail.php?id=3998>> etc. In the above prior works, it is shown that there are several types of robot taxation.

of robotics on the labor market. In other words, the problem is that as many companies introduce robots and promote automation, the number of unemployed people will increase in the short term and tax revenues related to payroll (including revenues related to social security contributions) will decrease significantly.

Furthermore, since the current tax rules treat work heavily and capital lightly, if the tax system remains as it is, robots will be increasingly introduced (the current tax system can be viewed as favoring automation).⁸ While automation will create new demand for some occupations, it may also cause large numbers of people to lose their jobs. The negative effects will be felt largely by low-wage and low-educated workers, and as a result, inequality will widen. Robot taxation is proposed as a response to the challenges posed by such automation.⁹

The main objectives of robot taxation are considered to be either taxation as a proxy (proxy tax) or taxation for regulatory purposes (regulatory tax), or both of them. Proxy taxation aims to compensate for the revenue loss of income tax on labor and create a level playing field between humans and robots, while regulatory taxation aims to internalize the negative externalities of robot use and slow the process of automation.¹⁰

II-2. Challenges of Robot Taxation

There are various problems with taxing robots. First, it is difficult to define the terms “robot” or “automation,” and it is not easy to clarify what, and to what extent, is included in the scope of taxation.¹¹ Second, even if definitions are successfully clarified, taxpayers (or potential taxpayers) can easily avoid taxation by moving robots to foreign countries or other jurisdictions where there is no or low taxation. Furthermore, strong arguments against using the tax system to deter the promotion of innovation (including the positive social effects produced by the use of robots) in one’s own country are expected.

In the end, without an international consensus, such as the Inclusive Framework agreement on the OECD/G20 BEPS project, such technology will flee to countries with looser robot taxation.¹² If this happens, neither the promotion of innovation nor the increase in tax revenues will be achieved. Thus, there would be significant difficulties in compensating for

⁸ See Abbott & Bogenschneider, *supra* note (7), at 10 and 21 (2018). A tax system that lightly imposes payroll taxes would mean a substantial wage increase, which, taken alone, would be a desirable outcome for the current Japanese government. However, the sheer number of payroll taxpayers means that heavy imposition of another tax category (e.g., property tax) would be necessary to avoid a loss of tax revenue, which is not an easy task. Furthermore, even if the wage tax system is successful and companies increase wages, this alone will not stop automation. In other words, it would be very difficult to introduce a tax system (light taxation on wages) that would further reduce tax revenues that would otherwise be reduced by automation.

⁹ *Id.* at 27.

¹⁰ See de la Feria & Grau Ruiz, *supra* note (7).

¹¹ See Tatiana Falcão, Should My Dishwasher Pay a Robot Tax? 90 Tax Notes Int’l 1273, 1275 (Jun 11, 2018); Joachim Englisch, Digitalisation and the Future of National Tax Systems: Taxing Robots? (Sept. 5, 2018). Available at SSRN: <https://ssrn.com/abstract=3244670>.

¹² In the “Key Issues for Promoting New Capitalism” presented at the Japanese government’s “22nd Conference on Realizing New Capitalism (September 27, 2023),” “promoting investment in future growth areas such as GX, AI, semiconductors, biotechnology, and quantum technology through public-private partnerships” is mentioned, so the overseas flight of advanced technology is probably unacceptable. The original plan for “new capitalism” is presented in the “Grand Design of New Capitalism and Action Plan 2023 Revised Version (June 16, 2023)” by the Cabinet Office.

the decrease in payroll taxation with robot taxation.

For the same reason, it is also difficult to obtain funding for benefits and reskilling for those who lose their jobs due to automation. It is not a wrong policy¹³ for the government to provide more generous subsidies for reskilling, etc., in order to reduce the number of people and companies that become victims of new technologies. However, it is not feasible to finance this by taxing robots.

On the other hand, many people tend to want “someone else” to pay taxes for them, making taxation of robots more acceptable (Robots are also depicted as a threat to humanity in popular movies such as “Terminator” and “The Matrix”). However, they are reactions based on intuition, not a theoretical basis for supporting robot taxation.¹⁴ Not surprisingly, many of the above issues of robot taxation also apply to generative AI.

III. Generative AI for Taxpayers and Practitioners

III-1. Use by Taxpayers Themselves

It is not so easy for an individual to know exactly how much tax he or she will owe on any given transaction. This is also true for corporations, albeit to a lesser extent. These potential taxpayers would find it very reassuring if accurate information about taxation could be obtained in advance using generative AI.

For relatively simple and general questions such as “how to legally avoid gift tax” or “requirements for mergers without corporate tax,” some knowledge can be obtained by simply searching on a computer, without resorting to using generative AI. However, even questions that are based on specific and detailed circumstances and conditions that individual taxpayers actually face are likely to be able to predict certain taxation outcomes, depending on future developments in generative AI technology.

However, it is unlikely that a generative AI will be able to predict accurate taxation results for specific cases in such a short time, because the content of tax laws is more complex than other laws, their article volume is greater, and they are revised more frequently. Currently, it is not always possible to get an accurate answer to even a simple question.¹⁵

However, if a generative AI can provide accurate answers to complex questions, it could

¹³ See “Reskilling assistance is generous for small and medium-sized enterprises” (January 22, 2024, Nihon Keizai Shimbun morning edition, page 1).

¹⁴ See de la Feria & Grau Ruiz, *supra* note (7).

¹⁵ For example, if we ask the question “Under current law, how can I transfer 10 million yen to my grandchildren without paying taxes?” to ChatGPT 3.5, the main part of the answer is as follows. “Under current gift tax law, a specific tax exemption limit (up to 10 million yen at present) is established for gifts from parents to children. Using this specific tax exemption, a grandparent can give a gift of 10 million yen to a grandchild. If the amount of the gift is within the specified tax exemption limit, no gift tax will be imposed,” was the reply. Needless to say, the above is incorrect. In any case, referring to a law that does not exist (it is actually the “Inheritance Tax Law”) is not reasonable. The deadline for confirming the AI’s response quoted in this article is January 23, 2024.

