The Contribution of Artificial Intelligence and Computer Algorithms to the Investigation Activities of the Financial Administration and to the *Jus Dicere* Function of the Tax Judge: What Prospects for the Suppression of Tax Evasion?

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Abstract

Artificial intelligence, big data and computer algorithms, in addition to being used in administrative action, can play an important role in judicial proceedings, in the application of tax provisions, in the context of assessment procedures and in suppression of tax evasion.

One of the advantages of the technology lies in the possibility of filing a large amount of information relating to taxpayers, which can then be shared between tax authorities of different States. This system maximizes the ability of the financial administration to carry out cross-checks, also through the use of telematic tools, in order to identify any inconsistencies worthy of further study.

In the jurisdictional field, 'predictive justice' software, based on the indexing of data and the use of metadata and sophisticated algorithms, while fully complying with common law systems, in which the principle of the binding precedent applies, can be important also in civil law systems, including tax matters.

The essay aims to examine the extent to which public entities can base their institutional action on the results of algorithmic processing.

I. The Jurisdictional and Tax Assessment Functions in the Era of the Data Economy and Cloud Computing Systems: The Contribution of Artificial Intelligence and Computer Algorithms

In the era of the data economy[1] and crypto-assets,[2] artificial intelligence and

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[1] A.F. Uricchio and S.A. Parente, 'Data driven e digital taxation: prime sperimentazioni e nuovi modelli di prelievo' *Diritto e pratica tributaria internazionale*, 606 (2021); A.F. Uricchio, 'L'imposizione della data economy tra proposte di nuove forme di prelievo, web tax italiana e global minimum tax', in F. Gallo and A.F. Uricchio eds, *La tassazione dell'economia digitale. Tra imposta sui servizi digitali, global minimum tax e nuovi modelli di prelievo* (Bari: Cacucci, 2022), 31-120; A. Fedele, 'Intervento sulla rilevanza dei dati nella determinazione degli imponibili nell'era digitale' *Rivista di diritto tributario – supplemento online*, 19 September 2023, 1-12.

[2] F. Alcaro, 'Intelligenza artificiale e attività giuridica', in P. Perlingieri et al eds, *Rapporti civilistici e intelligenze artificiali: attività e responsabilità* (Napoli: Edizioni Scientifiche Italiane, 2020), 3; M.R. Nuccio, 'Intelligenza Artificiale e gestione dei rischi: prospettive di tutela' *Rassegna di diritto civile*, 1466-1470 (2022); S. Capaccioli, 'Cripto-attività, cripto-valute ed Iva', in G. Ragucci ed, *Fisco*

computer algorithms,[3] phenomena largely resulting from the development of technological knowledge and innovation,[4] can be used in administrative procedures, giving rise to an automated action,[5] and can also play an important role in judicial proceedings[6] and in the application of tax provisions.[7]

Of no less importance can be the function carried out in the context of formal and substantive assessment procedures[8] - in order to facilitate and guide controls

digitale. Cripto-attività, protezione dei dati, controlli algoritmici (Torino: Giappichelli, 2023), 33; D. Conte, 'Imposizione reale e ricchezza di origine virtuale: quale tassazione per le criptoattività?' *Rivista di diritto tributario*, 483-540 (2023); A. Fuccio and M. Tarantino, 'Cripto-attività e stabile organizzazione' *Rivista di diritto tributario – supplemento online*, 2 February 2023, 1-7; M. Pierro, 'Le cripto-attività e l'imposizione diretta dopo la legge di bilancio 2023', in G. Ragucci ed, *Fisco digitale* above 11; E. Fazio, *Intelligenza artificiale e diritti della persona* (Napoli: Edizioni Scientifiche Italiane, 2023), 2; A. Marano, 'La rivoluzione degli algoritmi verdi nella fiscalità ambientale: dall'esperienza spagnola alle novità italiane' *Rivista di diritto tributario*, 687-707 (2023); A. Perrone, 'Sull'esistenza di un nuovo "valore digitale" e la sua rilevanza fiscale: il caso dei crypto-asset' *Rassegna tributaria*, 268-308 (2023); M. Pierro, 'Il TUIR alla prova delle cripto-attività: indicazioni europee e il discutibile intervento della prassi' *Rassegna tributaria*, 855-875 (2023).

[3] On the new taxation models deriving from the spread of artificial intelligences and computer algorithms, see S. Dorigo, 'La tassa sui robot tra mito (tanto) e realtà (poca)' *Corriere tributario*, 2364-2370 (2018); A.F. Uricchio, 'Robot tax: modelli di prelievo e prospettive di riforma' *Giurisprudenza italiana*, 1749-1761 (2019); S.A. Parente, 'Artificial Intelligence and Taxation: Assessment and Critical Issues of Tax-Levy Models' 26(3) *Białystok Legal Studies*, 135-151 (2021); A.F. Uricchio, 'Prospettive di ulteriori interventi in materia fiscale tra tassazione dell'intelligenza artificiale e ulteriori nuove forme di prelievo', in F. Gallo and A.F. Uricchio eds, n 1 above, 485-534; M.G. Ortoleva, 'Artificial Intelligence and Robots: Taxing or Incentivising?' *Rivista di diritto tributario – supplemento online,* 31 December 2022, 1-10.

[4] A. Uricchio, 'Evoluzione tecnologica e imposizione: la cosiddetta «bit tax». Prospettive di riforma della fiscalità di internet' *Il diritto dell'informazione e dell'informatica*, 753, 753-754; A. Uricchio and W. Spinapolice, 'La corsa ad ostacoli della web taxation' *Rassegna tributaria*, 451-493 (2018); C. Sacchetto, 'Introduzione', in F. Montalcini, R. Nemni, C. Sacchetto, *Diritto tributario telematico. Nuovi confini* (Torino: Giappichelli, 2021), XXVII.

[5] A.G. Orofino and G. Gallone, 'L'intelligenza artificiale al servizio delle funzioni amministrative: profili problematici e spunti di riflessione' *Giurisprudenza italiana*, 1738, 1738-1748 (2020); F. Farri, 'Digitalizzazione dell'amministrazione finanziaria e diritti dei contribuenti' *Rivista di diritto tributario*, 115, 129-139 (2020); C. Francioso, 'Automated decision making by tax authorities and the protection of taxpayers' rights in a comparative perspective' *Rivista trimestrale di diritto tributario*, 541-558 (2023).

[6] For the application of artificial intelligences in accounting judgment, see A. Giordano, 'Intelligenza artificiale, giusto processo e giudizio contabile' *Rivista della Corte dei conti*, 27-35 (2022).

