Toutefois, dans un second temps, il est tout à fait possible que certaines formes spécifiques de systèmes d'IA ou de robots intelligents soient reconnues comme ayant une capacité contributive, qui pourraient alors être soumis à l'impôt. Cela conduirait inévitablement à une véritable révolution fiscale, avec l'émergence d'un nouveau contribuable, une unité d'IA elle-même, qui pourrait conclure une transaction, recevoir une forme de « revenu » ou même agir en tant que consommateur. Les sociétés de capitaux bénéficient déjà d'une capacité contributive, sous la forme d'une capacité de paiement. Il pourrait en être de même à l'avenir pour certains systèmes d'IA, dans la mesure où ils bénéficieraient d'une autonomie suffisante et de la capacité de contrôler les fonds et de payer l'impôt. À cet égard, nous avons soutenu que l'IA, pour être reconnue ultérieurement comme une entité autonome imposable, devrait remplir les quatre conditions essentielles suivantes : l'autonomie ; un patrimoine distinct ; l'identification ; et un contrôle par les humains[7].

Une fois les unités imposables de l'IA reconnues comme disposant d'une capacité contributive propre, il pourrait alors être intéressant d'envisager de trouver un moyen d'imposer les revenus qu'elles perçoivent. Cette taxation pourrait initialement se fonder sur des règles similaires applicables aux humains exerçant des activités comparables, mais devrait probablement s'éloigner rapidement de ces modèles, afin de tenir compte des possibilités spécifiques, de plus en plus différentes et en constante évolution, offertes par l'évolution technologique. Cette taxe pourrait également être basée, plutôt que sur les revenus au sens traditionnel du terme, sur les flux financiers transférés par l'intermédiation de l'IA. Dans cette logique, les unités assujetties à l'IA pourraient elles-mêmes être soumises à la TVA. La technologie applicable pourrait être adaptée pour inclure des mécanismes permettant de collecter la taxe sur chaque transaction et de la verser à l'autorité compétente.

Les questions soulevées dans cet article dépassent largement les frontières nationales. Elles devront être examinées à l'échelle mondiale, en tenant compte des évolutions récentes du droit fiscal international au sein de l'OCDE, des Nations Unies et de l'UE. Le débat sur l'imposition de l'IA ne fait que commencer. Compte tenu des progrès fulgurants de l'IA, il arrive à point nommé. Pour une fois (si ce n'est la dernière fois), un futur contribuable peut être programmé dans le système sans son aide…

[7] Oberson, *supra* note 1, p. 30.

Taxing **artificial intelligence**

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The development of Artificial Intelligence (AI) has become an issue of global significance. AI is now used not only in the industrial sector but nowadays also in the service and entertainment sectors. Robots can help lawyers, doctors, bankers, brokers, nurses, farmers, social workers or even artists. Increased use indeed has positive impacts as robots can now replace difficult, repetitive or even dangerous activities (such as cleaning polluted sites) and encourage efficiencies. However, the impact in the future of human labour is a growing concern. The recent appearance of conversational and collaborative models of AI, using large language models, such as ChatGPT, has also reinforced fears of a major impact on jobs, which, under a pessimist view, could drastically shrink in favor of automation and even disappear in the long-run.

While the impact of AI on the future of jobs is highly controversial, it seems at least likely to us that many jobs will disappear. Furthermore, As a result, it is by no means certain that enough new jobs will be created to compensate for those that would have disappeared. In addition, many workers will not be able to adapt soon enough to the evolution of their profession. With jobs disappearing and inequality among labor and capital increasing, massive financial consequences would occur for the States, notably to finance social security. Indeed, taxes and social contributions on salaries are, in general, the most important source of revenues for the States. Consequently, it is necessary to explore solutions to the impact of AI on the economy, should, in the future, the pessimist scenario become reality. In our opinion, a tax on AI represents an interesting alternative that deserves to be considered[1].

The risks that automation raise on the future of human labor are beginning to be taken seriously. The idea of taxing AI, or robots, is now debated all around the world. In a report on February 16, 2017, the European Parliament questioned the possibility of taxing "smart robots", but ultimately decided against it[2]. The following day, Bill Gates, in an interview with the TV Quartz channel, also confirmed

[1] Xavier Oberson, Taxing Artificial Intelligence, Elgar Publishing, Cheltenham, 2024, p. 10 ff.

[2] See European Parliament, Report with recommendations to the Commission on civil law rules on robotics, Committee on Legal Affairs, Rapporteur Mady Delvaux, N° 2015/2103(INL), January 27, 2017 (hereinafter EU Report).

his support for a taxation of robots in order to address potential disappearance of human workers. On our side, back in early 2016, we have argued in favor of robot taxation, leading further to a proposed taxation of AI, as a solution for the future[3].

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The idea of taxing AI or robots raises complex issues. To be justified, such a tax must be based on an operational definition of the taxpayer and the tax base, in line with the leading principles of tax law, such as equality of treatment and ability to pay. In general, even if there is no unanimously accepted definition, AI is a general term, which includes all types of algorithms or software designed to create intelligent machines. Robots, by contrast, are usually regarded as implementation of AI on machines. In other words, we tend in everyday language to view robots as a form of "embodied" AI. While the distinction between AI and robots may serve to visualize these concepts, we should in our view focus on the taxation of AI, defined in accordance with its purpose and effect on the economy. What should be relevant is the autonomy of AI, defined as the capacity to process, plan and act on its own. The fact that AI is located in a computer, a network, a software or an industrial robot does not make any difference from a tax standpoint.