In addition, in order to have the generative AI respond as appropriately as possible, the method of asking questions to the AI, or prompts, is important. See Yukio Noguchi, “ ‘Super’ Creation Method: How Will Generative AI Change Intellectual Activities?” p. 247 (2023, Gentosha Shinsho).

be a useful tool for taxpayers. For example, if a taxpayer is unsure of what form a transaction should take, it would be very beneficial to know the tax consequences in advance. Similarly, even after the transaction, the generative AI could function effectively as a tool to assist with tax returns.¹⁶

Thus, one of the challenges will be how to encourage the evolution of generative AI on tax law.¹⁷ This evolution could have a significant impact on tax accountants and others, which will be discussed next.

III-2. *Actual Concerns of Practitioners (Tax Accountants, etc.)*

At present, tax practitioners such as tax accountants, certified public accountants (CPAs), and lawyers are probably more concerned about the rise of tax generative AI than taxpayers themselves. These practitioners have been providing taxpayers with pre- and post-tax consultation services, but they may be displaced by the development of generative AI in the future.

Among the services related to tax return, traditional bookkeeping and other services have already been strongly influenced by IT.¹⁸ As is well known, accounting and other software are becoming increasingly popular in this field. On the other hand, tax consulting services, which involve interpretation of laws, have not been affected as much as bookkeeping services. At least in the current situation in Japan, it seems that generative AI cannot take the place of tax accountants, etc. right now.¹⁹

As already mentioned, the fact that tax law articles are numerous, interrelated, and frequently revised, that each taxpayer is in a different situation, and that the types and nature of transactions performed may vary widely, may be one of the reasons why a generative AI cannot replace tax accountants and other professionals. However, the possibility cannot be de-

¹⁶ Even today, taxpayers can ask questions about their national taxes by accessing the National Tax Agency (NTA) website “Ask Chatbot (Futaba).” <<https://www.nta.go.jp/taxes/shiraberu/chatbot/index.htm>>. In addition, regarding the quality of conversations with chatbots recorded using generative AI, see *infra* note (35).

¹⁷ On page 17 of the National Tax Agency’s “Digital Transformation of Tax Administration—Future Vision of Tax Administration 2023—(June 23, 2023),” explains that “a ‘tax consultation chatbot’ that allows you to consult on tax issues 24 hours a day has been introduced on the National Tax Agency’s website, and in addition to ‘final income tax returns’ and ‘year-end tax adjustments,’ consultations on the ‘invoice system’ began in May 2022 and on ‘final consumption tax returns’ began in January 2023. We will continue to work to expand and improve the accuracy of this service.” <<https://www.nta.go.jp/about/introduction/torikumi/digitaltransformation2023/pdf/syouraizo2023.pdf>>.

¹⁸ Carl Benedikt Frey & Michael Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation?* Technological Forecasting and Social Change 114 (2017) examines the occupations most likely to be affected by computerization and estimates that about 47% of all U.S. jobs are at high risk. And on page 278 of the appended table in the same paper, tax preparers is ranked as the occupation with the highest potential for computerization. The same information can be found in the Oxford Martin School working paper (September 17, 2013). <<https://www.oxfordmartin.ox.ac.uk/downloads/academic/future-of-employment.pdf>>. If the main job of Japanese tax accountants is to act as bookkeepers, there may indeed be a possibility of unemployment, but if their main work is tax consultation and filing of tax returns based on legal and accounting knowledge, they may be benefiting from the evolution of accounting software.

¹⁹ In a Tax Notes roundtable discussion on the evolving AI and tax practitioners, Robert Goulder, an American tax lawyer and editor of *Tax Analysts*, said “professionals are afraid that they would become obsolete as professionals, and that even though they worked hard to become lawyers or accountants and obtained their qualifications, they are worried that if clients simply use AI, they will be left out in the cold.” See Robert Goulder, Benjamin Alarie and Susan Massey, *TaxGPT: Advancing AI and Taxation*. *TaxGPT: Advancing AI and the Tax Profession*, 9 (Jun. 9, 2023). <<https://www.taxnotes.com/tax-notes-live/tax-notes-videos/taxgpt-advancing-ai-and-tax-profession/7gvr2>>.

nied that the situation may change significantly depending on the evolution of generative AI.

III-3. ChatGPT's Own View

What was interesting was the response we received when I asked ChatGPT 4.0 itself about this point. Knowing that this was a bit of a mean-spirited question, even for a machine, I asked, "How well can a generative AI take the place of a tax accountant? How well can it provide appropriate answers to specific tax consultation questions?" In response, ChatGPT began by saying, "Generative AIs, especially Large Language Models like mine, can provide useful answers to basic tax-related information and general consultation. This includes providing an overview of tax law, explaining the tax process in general, and providing basic information related to a particular tax system," it replied in its own defense.

But it went on to list the following four points as "However, they cannot replace tax accountants in the following respects. Namely, (1) response to individual specific consultations, (2) information on the latest tax law revisions, (3) legal responsibility and compliance, and (4) interpersonal service and customization." As might be expected of a firm that exhibits competency, these seem to be reasonably straightforward answers.

First, regarding (1), ChatGPT states, "Specific advice on situations unique to each case and on complex tax issues requires specialized knowledge and a deep understanding of each case." It also states "Tax accountants can provide expert advice on individual cases." I guess it is saying that it (ChatGPT) does not have such "expertise and deep understanding of each case" and therefore cannot "provide professional advice." However, there is a good chance that with training, a "deeper understanding" could be developed.

Regarding (2), "Tax laws are revised frequently, so it is necessary to keep up to date with the latest laws and information regarding tax reform. My knowledge is based on information up to the time of my last training and may not be up to date on the latest law changes,"²⁰ it states. True, but this will also depend on future training.

Regarding point 3, it states, "Tax accountants have legal responsibility for the services they provide, and they must meet specific legal standards and compliance requirements. AI cannot take on such legal responsibility." Who is responsible when AI makes a mistake is a general issue that is relevant not only to tax law but also to other areas of law (e.g., when a self-driving car hits a person),²¹ but at least here ChatGPT itself is declaring that even if it gives incorrect tax advice, it is declaring that it cannot be held legally responsible.