[7] S. Dorigo, 'Intelligenza artificiale e norme antiabuso: il ruolo dei sistemi "intelligenti" tra funzione amministrativa e attività giurisdizionale' *Rassegna tributaria*, 728-751 (2019); T. Rosembuj, *Inteligencia artificial e impuesto* (Barcelona: el Fisco, 2018).

[8] M.G. Ortoleva, 'The employment of AI by the Italian tax administration to fight tax relief abuse: the difficult balance between public interest and taxpayer rights' *Diritto e processo tributario*, 351-376 (2022); F. Paparella, 'L'ausilio delle tecnologie digitali nella fase di attuazione dei tributi' *Rivista di diritto tributario*, 617-652 (2022); A. Contrino, 'Digitalizzazione dell'amministrazione finanziaria e attuazione del rapporto tributario: questioni aperte e ipotesi di lavoro nella prospettiva dei princìpi generali' *Rivista di diritto tributario*, 105-120 (2023); C. Francioso, 'Intelligenza artificiale nell'istruttoria tributaria e nuove esigenze di tutela' *Rassegna tributaria*, 47-60 (2023); A. Guidara, 'Accertamento dei tributi e intelligenza artificiale: prime riflessioni per una visione di sistema' *Diritto e pratica tributaria*, 384-400 (2023); F. Paparella, 'L'ausilio delle tecnologie digitali nell'applicazione

and to make the choice of taxpayers more neutral - and in the prosecution of tax fraud.[9]

Since these are functions characterized by public interest, in which a conflict emerges between the power exercised by the administrative authority and the protection of the administered,[10] it is necessary to examine the limits, including those of an ethical nature,[11] that should be placed on the ability of public agencies to rely upon the results of processing based on artificial-intelligence systems as the foundation of their institutional action.[12]

One of the advantages of technology lies in the ability to store a large amount of data relating to taxpayers[13] (also using the aid of sophisticated cloud computing systems) and to effectively process the stored data.

The subsequent sharing of this information between the authorities of the different States maximizes the ability of the financial administration to carry out cross-checks, also through the use of telematic tools,[14] in order to identify any inconsistencies worthy of further study.[15]

dei tributi', in L. del Federico and F. Paparella eds, *Diritto tributario digitale* (Pisa: Pacini Giuridica, 2023), 155.

[9] R. Cordeiro Guerra, 'L'intelligenza artificiale nel prisma del diritto tributario', in S. Dorigo ed, *Il ragionamento giuridico nell'era dell'intelligenza artificiale* (Pisa: Pacini Giuridica, 2020), 87-88, according to which 'the issue of transparency in the selection of subjects to be controlled, net of the appreciable positions of the doctrine in this regard, is in fact lacking in effective justice, in the sense that the circumstance that a taxpayer is controlled outside the guiding criteria internally issued by the competent offices or an excessive or redundant number of times, does not constitute grounds for the invalidity of the deed of assessment resulting from such control' (translated from the original). On topic, see G. Melis, *Manuale di diritto tributario* (Torino: Giappichelli, 2019), 298; S. Dorigo, 'Opportunità e limiti nell'impiego dell'intelligenza artificiale da parte del Fisco' *Corriere tributario*, 965-973 (2022); E.M. Bartolazzi Menchetti, 'Le sanzioni tributarie nell'economia digitale', in L. del Federico and F. Paparella eds, *Diritto tributario digitale* n 8 above, 261; S. Dorigo, 'L'intelligenza artificiale e il possibile "rinascimento" del sistema sanzionatorio tributario' *Rivista di diritto tributario*, 407-433 (2023).

[10] D.U. Galetta, 'Public Administration in the Era of Database and Information Exchange Networks: Empowering Administrative Power or Just Better Serving the Citizens?' 25(2) *European Public Law*, 171-181 (2019).

[11] A. Maceratini, 'New Technologies between Law and Ethics: Some Reflections' 26(3) *Białystok Legal Studies*, 9-24 (2021).

[12] S. Dorigo, 'L'intelligenza artificiale e i suoi usi pratici nel diritto tributario: Amministrazione finanziaria e giudici', in R. Cordeiro Guerra and S. Dorigo eds, *Fiscalità dell'economia digitale* (Pisa: Pacini Giuridica, 2022), 204.

[13] G. Palumbo, 'Alcuni argomenti a favore dell'utilizzo dei dati personali da parte del Fisco', in Id, *Fisco e privacy. Il difficile equilibrio tra lotta all'evasione e tutela dei dati personali* (Pisa: Pacini Giuridica, 2021), 99.

[14] M. Carrozzino et al, 'I controlli tributari telematici', in L. Del Federico and C. Ricci eds, *Le nuove forme di tassazione della Digital Economy. Analisi, proposte e materiali per il dibattito politico e istituzionale* (Canterano: Aracne, 2018), 171.

[15] F. Farri, 'Digitalizzazione' n 5 above, 129.

II. The Use of Digital and Algorithmic Tools to Make Tax Prevention, Assessment and Prosecution More Efficient

Even without achieving a real 'algorithmic revolution',[16] this system – already envisaged and, in part, implemented in the French legal system[17] and in that of the United States of America, whose financial administrations have long been entitled to make use of algorithms and big data to scan the social media used by taxpayers and additional open sources (for example, press articles, websites and information made public by the data subject) in search of potential tax evaders[18] – has been the subject of attention by the Italian tax authority.

That agency – through SOGEI, a company in charge of managing and organizing IT systems on behalf of the Ministry of Economy and Finance and the Court of Auditors – has long made use of information obtained from electronic invoicing,[19] as well as telematics databases for intelligence and tax verification activities and for economic policy decisions.[20] These cognitive elements rise to a sort of 'fiscal oracle'.[21]

Recently, a new algorithm has been developed, called 'Ve.R.A.' (acronym for 'verification of financial reports'),[22] capable of processing and cross-referencing millions of pieces of data simultaneously in order to identify lists of taxpayers at risk of tax evasion. The legal basis for the adoption of the 'Ve.R.A.' algorithm is represented by Art 1, para 682, legge 27 December 2019 no 160, where the interconnection of different tax datasets and databases with the national tax

[16] S. Dorigo, 'Il tramonto delle regole fiscali tradizionali nell'economia del XXI secolo: rivoluzione algoritmica e tutela dei diritti', in R. Cordeiro Guerra and S. Dorigo eds, n 12 above, 29.

[17] Art 154, legge 28 December 2019, no 2019-1479 (Loi de finances pour 2020).