So far, AI and robots, even with sufficient autonomy, are not regarded as legal persons, subject to rights and obligations. As such, they do not benefit form a specific ability to pay. This is why most current projects of taxing AI or robots focus mainly on a taxation of their use by enterprises. However, this approach may prove insufficient in the long term. In 2017, we have argued in favor of analyzing the possibility of "smart robots" to be recognized as taxable entities, with an ability to pay[4]. Nowadays the focus is on AI systems, in accordance with a "form neutral" definition to be specified by the legislator. History has however already witnessed similar legal breakthrough. More than a century ago, the concept of a separate legal personality was developed. At the time, the purpose was to encourage entrepreneurship and to offer people the possibility to create a limited liability entity. As soon as a company was incorporated as a legal entity, the legislator introduced a tax on its profits, since the companies were recognized as benefiting from their own ability to pay.

As a consequence, a taxation of AI could follow a two-stage approach. First, the use by enterprises of AI replacing humans would be taxed, in the absence of any tax capacity attributable to the AI systems as such. In this perspective, the taxpayer would remain the company using AI. Second, to the extent that the tax legislation would recognize AI taxable units or smart robots as tax subjects, the taxpayer would then become the AI unit as such.

In the first stage, focusing on the *use* of AI by enterprises, an interesting solution would be to levy an income (profit) tax on the hypothetical salary that companies using AI would have received for equivalent work or activity performed by humans. Thus, the income attributable to the company using AI should correspond to the economic benefit realized by using AI instead of human workers. This hypothetical income could also be subject to social security contributions. A simpler alternative would be to introduce a lump-sum taxation system, corresponding to an approximation of the value created by the use of robots. The idea of introducing a tax on a hypothetical imputed income is however not new. For example, some States such as Switzerland have long collected from landlords a tax on rental value. This taxation corresponds to the hypothetical income which the landlord would have had to pay to occupy the property.

In this context, another more schematic approach focuses on the idea of introducing an "automation tax" that would apply to a company's production factors using AI or robots instead of human workers. In this line of thinking, some authors have argued in favor of a tax on companies based on a ratio corresponding, for example, to the percentage of total sales to the number of human employees (automation ratio)[5]. In other words, the higher the ratio, the more the company uses AI and robots to the detriment of humans, and the higher the amount of the tax should be.

With this in mind, taxes on robots could also be introduced to compensate (internalize) the negative externalities associated with job losses caused by automation. In our view, in the short term, such taxation could be justified to ease the transition to a new economy and enable the workers concerned to adapt as much as possible[6].

[3] Compare our article published on October 17, 2016, in Le Temps, in favor of taxing robots, with the one published on August 23, 2017, in the Neue Zürcher Zeitung, essentially considering that this idea is meaningless ("Unsinn").

[4] 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 2017, pp. 247. The idea of granting some form of legal personality to robots has been also widely discussed, see, among others, Ugo Pagallo, The Laws of Robots, Elgar Publishing 2013, pp. 152 ff; Lawrence Solum, Legal Personhood for Artificial Intelligence, 70 North Carolina Law Review 1992, pp. 1231 ff.

[5] Ryan Abbott/Bret N. Bogenschneider, Should Robots Pay Taxes? Tax Policy in the Age of Automation, 12 Harvard Law & Policy Review 2018, pp. 15 ff.

[6] Robert J. Shiller, Robotization Without Taxation?, Project Syndicate, March 22, 2017.

Another more specific approach consists in imposing a special tax on the use of certain automatic machines, typically in the retail or industrial sectors. For example, in Geneva, a cantonal bill has proposed to introduce a tax on the use of automatic vending machines that replace human sales assistants in consumer goods stores. To our knowledge, this proposal has not been adopted. The possession of specific facilities using AI or robots may also be subject to an object tax, similar to a tax on cars, planes, or dogs. For example, taxes on drones and self-driving cars already exist in California in the United States.

However, in a second stage, it is entirely possible that certain specific forms of AI systems or smart robots could be recognized as having the capacity to pay taxes, which could then be subject to taxation. This would inevitably lead to a veritable tax revolution, with the emergence of a new taxpayer, an AI unit itself, which could conclude a transaction, receive a form of "income" or even act as a consumer. Companies do benefit from an ability to pay, in the form of a capacity of payment. The same could apply in the future for some AI systems, to the extent they benefit from a sufficient autonomy and the capacity to control funds and pay the tax. In this respect, we have argued that AI, in order to be later recognized as a taxable autonomous entity, should meet the following four essential conditions: autonomy; a distinct patrimony; identification; and control by humans[7].

Once AI taxable units are recognized as having an ability to pay of their own, it might then be worth considering finding a way of taxing the income they receive. Such taxation could initially be based on similar rules applicable to humans engaged in comparable activities, but would probably have to move away from these models rapidly, in order to take account of the specific and increasingly different and constantly evolving possibilities offered by the technological evolution. This tax could also be based, rather than on revenues in the traditional sense of the term, on the financial flows transferred through the intermediation of AI. Following this logic, AI taxable units could themselves become subject to VAT. The applicable technology could be adapted to include mechanisms for collecting the tax on each transaction and pay it to the competent authority.

The issues raised in this article certainly transcend national frontiers. They will need to be considered globally, taking into account recent developments in international tax law at the OECD, the UN and the EU. The debate on the taxation of AI is just beginning. Given the fulgurant progress in AI, the debate is timely. For once (if not the last time), a future taxpayer may be programmed into the system without his assistance… ■

[7] Oberson, *supra* note 1, p. 30.