In general, the question of who is legally responsible when a large tax liability arises

²⁰ In this regard, ChatGPT 3.5 frequently gives the message "My knowledge is based on data up to January 2022. Therefore, I have no knowledge of events or information after January 2022." In ChatGPT 4.0, the explanation is "My response is based on data up to April 2023."

²¹ There was a lawsuit in the United States. Uber was testing its self-driving cars in Tempe, Arizona in March 2018, when one of the cars hit and killed a man who was pushing a bicycle across the road. At the time of the collision, the driver was watching the streaming service "The Voice," but this was deemed insufficient to prosecute Uber. See Uriel J. Garcia, No Criminal Charges for Uber in Tempe Death; Police Asked to Further Investigate Operator, AZ Central (Mar 5, 2019). <<https://www.azcentral.com/story/news/local/tempe/2019/03/05/no-criminal-charges-uber-fatal-tempe-crash-tempe-police-further-investigate-driver/3071369002/>>.

based on incorrect advice given by AI is a matter of contract interpretation. In addition, assuming the rapid growth of AI tools that are involved in important decision-making, the impact of these new tools on legal liability should be considered as a legislative issue.²²

Regarding (4), “Tax accountants communicate directly with clients and provide customized services tailored to their needs; AI is suitable for providing general information but cannot replace in-person services.” There seems to be an important implication here: since AI is suitable for providing general information, the use of such AI to provide customized services to each client may be the *raison d’être* of tax accountants, etc. in the future. To exaggerate to a degree, it may even be said that only tax accountants who can make good use of AI will be able to survive in the future.

III-4. Forward-Looking Statements

As generative AI evolves in the future, how might it respond to taxpayers’ questions? Benjamin Alarie, Professor of Business Law at the University of Toronto, gives one concrete example of what we can expect,²³ which is summarized below (Professor Alarie is also the CEO of a company called “Blue J”²⁴ that creates tax-focused AI tools, one of its products is “Ask Blue J”²⁵).²⁶

Suppose a large company wishing to acquire a particular company asks the AI system what scenarios are possible if acquirer X were to acquire target Y, including the taxation effects. First, the AI presents the plain-vanilla way. It presents the usual transactions and their tax consequences.

The AI then presents an aggressive approach for tax purposes. It involves a more multi-step and circuitous transaction than usual, which entails tax risks. There is a concern that the economic substance principle and the step transaction principle may lead to a denial of the transaction. The chances of success in a challenge are only about 10%, but if successful (and ultimately non-repudiation is not required), a tangible amount of tax savings is indicated for a tremendous amount of money.

Finally, the AI presents and recommends an intermediate scenario (Goldilocks scenario) as the optimal tradeoff between a transaction that minimizes the tax burden and a transaction that is not repudiated.

It is only after this that practitioners such as tax accountants and lawyers come into the picture. If a tax accountant, etc. judges the scenario produced by the above AI based on his/

²² See Benjamin Alarie, Rory McCreight, & Cristina Tucciarone, *Automated Tax Planning: Who’s Liable When AI Gets It Wrong?* 180 Tax Notes Federal 2297, 2298 (Sep 23, 2023).

²³ See Goulder, Alarie & Massey, *supra* note (19) at 8.

²⁴ <<https://www.bluej.com/about-us>>.

²⁵ <<https://www.bluej.com/ask>>.

²⁶ See Benjamin Alarie, Kim Condon, Susan Massey & Christopher Yan, *The Rise of Generative AI in Tax Research* 179 Tax Notes Federal 1509 (May 29, 2023). For Blue J, see also Japan Federation of Tax Accountants’ Associations, International Tax Information Study Group, “Canadian Taxation Observation Study Report (March 2020),” p. 26. <<https://www.tains.org/wp-content/uploads/2020/05/%E3%82%AB%E3%83%8A%E3%83%80%E7%A8%8E%E5%88%B6%E8%A6%96%E5%AF%9F%E8%AA%BF%E6%9F%BB%E5%A0%B1%E5%91%8A%E6%9B%B8.pdf>>.

her experience, prepares a text, and seeks a preliminary inquiry from the taxation agency for approval, the taxpayer can enter into the transaction with peace of mind. In this case, tax accountants, etc. could use dedicated AIs to analyze and document, etc.

This is only an example of a future diagram, but at this point, it may even be possible to automate the entire process and eliminate the practitioners any longer. To this question, Professor Alarie responds that when business parties execute a very important transaction, they want to make sure that they know what an expert would do.²⁷

Professor Alarie illustrates this with the analogy of an automated surgical procedure: “So even if I can look up online, ‘How to perform some kind of surgery,’ and I could get all that information about how to perform a surgery and maybe there are some great tools I could rent to perform surgery on my child, there’s no way I’m going to perform surgery on my child. I am going to go and take them to a surgeon. Even if the surgeon says, ‘Medical technology has progressed to the point where the surgery is completely automated, and I’m going to be here on standby just in case I’m needed, but I haven’t had to intervene for the last 422 operations of this kind.’ I’d say, ‘That’s fantastic. I’m so glad you’re here. Go do this thing, and if something does go wrong, you’re going to be there to make sure things go right.’ I’m going to trust that surgeon. I’m going to go [to] that surgeon every time.”

The same is true for the significance of tax accountants in important transactions, which is an analogy for the fact that no matter how advanced AI becomes, the value of experts will never completely disappear.

IV. Generative AI for Taxing Authorities

IV-1. Taxation of AI Itself

The issue of taxing robots in the same way as people has already been discussed in Professor Oberson’s earlier work,²⁸ and there is a similar argument for AI. This is not a question of taxing AI instead of people, but of making AI itself subject to taxation, i.e., of treating AI as a person for taxation purposes.

If AI must be granted legal capacity in order to tax AI itself, some would argue that this is still a long way off.²⁹ However, it is possible to make a legislative argument as to in what cases AI should be granted taxable personality.