[18] C. Dell'Oste and G. Parente, 'Ecco come il Fisco incastra gli evasori con le prove raccolte sul web' *Il Sole 24 Ore*, 28 January 2020; L. Quarta, 'Impiego di sistemi AI da parte di Amministrazioni finanziarie ed agenzie fiscali. Interesse erariale versus privacy, trasparenza, proporzionalità e diritto di difesa', in A.F. Uricchio et al eds, *Intelligenza Artificiale tra etica e diritti. Prime riflessioni a seguito del libro bianco dell'Unione europea* (Bari: Cacucci, 2020), 199; F. Montalcini, 'Piattaforme Digitali, Social Network e Fisco: Evoluzione o Rivoluzione?', in Id et al, *Diritto tributario telematico. Nuovi confini* (Torino: Giappichelli, 2021), 49; G. Palumbo, 'L'utilizzo dei dati da parte del fisco e delle multinazionali: punti di contatto e differenze', in Id, *Fisco e privacy* n 13 above, 60; O. Signorile, 'La ricerca di dati su fonti aperte come nuovo strumento delle indagini fiscali', in G. Ragucci ed, n 2 above 113.

[19] M. Conigliaro, 'Big data e fatturazione elettronica: nuovi strumenti di contrasto all'evasione' *Il fisco*, 3907-3912 (2019); M. Peirolo, *Fatturazione elettronica* (Milano: Wolters Kluwer, 2019), 7; A. Amodeo, 'Memorizzazione ed utilizzazione dei dati tratti dalle fatture elettroniche', in G. Palumbo, *Fisco e privacy* n 13 above, 89; M. Conigliaro and S. De Benedictis, 'Tenuta e conservazione digitale a norma di libri e registri: un percorso a ostacoli nonostante i tentativi di semplificazione' *Il fisco*, 3407-3412 (2022); F. Farri, 'Gli obblighi strumentali ai fini dell'attuazione del tributo', in L. del Federico and F. Paparella eds, *Diritto tributario digitale* n 8 above, 192.

[20] A. Contrino, 'Banche dati tributarie, scambio di informazioni fra autorità fiscali e "protezione dei dati personali": quali diritti e tutele per i contribuenti?' *Rivista di diritto tributario – supplemento online*, 29 May 2019, 1-8; F. Tarini, 'L'utilizzo delle banche dati nei controlli in dogana' *Tax News*, 81, 81-92 (2022).

[21] G. Palumbo, 'E domani?', in Id, *Fisco e privacy* n 13 above, 115-116.

[22] C. Francioso, 'Intelligenza' n 8 above, 63-76.

registry[23] governed by decreto del Presidente della Repubblica 29 September 1973 no 605 is allowed.

Equally important is the use of big data[24] (tax registry, archive of relationships with financial operators and tax information system) for the collection and exchange of information relating to balances and movements in current accounts and other types of relationships entertained by taxpayers through financial intermediaries.[25]

Therefore, big data, such as massive collection of data and information of a strictly individual nature, despite the critical issues regarding the protection of the privacy of the subjects involved,[26] has become an important tool that allows the financial administration to enrich its information compendium in order to make it broad and varied.[27]

In this way, in addition to implementing and making tax monitoring, prevention and assessment activities better and more efficient, the use of big data allows agencies to limit illegal conduct and prosecute violations with greater immediacy and effectiveness.[28]

III. Big Data and Predictive Capacity of the Financial Administration

From this perspective, as also reiterated at the Organization for Economic

[23] C. Califano, 'Anagrafe tributaria' *Diritto online (2014)*, available at http://tinyurl.com/4pfmvdyu (last visited 10 February 2024).

[24] The term indicates the ability to extrapolate, analyze and relate multiple heterogeneous data, even diversified according to the source (human generated, machine generated, and business generated), in order to identify the links between the different phenomena and predict future ones. On the use of big data by the financial administration, see K. Malaszczyk and B.M. Purcell, 'Big data analytics in tax fraud detection' 23 *Journal of Finance and Accountancy*, 1-10 (2018); P. Mehta et al, 'Big Data Analytics for Tax Administration', in A. Kő et al eds, *Electronic Government and the Information Systems Perspective* (Cham: Springer, 2019), 47; G. Palumbo, 'L'utilizzo' n 18 above, 63; A. Purpura, 'La frontiera dei Big data', in G. Palumbo, *Fisco e privacy* n 13 above, 71; G. Pitruzzella, 'Dati fiscali e diritti fondamentali' *Diritto e pratica tributaria internazionale*, 666, 666-677 (2022).

[25] A.F. Uricchio, 'La fiscalità dell'intelligenza artificiale tra nuovi tributi e ulteriori incentivi', in U. Ruffolo ed, *Intelligenza artificiale. Il diritto, i diritti, l'etica* (Milano: Giuffrè, 2020), 528; A.F. Uricchio, 'Prospettive per l'introduzione di nuovi modelli di prelievo in materia di intelligenza artificiale anche alla luce del recovery plan', in U. Ruffolo ed, *XXVI lezioni di Diritto dell'Intelligenza Artificiale* (Torino: Giappichelli, 2021), 447-448.

[26] M. Bogni and A. Defant, 'Big data: diritti IP e problemi della privacy' *Il Diritto industriale*, 117-126 (2022); A. Contrino, 'Banche dati' n 20 above, 1; A. Carinci, 'Fisco e privacy: storia infinita di un apparente ossimoro' *Il fisco*, 4407, 4407-4412 (2019); A. Contrino and S. Ronco, 'Prime riflessioni e spunti in tema di protezione dei dati personali in materia tributaria, alla luce della giurisprudenza della Corte di Giustizia e della Corte EDU' *Diritto e pratica tributaria internazionale*, 599-625 (2019); S. Capolupo, 'Analisi del rischio: disposizioni a tutela della privacy' *Il fisco*, 307-311 (2020); G. De Petris, 'La digitalizzazione del fisco e la difficile parità delle armi tra amministrazione e contribuente' *Corriere tributario*, 588-594 (2020); F. Montalcini, 'Privacy e Fisco nell'ambiente fiscale virtuale', in Id et al, *Diritto tributario telematico. Nuovi confini* (Torino: Giappichelli, 2021), 23.

[27] A. Purpura, 'La frontiera' n 25 above, 79-80.

[28] ibid 73.