Since we are only discussing taxable personality here, it would not make much sense to address, for example, whether an AI can conceive of rights or obligations with respect to marriage. However, as far as taxation is concerned, the question of whether an appeal can be filed against a disposition (does an AI have such a right?) should be included in the scope of discussion. If this is the case, it still seems that it will take some time before taxation of AIs themselves is recognized. However, it may be possible to take the view that it is not neces-

²⁷ See Goulder, Alarie & Massey, *supra* note (19) at 8-9.

²⁸ See *supra* note (7).

²⁹ See de la Feria & Grau Ruiz, *supra* note (7).

sary to consider rights when focusing exclusively on tax “obligations.”

Some argue that if AI has sentience, in the sense of feeling or perceiving as humans do, then we can find a basis for taxation, where they have tentatively defined AI sentience as AI having awareness of itself and its interactions with human beings, other AI entities, and the rest of its surroundings.³⁰ They then advocate treating a sentient AI as a taxable entity if it has some degree of economic autonomy in relation to its developer.³¹

IV-2. *Use of AI in Tax Administration*

Generative AI holds great promise not only for taxpayers but also for taxation agencies. The National Tax Agency’s “Digital Transformation of Tax Administration: Future Vision of Tax Administration 2023 (June 23, 2023)” lists “utilization of AI and data analysis” as one of the items under “efficiency and advancement of taxation and collection administration.” It explains, “We will work to improve the efficiency and sophistication of taxation and collection by analyzing a wide range of data, including the use of AI, to determine taxpayers who are likely to fail to file tax returns, and to determine how to respond to delinquent taxpayers according to their circumstances.”³² It also cites the OECD report “Tax Administration 3.0”³³ as part of its description of the world envisioned by the report: [Tax administration will be] “a human touch and high tech adaptive organisation” and “The key success factor is the intertwining of human staff and skills with advanced analytics and decision-supporting tools such as AI. This combination will support taxpayer compliance in the reducing number of areas where compliance choices still remain. It will also detect anomalies, leakages and flaws in the tax system.”³⁴

Successful use of generative AI is expected to make data analysis, management and use of the results more efficient and sophisticated within taxing agencies, and save manpower.³⁵ For example, the U.S. Internal Revenue Service (IRS) announced in September 2023 a program to improve fairness and compliance efforts using funds authorized by Inflation Reduc-

³⁰ See Lucas de Lima Carvalho & Victor Guilherme Esteche, Sentience as a Prerequisite for Taxing AI, 108 Tax Notes Int’l 1263, 1264 (Dec 5, 2022).

³¹ *Id.* at 1266. There is a concern that without taxing such AIs, they will enjoy a competitive advantage in the trade of goods and services, *Id.* at 1268.

³² National Tax Agency, *supra* note (17), p. 21. With regard to the judgment of taxpayers who are highly likely to have failed to file a tax return, it is explained that “by analyzing various data collected using statistical analysis, machine learning, and other methods using BA tools and programming languages, we are able to determine which taxpayers are highly likely to have failed to file a tax return. By utilizing the results of this analysis, we are able to conduct efficient investigations and administrative guidance, and we are also able to conduct in-depth investigations of taxpayers who are highly likely to require investigation.” On the other hand, in terms of predicting the most effective way to contact delinquent taxpayers, it is explained that “Using BA tools and programming languages, we predict the most effective way to contact each delinquent taxpayer (phone reminder, on-site reminder, written reminder) based on various information about the delinquent taxpayer (past contact history, tax return data, industry, etc.), and implement efficient delinquent tax collection. In the centralized telephone demand center, we analyze information on delinquent debtors (scale, industry, etc.) and past calling history, etc., and then construct a response prediction model for each day of the week and time of day, and we make calls based on a call list (AI call list) that adds a response prediction perspective, etc., in order to improve the response rate.”

³³ See OECD (2020), *Tax Administration 3.0: The Digital Transformation of Tax Administration*, OECD Publishing, Paris, <https://doi.org/10.1787/ca274cc5-en>.

³⁴ See National Tax Agency, *supra* note (17), p. 32; See also as a current OECD report, OECD (2023), *Tax Administration 2023: Comparative Information on OECD and Other Advanced and Emerging Economies*, OECD Publishing, Paris, <https://doi.org/10.1787/900b6382-en>.

tion Act (IRA).³⁶ Among them is the use of advanced AI technology as a specific example of innovation in tax administration.³⁷ Indeed, the implementation of generative AI by taxing authorities could lead to increased efficiency by simplifying complex tasks such as document preparation. On the other hand, however, the protection of taxpayer privacy or confidentiality must also be considered.³⁸

Note that data collection is first necessary for data analysis, etc., by the generative AI. In this regard, France, by Decree No. 2021-148 of February 2021,³⁹ authorized the collection of free public information on online platforms such as Facebook, Twitter (now X), Instagram, and eBay for a three-year trial period and allowed its tax agency to use it to detect fraud in tax filings.⁴⁰ However, certain considerations are given to how data is collected and how the data is handled after collection from the perspective of privacy protection and other issues.⁴¹

Also, as it relates to property tax, the French tax authority (Direction générale des Finances publiques (DGFiP)) will be able to detect undeclared swimming pools on taxpayers' property through an AI monitoring pilot program starting in October 2021.⁴² It announced in August 2022 that this detection allowed for the retroactive recovery of more than 10 million euros in property taxes, since properties with swimming pools are valued higher.⁴³ Thus, the

³⁵ The NTA chatbot has already been mentioned in the previous note (16), and it seems that the quality of records when retaining the content of chatbot conversations can be improved by using generative AI in call center operations and other areas. If the quality of records is improved, it will also contribute to subsequent data analysis. See "Customer Response Time Halved by AI" (January 15, 2024, Nihon Keizai Shimbun morning edition, page 7).

³⁶ See IR-2023-166 (Sep 8, 2023). <<https://www.irs.gov/newsroom/irs-announces-sweeping-effort-to-restore-fairness-to-tax-system-with-inflation-reduction-act-funding-new-compliance-efforts>>.

³⁷ *Id.* By the end of September 2023, the IRS would open examinations of 75 of the largest partnerships in the U.S. that represent a cross section of industries including hedge funds, real estate investment partnerships, publicly traded partnerships, large law firms and other industries as "expansion of pilot focused on largest partnerships leveraging Artificial Intelligence." See also Robert Kovacev & Omar Hussein, Fast-Tracking IRS Internal Operations Through Generative AI, 181 Tax Notes Federal 1753 (2023).

³⁸ Kovacev & Hussein, *supra* note (37), at 1757, states that any program implementing generative AI must take into account section 6103, discussing confidentiality and disclosure, and section 7213A, discussing limitations on internal access to information.

³⁹ <<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000043129895>>.

⁴⁰ That Decree allows the tax authorities unfettered access to the text, images, photos, videos, and identifiable personal information available on these sites. Citing this treatment as unfair, La Quadrature du Net, a French digital rights advocacy group, filed a lawsuit seeking, among other things, the invalidation of the data collected, but the Conseil d'Etat dismissed the lawsuit on July 22, 2022. <<https://www.conseil-etat.fr/fr/arianeweb/CE/decision/2022-07-22/451653>>.

⁴¹ No password-protected data may be accessed, no login profiles may be created to access the data, and no facial recognition technology may be used. Sensitive or irrelevant data must be destroyed within a maximum of five days after collection, and data needed for tax audits may be stored on a secure server for up to one year before being destroyed. The Conseil d'Etat decision above took into account this limitation on the scope of data that can be accessed and the rapid elimination of data irrelevant to tax audits, etc. See Sarah Paez, Tax Authorities Can Use Social Media Data, French Court Finds, 107 Tax Notes Int'l 593 (Aug 1, 2022).

⁴² According to the newspaper Le Parisien on October 10, 2021, the program reports a 30 percent error rate, largely because of the software mistaking above-ground or nonpermanent pools for permanent, taxable structures. <<https://www.leparisien.fr/economie/impots/lutte-contre-la-fraude-fiscale-la-chasse-aux-piscines-non-declarees-est-ouverte-10-10-2021-NEO4Z7ECTJFGBBZEM5FVQ4X6JL.php>>. French property owners are supposed to declare within 90 days any permanent changes that would increase the value of their property, such as the construction of in-ground swimming pools (in-ground swimming pools), though, this is a countermeasure to the endless number of wealthy people who fail to do so.

⁴³ He publishes both on Twitter (now X) and in the newspaper (Le Parisien). <https://twitter.com/dgfip_officiel/status/1564183168009342981> <<https://www.leparisien.fr/economie/impots/la-traque-aux-piscines-non-declarees-a-deja-rapporte-10-millions-deuros-au-fisc-28-08-2022-EZDWG7YDLJE7VBLXVMRDREF6BQ.php>>.

test-like program in question appears to have been a success, but there are still future issues to be addressed, such as software malfunctions and false detections.⁴⁴

These two French examples seem to show rather strongly the aspect of information collection and surveillance by AI. And if we take the IRS example together, we can see that the balance between efficiency and privacy protection through the introduction of a generative AI system is important.⁴⁵

V. Problems with Generative AI

V-1. *Inaccurate Answers, Hallucination, Lack of Transparency*

Generative AI engage in problematic behavior such as lying with impunity. This is commonly known as hallucination.⁴⁶ Such a phenomenon is also observed for answers related to tax law.

As a test, I asked ChatGPT 4.0, “What does Article 190 of the Corporation Tax Law provide?” Its reply was, “Article 190 of the Japanese Corporation Tax Act provides for additional reporting requirements for income related to special tax incentives under the Special Taxation Measures Law. Specifically, it requires a corporation that has received special measures under the Special Taxation Measures Law to report the amount of income and deductible expenses related to such special measures in a separate table attached to its corporate tax return. The purpose of this provision is to ensure that corporations receiving preferential tax treatment clearly declare the details related to the application of the preferential tax treatment, thereby providing the tax authorities with information for proper tax administration. This is expected to ensure proper implementation of the tax incentives and improve tax transparency.”⁴⁷

It is clear from the law database “e-Gov Laws and Regulations Search”⁴⁸ that the current Corporate Tax Law only goes up to Article 163, which means that Article 190 of the Corporate Tax Law is a nonexistent provision. As long as ChatGPT is giving such fabricated an-

⁴⁴ This program reported an error rate of 30%, and the main cause is said to be that the software mistakenly identifies above-ground pools and nonpermanent pools as permanent taxable structures. See Sarah Paez, French Tax Authorities Recover €10 Million From AI Surveillance, 107 Tax Notes Int'l 1160 (Sep. 5, 2022).

⁴⁵ In its November 6, 2023 decision, The House Rules Committee rejected a proposal to prohibit the use of AI technology in compliance activities and will consider an amendment to investigate the IRS's use of AI in tax enforcement. The amendment was seeking a study on how AI is used in enforcement asks for information on the dollar amounts of recoveries made through AI use, the human controls on AI's decision-making processes, privacy safeguards, and data on how many audits selected via AI resulted in no change in taxes owed. See Doug Sword, “The House Will Consider Studying IRS Use of AI in Tax Enforcement,” in House Rules Committee, November 6, 2023. House Will Consider Studying IRS Use of AI, Nixes Ban, 181 Tax Notes Federal 1286,1287 (Nov. 13, 2023).

⁴⁶ In the “Glossary” of “Knowledge Insight” on the Nomura Research Institute website, “Hallucination is a phenomenon in which artificial intelligence (AI) generates information that is not based on facts. It is so called because it outputs plausible lies (content that is different from the facts) as if the AI is hallucinating.” <<https://www.nri.com/jp/knowledge/glossary/1st/ha/hallucination>>.

⁴⁷ Just to be sure, I tried another article. This time, I asked ChatGPT 4.0, “Please tell me about Article 200 of the Corporation Tax Law,” and it replied, “Article 200 of the Corporation Tax Law is an important provision regarding corporate tax in Japan. This article regulates the procedures for corporate tax returns, payments, and refunds. Specifically, it stipulates the deadline for filing corporate tax returns, the method of paying taxes, and the conditions for receiving refunds,” was the reply.