Cooperation and Development (OECD),[29] the tax authority benefits from big data, which can reveal, with greater ease and immediacy, each taxpayer's effective ability to pay.[30]

Nevertheless, a balance of the interests involved prevents the financial administration, in the exercise of its action, from exceeding what is necessary to ensure the regular functioning of the services essential for the life of the community.[31]

The use of big data, together with the ability to realize economic benefits in terms of optimization of the costs of the administrative apparatus, with consequent saving of resources to be allocated to other purposes, contributes to perfecting a predictive capacity for the financial administration, also acting as an indirect parameter for evaluating both the effectiveness of internal activities and external initiatives that impact (positively or negatively) on the taxpayer's legal and patrimonial sphere.[32]

The predictive attitude[33] takes the form of the possibility of formulating advances and forecasts about the trend of future taxpayers' conduct, a result that traditional monitoring and prevention tools would be able to ensure only with extreme difficulty.[34]

The use of big data in the tax field, making it clear which tax obligations have appeared to be more complex and poorly understood by taxpayers, also contributes to achieving a 'relational' benefit, favoring a rapprochement between tax authorities

[29] OECD, Advanced Analytics for Better Tax Administration: Putting Data to Work (Paris: OECD, 2016), 15.

[30] A. Purpura, 'La frontiera' n 25 above, 83. On the systematic relevance of the principle of ability to pay, see K. Vogel, 'Il diritto tributario internazionale', in A. Amatucci ed, *Trattato di diritto tributario* (Padova: CEDAM, 1990), I, II, 365-390; M. Basilavecchia, 'Funzione impositiva e situazioni soggettive', in L. Perrone and C. Berliri eds, *Diritto tributario e Corte costituzionale* (Napoli: Edizioni Scientifiche Italiane, 2006), 185-200; E. De Mita, *Interesse fiscale e tutela del contribuente. Le garanzie costituzionali* (Milano: Giuffrè, 2006), 41-56; P.J. Wattel, 'Fiscal Cohesion, Fiscal Territoriality and Preservation of the (Balanced) Allocation of Taxing Power; What is the Difference?', in D. Weber ed, *The Influence of European Law on Direct Taxation. Recent and Future Developments* (Alphen aan den Rijn: Kluwer Law International, 2007), 156-165; J. Goldsmith and D. Levinson, 'Law for States: International Law, Constitutional Law, Public Law' 122(7) *Harvard Law Review*, 1822-1830 (2009); G. Falsitta, *Il principio di capacità contributiva nel suo svolgimento storico prima e dopo la Costituzione repubblicana. Schermaglie dialettiche su "scuole" e "maestri" del passato* (Milano: Giuffrè, 2014), 189-199; M.C. Fregni, 'Legitimacy in Decision-Making in Tax Law: Some Remarks on Taxation, Representation and Consent to Imposition' *Rivista di diritto finanziario e scienza delle finanze*, 410-435 (2017); C.J. Jacobs, 'In Defense of Territorial Jurisdiction' 85(7) *The University of Chicago Law Review*, 1623-1647 (2018); J. Kokott, 'Brevi riflessioni sui rapporti tra principi costituzionali e principi del diritto internazionale in materia tributaria' *Diritto e pratica tributaria internazionale*, 588-598 (2022).

[31] A. Purpura, 'La frontiera' n 25 above, 87-88.

[32] ibid 80-81.

[33] A. Di Pietro, 'Leva fiscale e divisione sociale del lavoro', in U. Ruffolo ed, *XXVI lezioni di Diritto dell'Intelligenza Artificiale* (Torino: Giappichelli, 2021), 451.

[34] A. Purpura, 'La frontiera' n 25 above, 76.

and taxpayers.[35]

IV. Blockchain Technologies and Control and Monitoring Activities of the Tax Authority

From a *de iure condendo* prospect, especially for combating VAT carousel fraud,[36] blockchain technology could also be a useful support to the control and monitoring activities carried out by the tax authority,[37] as, within the system of blocks, each operation is subject to distribution within an open access digital register, in which it is then filed and encrypted, thus becoming no longer manipulable.[38]

In fact, blockchain technology makes it possible to verify in real time the transactions carried out between economic operators, the exact time of execution of the operation, the identity of the parties involved and the possible existence of tax credits or debts.[39]

In particular, the blockchain uses public key cryptography, consisting of an asymmetric cryptographic algorithm that uses two mathematically generated keys: a 'private key', used to encrypt, and a 'public key', used to de-encrypt the message or to verify its signature. As a result of a mathematical link between the two keys, the public key works only if the corresponding private key exists.[40]

In relation to the activities carried out by the financial administration, blockchain technology would play a disincentive role with respect to those who intend to carry out fraudulent transactions, while at the same time encouraging tax compliance.[41]

[35] ibid 77.

[36] G.D. Toma, 'La frode carosello nell'Iva. Parte prima: risvolti penali' *Diritto e pratica tributaria*, 715-766 (2010); Id, 'La frode carosello nell'Iva. Parte seconda: risvolti tributari (I)' *Diritto e pratica tributaria*, 1381-1433 (2010); A. Giovanardi, *Le frodi IVA. Profili ricostruttivi* (Torino: Giappichelli, 2013), 10; P. Bertini, *Le frodi carosello* (Santarcangelo di Romagna: Maggioli, 2016), 109; M. Greggi, 'Frodi fiscali e neutralità del tributo nella disciplina dell'Iva' *Diritto e pratica tributaria*, 115-138 (2016); R. de la Feria and A. Schoeman, 'Addressing VAT Fraud in Developing Countries: The Tax Policy-Administration Symbiosis' 47(11) *Intertax*, 950-967 (2019).

[37] A. Maniatis, 'Blockchain with emphasis on tax law', in D. Vrontis et al eds, *Business Management Theories and Practices in a Dynamic Competitive Environment* (Thessaloniki: EuroMed Press, 2019), 680; T. Calculli, 'Proporzionalità del prelievo e sostituzione tributaria ai tempi della blockchain "aterritoriale" ' *Rivista di diritto tributario – supplemento online*, 1 November 2022, 1-10; A. Quattrocchi, 'Le potenzialità applicative della blockchain e dei database condivisi nell'attuazione della norma tributaria' *Rivista di diritto tributario – supplemento online*, 22 November 2022, 1-9; F. Tumbiolo, 'Profili fiscali della formazione del consenso all'interno della blockchain: la tassazione del mining e del fork di bitcoin' *Diritto e processo tributario*, 475-509 (2022).

[38] A. Purpura, 'Digitalizzazione, tecnologizzazione e diritto tributario. Prospettive di una difficile (ma possibile) sinergia?' *Rivista di diritto tributario – supplemento online*, 22 July 2020, 3-4.

[39] M. d'Agostino Panebianco, 'A Blockchain to reinforce Tax-Compliance' *Rivista di diritto tributario – supplemento online*, 1 May 2020, 1-5; ibid 5.

[40] A. Purpura, 'Digitalizzazione' n 38 above, 7.