⁴⁸ <<https://elaws.e-gov.go.jp/>>.

swers, it will never be able to replace tax accountants and other professionals.⁴⁹

If generative AIs were to become widely used across industries involved in taxation, there would be a sharp increase in inaccurate or false information and data, which would greatly reduce the accuracy of taxpayer submissions and external data on which taxing agencies rely (e.g., comparator data used for benchmarking).⁵⁰ The danger is that false data generated by an AI would be responded to by another AI. There is also the danger of a negative spiral in which another AI reacts to the data. However, it is difficult to accurately identify what is real and what is AI-generated fabrication.⁵¹ Therefore, if it is impossible to completely prevent the hallucination of generative AIs at this stage, then expert checks on responses are inevitable.⁵²

Generative AIs often do not provide a rationale for their responses. Even if the answer of a generative AI appears to be accurate, if it does not provide a rationale, it is impossible to judge whether the content is really correct or not.⁵³ Once a question is asked, a plausible answer will be given immediately, but if it is not possible to verify why the answer was given in the way it was, it will become a black box. In this sense, the current generative AI lacks transparency.⁵⁴

V-2. Tax Fraud Using Generative AI

Taxpayers may be threatened by the presence of generative AI. One such case is when generative AI is used for fraud. It is said that fraudulent emails can be created automatically using generative AI.⁵⁵ There are also growing harms such as imposter phone scams in which a person's voice is made to sound exactly like another person⁵⁶ using a generative AI. The dangers of abuse of generative AI are by no means the exception, even for tax-related scams.

In fact, four U.S. Senators, including Senate Finance Committee Chairman Ron Wyden, have asked the IRS Commissioner to take action regarding tax scams.⁵⁷ The senators are

⁴⁹ It is explained that “when ChatGPT hallucinates, what it’s doing is it’s just guessing based on what the language it’s seeing that’s available and what certain authorities look like. It’s guessing to just fill gaps if it’s not able to get an answer,” by Caitlin Tharp. See Cara Griffith, Mindy Herzfeld, Sharda Cherwoo and Caitlin Tharp in the June 6, 2023 Tax Notes roundtable discussion AI in Tax: Possibilities and Challenges (“Taxing Issues” webinar). <<https://www.taxnotes.com/featured-analysis/ai-tax-possibilities-and-challenges-transcript/2023/06/14/7gw49>>.

⁵⁰ See Sam Sim, Artificial Intelligence and Taxation at the Dawn of Generative AI, 112 Tax Notes Int’l 1647, 1657 (Dec. 18, 2023).
⁵¹ *Id.*

⁵² Generative AI has not yet reached the stage where it can drive automatically (autopilot) by itself, and is still at the stage where it is used as a co-pilot for work. The function that supports “Microsoft 365” with AI is called “co-pilot.” See “Microsoft to Provide AI Support for Business Software for \$20 to \$30 a Month” (January 16, 2024, Nihon Keizai Shimbun Web Edition). <<https://www.nikkei.com/article/DGXZQOGN158SR0V10C24A1000000/>>.

⁵³ See Alarie et al. *supra* note (26), at 1514.

⁵⁴ Problems arising from this lack of transparency may also manifest themselves when relying on generative AI for matters involving enforcement, such as tax audits. See Mindy Herzfeld, Godlike AI: Disrupter of the Tax Worlds, 110 Tax Notes Int’l 571, 571-572 (May 1, 2023).

⁵⁵ See the Nihon Keizai Shimbun article in the preceding note (2). One of the reasons for the increase in so-called “business e-mail fraud” and other crimes is also the existence of generative AI.

⁵⁶ See “‘AI Crime’ Has Begun After All” (Tokyo Shimbun Web, June 9, 2023). <<https://www.tokyo-np.co.jp/article/255568>>.

⁵⁷ See Margaret Hassan, Charles Grassley, Ron Wyden & James Lankford, Senators Urge Werfel to Counter AI-Generated Tax Scams, 2023 TNTF 85-22 (May 2, 2023).

calling on the IRS to take advantage of all available tools to prevent tax scams, which may involve cybercriminals using new AI tools such as deepfakes and ChatGPT to steal personal financial information and commit deceptive tax fraud intended to induce taxpayers to pay false fines and taxes. The lawmakers are urging the IRS to utilize all available tools to prevent the fraud.

While traditional scam messages have clearly identifiable characteristics (e.g., misspellings, grammatical errors, inaccurate references to tax laws, etc.), tax scams generated by the new AI tools have no such characteristics and are expertly tailored to deceive vulnerable taxpayers, such as the elderly and small businesses.⁵⁸

And lawmakers want answers on how the IRS plans to address the rise in scams using AI tools, how it plans to educate taxpayers and professionals on this issue, and whether the IRS is actually receiving reports of AI-based scams.⁵⁹

No matter how sophisticated a text is, there must be someone behind it who uses it for fraud (a fraudster). The enemy is not only the generative AI on the front stage of the fraud, but rather those who manipulate it. If this is the case, then the people being recruited to prevent tax fraud must also be familiar with technology, including tax and generative AI.

In the section on “Securing and training human resources to promote data utilization” in the reference materials for “Digital Transformation of Tax Administration—Future Vision of Tax Administration 2023,” the National Tax Agency (NTA) states that “a new examination category for ‘science, technology and digital’ has been established for the National Tax Specialist Recruitment Examination, and through this, including the human resources recruited through this, we will train human resources to promote data utilization through training and other means.”⁶⁰ In Japan, in addition to the promotion of data utilization, we should also keep in mind the objective of securing and fostering human resources who can effectively combat tax fraud in the future.

V-3. Other (Providing Ideas on Tax Avoidance and Evasion)

Other tax challenges posed by generative AI include the privacy issues and tax avoidance issues already mentioned. The latter, in particular, raises concerns that generative AI will generate ideas for unfair or abusive tax avoidance and even deliberate tax evasion.⁶¹ In the future, generative AI may be able to effortlessly find the actions that minimize tax burden for each taxpayer, or even actions that are illegal but unlikely to be detected, and that

⁵⁸ *Id. at 1*. The legislators cite as an example, ChatGPT generated a fake email from the IRS claiming that, in order to receive a \$1,450 tax refund, an individual needed to respond with personal financial information.