[41] M. d'Agostino Panebianco, n 39 above, 1; ibid 4. On tax compliance, see G. Ragucci, *Gli istituti*

Along this line, the rewarding nature of the blockchain would seem to emerge, a mechanism structurally oriented to select the economic transactions carried out in a lawful manner, in the face of the automatic rejection of any fraudulent conduct.[42]

Also in this area, SOGEI, albeit on an experimental basis, has implemented specific analysis methodologies designed to prevent and combat tax evasion more effectively and to improve, also on a qualitative level, investigation by indicating the elements to be detected and the documentation (including digital documents)[43] to be acquired and integrating the available tools.[44]

V. 'Transaction Network Analysis' and Self-Compliance Tools: The Pilot Project 'A Data Driven Approach to Tax Evasion Risk Analysis in Italy'

In a *de iure condito* view, another aid to the investigation activities of the financial administration,[45] harmonized at European Union (EU) level, is the 'Transaction Network Analysis', a plan drawn up in 2019 by the European Commission to improve the efficiency of the exchange of information[46] between the tax authorities of the Member States for the purpose of combating VAT fraud,[47] through the preparation of an electronic archive formed with the data

della collaborazione fiscale. Dai comandi e controlli alla Tax Compliance (Torino: Giappichelli, 2018), 59.

[42] A. Purpura, 'Digitalizzazione' n 38 above, 7.

[43] G. Palumbo, 'La legittimità degli accertamenti basati su documentazione digitale', in Id, *Fisco e privacy* n 13 above, 51. In case law, see Corte di Cassazione 12 February 2010 no 3388, *CED Cassazione*; Corte di Cassazione 30 March 2012 no 5226, *CED Cassazione*; Corte di Cassazione 13 May 2016 no 9870, *CED Cassazione*.

[44] A.F. Uricchio, 'La fiscalità' n 26 above, 528; A. Uricchio, 'Prospettive' n 26 above, 448.

[45] A. Viotto, I poteri di indagine dell'amministrazione finanziaria. Nel quadro dei diritti inviolabili di libertà sanciti dalla Costituzione (Milano: Giuffrè, 2002); G. Fransoni, Le indagini tributarie. Attività e poteri conoscitivi nel diritto tributario (Torino: Giappichelli, 2020), 49.

[46] P. Adonnino, 'Cooperazione amministrativa e modalità di scambio di informazioni tra amministrazioni fiscali nazionali' *Tributi*, 826-829 (1995); S. Dorigo, 'La cooperazione fiscale internazionale', in C. Sacchetto ed, *Principi di diritto tributario europeo e internazionale* (Torino: Giappichelli, 2011), 206; C. Garbarino, 'Scambio di informazioni (dir. trib.)' *Digesto delle discipline privatistiche, sezione commerciale, Aggiornamento* (Milanofiori Assago: UTET Giuridica, 2012), VI, 661; P. Mastellone, 'La cooperazione fiscale internazionale nello scambio di informazioni', in R. Cordeiro Guerra ed, *Diritto tributario internazionale. Istituzioni* (Padova: CEDAM, 2012), 213; S. Dorigo, 'Scambio di informazioni nel diritto tributario internazionale' *Digesto delle discipline privatistiche, sezione commerciale, Aggiornamento* (Milanofiori Assago: UTET Giuridica, 2015), VII, 480; L. Salvini, 'I regimi fiscali e la concorrenza tra imprese' *Giurisprudenza commerciale*, 130-145 (2016); L. Starola, 'Lo scambio automatico di informazioni nel settore fiscale' *Corriere tributario*, 2280-2285 (2018); A. Valente, 'Scambio automatico di informazioni fiscali esteso anche alle piattaforme digitali' *Ipsoa Quotidiano*, 27 July 2020; C. Setti della Volta et al, 'Scambio di informazioni ed esigenza di coordinamento per le cripto-attività' *Il fisco*, 3465-3469 (2022).

[47] A. Purpura, 'Potenziali benefici, rischi e limiti del "Transaction Network Analysis" quale strumento di prevenzione e contrasto alle frodi IVA infra-UE' *Rivista di diritto tributario – supplemento online*, 2 August 2019, 1-10.

provided by users through self-compliance tools.[48]

The use of a complex algorithm makes it possible to connect such data, reporting any anomalies to the financial administration, through special 'alerts', in order to allow it to activate substantial controls.[49]

From this perspective, the access by the financial administration to computer archives processed with distributed ledger technology could be a useful tool for discovering evasion.[50]

In any case, the use of presumptive methods for determining the taxable amount and the results of predictive analyzes of possible evasive behaviors cannot constitute a presumption of evasion, being rather a source of triggering of the checks on the merits suitable for bringing out the positions of the individual taxpayers.[51]

Even in the Italian legal system, over the years, the use of artificial intelligence to support the assessment activities carried out by the financial administration has been increasingly intense: an implicit confirmation can be found in Art 1, para 682, legge no 160/2019, which allows the Revenue Agency to make use of

> 'the technologies, processing and interconnections with the other databases at its disposal, in order to identify risk criteria useful for bringing out positions to be subject to control and incentivizing spontaneous compliance'.[52]

Therefore, while waiting to arrive at a real 'algorithmic' assessment,[53] one could think of combining the data processing activity by intelligent systems with forms of preventive cooperation between tax authorities and taxpayers, in order to select the situations of potential risk.[54]

An initial screening carried out with the help of artificial intelligence systems would allow the selection of taxpayers worthy of further study. Subsequently, a preliminary cross-examination phase would allow the tax office to inform the taxpayer of the results of the automated procedure, opening the way to cooperation

[48] F. Farri, 'Digitalizzazione' n 5 above, 129.

[49] ibid 130, according to which to avoid VAT fraud, an algorithm could be used which, combining the data (VAT number) of the invoice issuer, uploaded by a user to make use of the VAT deduction, with the data of the VAT payments made from the issuer, brings out an inconsistency. Furthermore, on this point, see R.T. Ainsworth and A. Shact, 'Blockchain Technology Might Solve VAT Fraud' 13(83) *Tax Notes International*, 1174-1175 (2016).

[50] F. Farri, 'Digitalizzazione' n 5 above, 131.

[51] ibid 133.

[52] G. Palumbo, 'Contrasto all'evasione fiscale e impatto sulla privacy dei contribuenti', in Id, *Fisco e privacy* n 13 above, 13; A. Zuccarello, 'Algoritmi e automatismi nei controlli della dichiarazione: profili problematici' *Rivista di diritto tributario – supplemento online*, 2 June 2022, 1, 8.

[53] On topic, see G. Ragucci, 'L'analisi del rischio di evasione in base ai dati dell'archivio dei rapporti con gli intermediari finanziari: prove generali dell'accertamento "algoritmico"?' *Rivista di diritto tributario – supplemento online*, 4 September 2019, 1-6; M. Fasola, 'Le analisi del rischio di evasione tra selezione dei contribuenti da sottoporre a controllo e accertamento "algoritmico" ', in G. Ragucci ed, n 2 above, 79.

[54] S. Dorigo, 'Intelligenza' n 7 above, 746; L. Quarta, n 18 above, 245.

between the parties involved; such cooperation would promote a disclosure of the data not in the possession of the financial administration. With more data, the administration could integrate the cognitive elements at their disposal and, if necessary, repeat the algorithmic processing.[55]

Also important, in this context, is the pilot project called 'A data driven approach to tax evasion risk analysis in Italy' which was funded by the EU in 2021 with the primary purpose of innovating the tax risk assessment processes of taxpayers through use of network science tools, visual analysis of information and artificial intelligence.[56] In fact, the representation of data in the form of networks makes it easier to bring out indirect and non-evident relationships between subjects that may be related to tax evasion and avoidance schemes that are difficult to identify using traditional analysis techniques.[57]

VI. Intelligent Systems and Machine Learning Techniques: The Enhancement of the Financial Administration's Investigative Capabilities and the New Conformation of the Tax Legal Relationship

The adoption of innovative 'man-machine' interfaces, then, makes it possible to enhance the investigative capabilities of the financial administration, accelerating and making the process of acquiring and processing relevant information more intuitive and natural.[58]

In Italy, the Ministry of Economy and Finance, in the guideline for the achievement of the fiscal policy objectives relating to the three-year period 2021-2023, in line with the transition to e-government of the entire public administration, recognized the need to strengthen the databases, methodologies and technological tools to support the fight against tax evasion, to promote tax compliance, and to acquire relevant information. With the additional information, the Ministry would perform targeted checks on taxpayers who have particular tax risk indices, also through the use of machine learning and artificial intelligence techniques.[59]

It is, therefore, evident that nowadays tax agencies cannot ignore the use of sophisticated artificial intelligence systems capable of collecting, elaborating and processing a large amount of data and information relating to taxpayers, despite the potential to disclose personal data.[60]

[55] S. Dorigo, 'L'intelligenza' n 12 above, 209-210.
[56] ibid 204.
[57] ibid 204, fn 17.
[58] ibid 204, fn 18.
[59] ibid 204-205.
[60] ibid 205, according to which 'several times the Privacy Guarantor has intervened against the Revenue Agency to impose the adoption of suitable forms of guarantee on the use of such data, invoking the intervention of qualified human operators for the interpretation of the results of the automated processing for the protection of the taxpayer'. Furthermore, on this point, see G. Palumbo,

Such intelligent systems could help the administration to verify, on the basis of the evidence acquired elsewhere, whether or not a given behavior should be considered elusive or evasive.[61]

From a *de iure condendo* point of view, when drafting the Charter of taxpayers' IT rights, which is contained in action 24 of the 'EU eGovernment Action Plan 2016-2020', it should be reiterated that predictive calculations can be used for the fight against tax infringements only as a prerequisite for the initiation of investigation, not being able to assume a legal presumption of evasion.[62]

Furthermore, with the evolution of the investigative tools available to the financial administration, the need to codify some rights and obligations of the taxpayer, in order to adapt them to the modern conformation of the tax legal relationship, emerges strongly, even at the European level.[63] It concerns, in particular, the right to access one's personal data and to obtain its blocking and cancellation, the right to be heard before undergoing a measure potentially damaging to one's individual sphere, and the right to compensation for the damage deriving from the incorrect management of information.[64]

VII. The Application of Artificial Intelligence to Automated Settlement and Formal Control of Tax Returns. Further Uses of Intelligent Systems in Tax Matters

On the one hand, the continuous updating required by a jumble of primary and secondary rules, often antinomic, the administrative practice that is not

'Contrasto' n 53 above, 11; A. Tomo, 'La "forza centripeta" del diritto alla protezione dei dati personali: la Corte di giustizia sulla rilevanza in ambito tributario dei principi di proporzionalità, accountability e minimizzazione' Diritto e pratica tributaria internazionale, 908-918 (2022); C. Contrino, 'Spinte evolutive (sul piano sovranazionale) e involutive (a livello interno) in tema di bilanciamento fra diritto alla protezione dei dati dei contribuenti ed esigenze di contrasto all'evasione fiscale' *Rivista di diritto tributario – supplemento online*, 3 October 2023, 1-10; C. Francioso, 'Pubblicazione di dati fiscali e diritto al rispetto della vita privata' *Rivista di diritto finanziario e scienza delle finanze*, 82-129 (2023); G. Ragucci, 'Introduzione e note ordinate sul fisco digitale', in G. Ragucci ed, n 2 above, 4; G. Ziccardi, 'Protezione dei dati, lotta all'evasione e tutela dei contribuenti: l'approccio del Garante per la protezione dei dati italiano tra trasparenza, big data e misure di sicurezza', in G. Ragucci ed, n 2 above, 61. In case law, see Judgment of Corte di Cassazione 11 June 2018 no 15075, *CED Cassazione*; Corte di Cassazione 4 July 2018 no 17485, *CED Cassazione*.

[61] S. Dorigo, 'L'intelligenza' n 12 above, 205.

[62] F. Farri, 'Digitalizzazione' n 5 above, 139.

[63] For the interrelation between these new tools, the existing set of procedural safeguards recognised by the EU Charter of Fundamental rights to taxpayers (eg Effective Remedy – Art 47; Habeas Data – Art 42; Right to a Good Administration – Art 41) and the prospects highlighted by the recent update contained in the Charter of taxpayers' IT rights, see K. Perrou, *Taxpayer Participation in Tax Treaty Dispute Resolution* (Amsterdam: IBFD, 2014), 109; J. Kokott and P. Pistone, *Taxpayers in International Law. International Minimum Standards for the Protection of Taxpayers' Rights* (New York: Bloomsbury Publishing, 2022), 207; C. Califano, *L'arbitrato e gli strumenti di risoluzione delle controversie nel diritto tributario* (Milano: Giuffrè, 2023), 50.