⁵⁹ *Id.* At an April 19, 2023 hearing, Senator Hassan, one of the four Senators, asked IRS Commissioner Daniel Werfel how he would address the dangers of ChatGPT. In response, Werfel said that the IRS wants to use the additional funds authorized by the IRA to protect taxpayers from fraud, and he added that he found the IRS “to be in very good shape in terms of our understanding of the portfolio of fraud that’s out there and how we detect it. But we have more work to do.” See Cady Stanton, Senators Question IRS Readiness For AI-Generated Tax Scams, 179 Tax Notes Federal 1050 (May 8, 2023). See also Joseph DiSciullo, Senators Urge Commissioner to Counter AI-Generated Tax Scams, 179 Tax Notes Federal 1187 (May 15, 2023).

⁶⁰ See NTA, *supra* note (17), p. 39.

⁶¹ See Benjamin Alarie, AI and the Future of Tax Avoidance, 181 Tax Notes Federal 1809 (Dec 4, 2023).

would be unthinkable for ordinary humans.

On the other hand, the existence of AI will be indispensable to prevent such unfair or illegal acts through interpretation and legislation. Ultimately, the conflict between taxpayers and taxing authorities and legislatures will continue, but the situation may change drastically if both sides make use of AI. In addition, given the existence of generative AI, international cooperation in rulemaking and enforcement against tax evasion will become more important than ever before.

VI. Conclusion

It will be difficult to hold back the rapid development of robotics, generative AI, and other technologies through taxation, and it is true that these new technologies will cause people to lose their jobs in one way or another. The biggest concern is that technological innovation will have a significant impact even on white collar workers.⁶² If a significant loss of tax revenue related to payroll income were to occur, some action would need to be taken to increase revenues, but effective solutions have yet to be found. Another important issue is addressing tax fraud and tax evasion using generative AI.⁶³

On the other hand, we must also consider the effective use of generative AI. In a February 2017 QUARTZ interview,⁶⁴ Bill Gates argued that when robots start doing the same jobs as people, they should be taxed at the same level as people. However, in a January 2024 CNN interview,⁶⁵ Gates predicted that developments in AI would make life easier for everyone. He also welcomed the “dramatic” evolution of ChatGPT-4.0 and expressed strong hopes for its application in education and healthcare. He makes no mention of taxation. After almost 7 years, it appears that the emphasis has shifted from taxing robots to the effective use of generative AI.⁶⁶

In the taxation environment, the question of how AI will be used in the future will be even more important. Advances in technology sometimes exceed our expectations. The rapid progress of AI technology in the past few years is a prime example.⁶⁷ For the time being, we are likely to keep a close eye on taxation issues related to AI. The discussion in this pa-

⁶² Professor Bradford DeLong of the University of California, Berkeley, in “Economic Classroom: Generating AI, Fear Not” (January 4, 2024, Nihon Keizai Shimbun Morning Edition, page 15), stated, “I acknowledge that this IT wave is likely to cause job insecurity for those who enjoyed the comfortable and privileged status of white-collar workers, but the government should be able to handle it well.”

⁶³ At the annual meeting of the World Economic Forum (WEF) in Davos, there is a debate over whether to strengthen regulations to prevent the misuse of AI or to increase transparency by opening up the technology more widely, with arguments over how to respond to the situation split in two. See “AI: Open or Regulated? Arguments Split” (Nihon Keizai Shimbun, Morning Edition, January 19, 2024, p. 13).

⁶⁴ See Kevin J. Delaney, The Robot That Takes Your Job Should Pay Taxes, Says Bill Gates, Quartz (Feb. 17, 2017).

⁶⁵ See Jordan Valinsky, Bill Gates Explains How AI Will Change Lives in 5 Years, Houston Style Magazine (Jan 16, 2024). <<https://stylemagazine.com/news/2024/jan/16/bill-gates-explains-how-ai-will-change-lives-5-yea/>> “Bill Gates, ‘AI Will Change Lives in 5 Years’ ” (Jan 17, 2024, CNN.co.uk). <<https://www.cnn.co.jp/tech/35214006.html>>.

⁶⁶ It should be noted, however, that Microsoft has a multi-billion dollar partnership with OpenAI, and Gates remains one of Microsoft’s largest shareholders.

⁶⁷ What awaits us beyond generative AI is said to be a “universal AI” that can handle millions of different tasks and solve problems autonomously. See “The Future Brought to You by Universal AI” (January 9, 2024, Nihon Keizai Shimbun morning edition, page 15). At the time of proofreading, I learned that Google had further developed “Bard” and renamed it “Gemini.” See “Google Renews Generative AI,” February 9, 2024, Nihon Keizai Shimbun Morning Edition, page 15.

per is only a stepping stone, and its content may have to be revised over time also. Nevertheless, it is worthwhile to recognize the current status, challenges, and future possibilities.

References

- Abbott, Ryan (2020), *"The Reasonable Robot: Artificial Intelligence and the Law,"* Cambridge University Press.
- Abbott, Ryan and Bogenschneider, Bret (2018), "Should Robots Pay Taxes: Tax Policy in the Age of Automation," *Harvard Law & Policy Review*, Vol. 12, 145.
- Alarie, Benjamin (2023), "AI and the Future of Tax Avoidance," *Tax Notes Federal*, 1809.
- Alarie, Benjamin, Condon, Kim, Massey, Susan and Yan, Christopher (2023), "The Rise of Generative AI in Tax Research," *Tax Notes Federal*, 1509.
- Alarie, Benjamin, McCreight, Rory and Tucciarone, Cristina (2023), "Automated Tax Planning: Who's Liable When AI Gets It Wrong?" *Tax Notes Federal*, 2297.
- Asatsuma, Akiyuki (2018), "Should AI and robots be taxed—An introduction to the Oberson paper," *Zeikeitsushin*, Vol. 73, No. 2, pp. 2-3.
- Cabinet Office (2023), "Grand Design of New Capitalism and Action Plan 2023 Revised Version," <https://www.cas.go.jp/jp/seisaku/atarashii_sihonsyugi/index.html> (viewed March 12, 2025)
- de la Feria, Rita and Grau Ruiz, María Amparo (2022), "Taxing Robots," in *"Interactive Robotics: Legal, Ethical, Social and Economic Aspects,"* Ch. 17, Springer Nature.
- de Lima Carvalho, Lucas and Esteche, Victor Guilherme (2022), "Sentience as a Prerequisite for Taxing AI," *Tax Notes Int'l*, 1263.
- Delaney, Kevin J. (2017), "The Robot That Takes Your Job Should Pay Taxes, Says Bill Gates," QUARTZ – 17 FEBBRAIO 2017. <<https://www.rivistadirittotributario.it/wp-content/uploads/2017/03/Intervista-17.2.17.pdf>> (viewed March 12, 2025)
- DiSciullo, Joseph (2023), "Senators Urge Commissioner to Counter AI-Generated Tax Scams," *Tax Notes Federal*, 1187.
- Englisch, Joachim (2018), "Digitalisation and the Future of National Tax Systems: Taxing Robots?" Available at SSRN: <https://ssrn.com/abstract=3244670> or <http://dx.doi.org/10.2139/ssrn.3244670>. (viewed March 12, 2025)
- Falcão, Tatiana (2018), "Should My Dishwater Pay a Robot Tax?" *Tax Notes Int'l*, 1273.
- Frey, Carl Benedikt and Osborne, Michael (2017), "The Future of Employment: How Susceptible Are Jobs to Computerisation?" *Technological Forecasting and Social Change*, 114.
- Garcia, Uriel J. (2019), "No Criminal Charges for Uber in Tempe Death; Police Asked to Further Investigate Operator," *AZCentral*. <<https://www.azcentral.com/story/news/local/tempe/2019/03/05/no-criminal-charges-uber-fatal-tempe-crash-tempe-police-further-investigate-driver/3071369002/>> (viewed March 12, 2025)
- Goulder, Robert, Alarie, Benjamin and Massey, Susan (2023), "TaxGPT: Advancing AI and the Tax Profession," <<https://www.forbes.com/sites/taxnotes/2023/06/14/taxgpt->

- advancing-ai-and-the-tax-profession/> (viewed March 12, 2025)
- Hassan, Margaret, Grassley, Charles, Wyden, Ron and Lankford, James (2023), “Senators Urge Werfel to Counter AI-Generated Tax Scams,” 2023 TNTF 85-22. <<https://www.taxnotes.com/research/federal/legislative-documents/congressional-tax-correspondence/senators-urge-werfel-to-counter-ai-generated-tax-scams/7gln5>> (viewed March 12, 2025)
- Herzfeld, Mindy (2023), “Godlike AI: Disrupter of Tax Worlds,” *Tax Notes Int’l*, 571.
- Iwamoto, Koichi (2020), “Will the Robot Tax Save Jobs?” *Zeimukoho*, Vol. 68, No. 12, pp. 2-3.
- Izumi, Junya (2021), “Let’s Start a Discussion on AI/Robot Taxes—From ‘Job-Killing AI/Robots’ to ‘Feral AI/Robots’,” *The Journal of Chiba University of Commerce*, Vol. 59, No. 1, p. 25.
- Kovacev, Robert and Hussein, Omar (2023), “Fast-Tracking IRS Internal Operations Through Generative AI,” *Tax Notes Federal*, 1753.
- Morinobu, Shigeki (2019), “*Digital Economy and Taxes: the Attack on Wealth in the AI Era*,” Nihon Keizai Shimbun Publishing.
- Morinobu, Shigeki (2022), “The Development of AI and Robot Taxes—Public Policies to Avoid the Fragmentation of Digital Society” <<https://www.tkfd.or.jp/research/detail.php?id=3998>> (viewed January 23, 2024)
- National Tax Administration (2023), “Digital Transformation of Tax Administration—Future Vision of Tax Administration 2023—” <<https://www.nta.go.jp/about/introduction/torikumi/digitaltransformation2023/index.htm>> (viewed January 23, 2024)
- Noda, Masaki and Nishihara, Takamasa (2020), “On AI and Robot Taxation” in “*Digital Economy and Frontier of Taxation*” edited by Minoru Nakazato et al. pp. 224-236. Yuhikaku
- Noguchi, Yukio (2023), “ ‘Super’ Creation Method: How Will Generative AI Change Intellectual Activities?” Gentosha Shinsho.
- Oberson, Xavier (2017), “Taxing Robots? From the Emergence of an Electronic Ability to Pay to a Tax on Robots or the Use of Robots,” 9 *World Tax Journal* 247.
- OECD (2022), *Tax Administration 3.0 and the Digital Identification of Taxpayers: Initial Findings*, OECD Forum on Tax Administration, OECD, Paris.
- OECD (2023), *Tax Administration 2023: Comparative Information on OECD and Other Advanced and Emerging Economies*, OECD Publishing, Paris.
- Paez, Sarah (2022a), “Tax Authorities Can Use Social Media Data, French Court Finds,” *Tax Notes Int’l*, 593.
- Paez, Sarah (2022b), “French Tax Authorities Recover €10 Million From AI Surveillance,” *Tax Notes Int’l*, 1160.
- Sim, Sam (2023), “Artificial Intelligence and Taxation at the Dawn of Generative AI,” *Tax Notes Int’l*, 1647.
- Stanton, Cady (2023), “Senators Question IRS Readiness For AI-Generated Tax Scams,” *Tax Notes Federal*, 1050.
- Sword, Doug (2023), “House Will Consider Studying IRS Use of AI, Nixes Ban,” *Tax Notes*

Federal, 1286.

Valinsky, Jordan (2024), “Bill Gates Explains How AI Will Change Lives in 5 Years,” *Houston Style Magazine*. <<https://stylemagazine.com/news/2024/jan/16/bill-gates-explains-how-ai-will-change-lives-5-yea/>> (viewed March 12, 2025)