[64] G. Ragucci, 'L'analisi' n 54 above, 2-3.

always linear and coherent and the orientations of case law in continuous and frenetic evolution and, on the other, the apparent automatism application of many tax provisions[65] (such as, for example, those relating to tax deductions), together with some typical factors of intelligent systems – such as the tendential completeness of the reference database and the speed of data processing - which allow to reduce (if not eliminate) the margin of error, lead us to think that taxation is certainly one of the sectors of the legal system in which the use of artificial intelligence - in the near future - will be particularly intense, with the likelihood that AI's use will only expand.[66]

With reference to the activities carried out by the financial administration, artificial intelligence could find easy application in the hypothesis of automated liquidation and formal control of declarations,[67] governed in the Italian system by Arts 36 *bis* and 36 *ter*, decreto del Presidente della Repubblica 29 September 1973 no 600, as regards income taxes, and by Art 54 *bis*, decreto del Presidente della Repubblica 26 October 1972 no 633, for VAT: these are checks of an ascertainable nature[68] performed by an electronic brain programmed on the basis of specific algorithms, with which the *an* and *quantum debeatur* are recalculated with respect to the amounts declared by the taxpayer.[69]

This investigative activity, aimed at correcting the errors that emerge *ictu oculi* from the declaration, leads directly to registration in the tax role, preceded by a communication of irregularity (so-called 'amicable notice'),[70] which invites the taxpayer to assert his reasons or to regularize his position and access a

[65] E.L. Rissland, 'Artificial Intelligence and Legal Reasoning: A Discussion of the Field and Gardner's Book' 9(3) *AI Magazine*, 45-47 (1988).

[66] R. Cordeiro Guerra, n 9 above, 94.

[67] R. Schiavolin, 'Limiti di applicabilità dell'art. 36-bis D.P.R. 600/1973' *GT – Rivista di giurisprudenza tributaria*, 1165-1168 (1994); P. Russo, 'Il problema dei termini per la liquidazione delle imposte dovute in base alla liquidazione ai sensi dell'art. 36-bis' *Rassegna tributaria*, 1014-1018 (1995); P. Coppola, 'La liquidazione dell'imposta dovuta ed il controllo formale delle dichiarazioni' *Rassegna tributaria*, 1475-1483 (1997); F. Pedrotti, 'Riflessioni sull'ambito oggettivo di applicazione dell'art. 36 ter comma 2 D.P.R. 29 settembre 1972 n. 600' *Rivista di diritto tributario*, 479-485 (2019); M. Fasola, 'Dai controlli automatici ex art. 36-bis alla amministrazione "algoritmica" dei tributi: quali garanzie per il contribuente?' *Diritto e processo tributario*, 377-406 (2022); A. Zuccarello, 'Specificità del controllo formale della dichiarazione dei redditi' *Rivista di diritto tributario*, 347-354 (2022).

[68] G. Gaffuri, 'Considerazioni sull'accertamento tributario' *Rivista di diritto finanziario e scienza delle finanze*, 534-536 (1981); G. Fransoni, 'Considerazioni su accertamenti "generali", accertamenti parziali, controlli formali e liquidazione della dichiarazione alla luce della L. n. 311/ 2004' *Rivista di diritto tributario*, 600-602 (2005); S. Zagà, 'Le discipline del contraddittorio nei procedimenti di «controllo cartolare» delle dichiarazioni' *Diritto e pratica tributaria*, 857-864 (2015); S. La Rosa, *Principi di diritto tributario* (Torino: Giappichelli, 2020), 339.

[69] A. Zuccarello, 'Algoritmi' n 53 above, 2; P.L. Cardella et al, 'I controlli e la fase di accertamento', in L. del Federico and F. Paparella eds, *Diritto tributario digitale* n 8 above, 233.

[70] M. Pierro, *Il dovere di informazione dell'amministrazione finanziaria* (Torino: Giappichelli, 2013), 147; A.M. Gaffuri, 'Il punto su… la natura dei termini nei controlli formali e le conseguenze del mancato invio della preventiva comunicazione di irregolarità' *Rivista di diritto tributario – supplemento online*, 3 October 2022, 1-5.

facilitated assessment of tax penalties.[71]

Although this is a paperless process, a certain lack of transparency must be noted, as the algorithms on the basis of which the computer system is programmed is not known, with consequent uncertainty of the outcomes of the settlements.[72]

Further uses of intelligent systems in tax matters could concern, in the context of the synthetic assessment of income,[73] the institutions of the income meter[74] and the expenditure meter, as well as sector studies[75] (now replaced by synthetic reliability indices),[76] the comparability analysis in the transfer pricing regulations and the 'savings meter'.

The latter expression designates a predictive tool which, through a specific algorithm, verifies, on the basis of the data provided by the archive of relations with financial operators, the consistency of the savings accumulated by the taxpayer in a given tax period with the income declared in the same period of time, in order to bring out any anomalies suitable for further checks by the tax authority.[77]

This could happen if the taxpayer makes an important investment that is not justified by the declared income or, even in the presence of a fixed monthly salary, has lavish expenses potentially revealing the existence of other undeclared income.[78]

These are events in which the ability of the living operator to compare and connect apparently autonomous situations and data plays an important role, with respect to which the algorithm would significantly increase both the number of elements being analyzed and the speed of elaboration, without substantially altering the substantive tax law, thereby protecting the values that govern tax matters.[79]

VIII. The Need to Know the Support Mechanisms of the Computer Algorithm and the Indispensability of Human Intervention in Verifying the Results of Automated Data Processing: The Position of Administrative Case Law

Even the administrative case law,[80] while recognizing that the use of robotic

[71] A. Zuccarello, 'Algoritmi' n 53 above, 2.

[72] ibid 4.

[73] G. Selicato, *Il nuovo accertamento sintetico dei redditi* (Bari: Cacucci, 2014), 105; F. Amatucci, 'Introduzione. L'accertamento sintetico e il nuovo redditometro', in F. Amatucci ed, *L'accertamento sintetico e il nuovo redditometro* (Torino: Giappichelli, 2015), XI; G. Tinelli, 'Accertamento sintetico e tutela del contribuente', in F. Amatucci ed, *L'accertamento sintetico e il nuovo redditometro* (Torino: Giappichelli, 2015), 3.

[74] M. Logozzo, 'Redditometro e diritto alla privacy', in F. Amatucci ed, *L'accertamento sintetico e il nuovo redditometro* (Torino: Giappichelli, 2015), 49.

[75] M. Versiglioni, *Prova e studi di settore* (Milano: Giuffrè, 2007), 149.

[76] F. Amatucci, 'Dalla Tax compliance agli Indici sintetici di affidabilità' *Tax News*, 161, 161-168 (2019).

[77] G. Palumbo, 'L'utilizzo' n 18 above, 61.

[78] ibid 61.

[79] S. Dorigo, 'L'intelligenza' n 12 above, 202-214.

[80] Consiglio di Stato 8 April 2019 no 2270, available at www.dejure.it; Consiglio di Stato 13

procedures is instrumental in guaranteeing greater efficiency and cost-effectiveness of the administrative activity, for reasons of transparency has considered essential the requirement of the algorithm's knowability,[81] since it is a set of mathematical calculations through which an electronic brain is supplied with a series of instructions expressed in a language other than the legal one.[82]

This is also relevant for the purposes of the motivation of the assessment notice, which allows the taxpayer to be put in a position to understand the basis of what is being contested and the logical procedure through which the office reached its decision.[83]

Therefore, the 'technical formula' represented by the algorithm must be accompanied by clarifications that translate it into the 'legal rule' underlying it, so as to make it legible and understandable both for taxpayers, who can thus exercise their right of defense, and for the judicial body, put in a position to review how the power was actually exercised by the administrative authority.[84]

In fact, the opacity and non-knowability of the mechanisms underlying the algorithm[85] can also negatively affect the activity carried out by the judging body, which could assess the reliability of the reconstruction put in place by the tax office, only at the cost of making use of complex technical consultancy *ex officio*, which would significantly increase the costs of justice.[86]

It is, therefore, necessary to understand the path underlying the comparison between the concrete characteristics of the case and those that, on the basis of the data known by the computer system, should have existed in order to be able to judge correct the operation carried out by the taxpayer.[87]

The requirement of the algorithm's knowability also assumes relevance on the merit level as the impossibility of understanding its functioning involves the subordination of the administrative activity to the choices, even of value, made independently, uncontrolled and discretionary by those who have elaborated the algorithm.[88]

In any case, as confirmed by administrative case law,[89] albeit in relation to a

December 2019 no 8472, available at www.dejure.it.

[81] P.S. Maglione, 'La Pubblica Amministrazione "al varco" dell'Industria 4.0: decisioni automatizzate e garanzie procedimentali in una prospettiva human oriented' *Amministrazione in cammino*, 26 May 2020, 35; G. Palumbo, 'Conclusioni', in Id, *Fisco e privacy* n 13 above, 112; M. Pontillo, 'Algoritmi fiscali tra efficienza e discriminazione' *Rivista trimestrale di diritto tributario*, 649-678 (2023).

[82] A. Zuccarello, 'Algoritmi' n 53 above, 4.

[83] S. Dorigo, 'L'intelligenza' n 12 above, 205-206.

[84] G. Ragucci, 'L'analisi' n 54 above, 1; A. Zuccarello, 'Algoritmi' n 53 above, 4.

[85] F. Pasquale, The Black Box Society: The Secret Algorithms That Control Money and Information (Cambridge, London: Harvard University Press, 2015).

[86] S. Dorigo, 'L'intelligenza' n 12 above, 207.

[87] ibid 206.

[88] ibid 206.

[89] Tribunale amministrativo regionale Lazio 10 September 2018 no 9224, available at www.dejure.it; Consiglio di Stato 4 February 2020 no 881, available at www.dejure.it.

non-tax case, human intervention cannot be ignored in the verification of the results of algorithmic processing, since the latter cannot be used without first taking steps to prevent a tool conceived as a predictive model of the risk of evasion from becoming a method of assessment, especially where it is based on presumptions.[90]

From this perspective, the activity carried out with the use of artificial intelligence systems does not automatically result in the issuance of a tax penalty: this phase, rather, becomes an internal investigation, purely instrumental and auxiliary, which is followed by an administrative procedure based on respect of the principles of cross-examination,[91] collaboration[92] and good faith between the financial administration and the taxpayer, in which the official who is a natural person assumes external responsibility for the agency's activity after having put in place a cognitive, acquisitive and judgment activity.[93]

IX. The Role of Artificial Intelligence and Computer Algorithms in Tax Consultancy for the Taxpayer

In particular, the more stable and ordered a body of legislation is, the less need there is to resort to artificial intelligence will be felt to facilitate times and methods of application. By contrast, a chaotic and emergency tax legislation, not consistent with the principles but characterized by a simple list of cases, as happens in the Italian legal system,[94] requires a mechanistic and meticulous interpreter. Artificial intelligence could well support (and even replace) the human figure of the jurist or practitioner in applying such legislation.[95]

Not surprisingly, the Institute for Employment and Research (IAB) of Nuremberg - as part of the 'Futuromat' program - has identified the tax consultant as one of the professions with the highest risk of replacement due to the advent of robotics,[96] especially with reference to the basic application activities, including the drafting of the tax return, which are characterized by almost mechanistic aspects.

There is also no shortage of intelligent machines equipped with greater

[90] G. Ragucci, 'L'analisi' n 54 above, 1-2.

[91] S. Muleo, 'Il contraddittorio procedimentale e l'affidamento come principi immanenti', in A. Bodrito et al eds, *Consenso, equità e imparzialità nello Statuto del contribuente. Studi in onore del prof. Gianni Marongiu* (Torino: Giappichelli, 2012), 406; G. Ragucci, *Il contraddittorio nei procedimenti tributari* (Torino: Giappichelli, 2013), 5; S. Sammartino, 'Il diritto al contraddittorio endoprocedimentale' *Rassegna tributaria*, 986-989 (2016); A. Giovannini, 'Il contraddittorio endoprocedimentale' *Rassegna tributaria*, 13-18 (2017).

[92] S. Cannizzaro, 'Il principio di reciproca collaborazione tra amministrazione finanziaria e contribuente nel procedimento e nel processo', in A. Fantozzi and A. Fedele eds, *Statuto dei diritti del contribuente* (Milano: Giuffrè, 2005), 242.

[93] S. Dorigo, 'L'intelligenza' n 12 above, 207-208.

[94] M. Logozzo, 'Codificazione, Statuto dei diritti del contribuente e federalismo fiscale', in Id, *Temi di diritto tributario* (Pisa: Pacini Giuridica, 2019), 3.

[95] R. Cordeiro Guerra, n 9 above, 96-97.

[96] McKinsey Global Institute, *Jobs lost, jobs gained: workforce transitions in a time of automation* (New York: McKinsey & Company, December 2017).

functionality, capable of simulating human skills of a higher level. The experimental project 'Taxman'[97] was elaborated and developed in the United States of America since the mid-1970s with the main purpose of providing information to taxpayers regarding the tax treatment to which certain corporate reorganization operations would be subject. Another example is 'predictive' software, such as the 'Blue J Legal'[98] system, which, through a specific algorithm, using a program called 'Tax Foresight', compares and crosses the jurisprudential precedents on which the common law systems are based, providing the success/failure percentages in relation to the disputes to be undertaken in tax matters, in order to express the possible expected result of a certain interpretation or application of tax legislation.[100]

The role assumed by artificial intelligence systems and computer algorithms is therefore evident. These tools could also constitute a useful support for the taxpayer and his tax consultants, providing valuable information suitable for evaluating the conduct to be followed in relation to the tax treatment of a specific case or to set up an effective defensive strategy or to identify *ex ante* the probabilities of a positive outcome of a possible litigation action, in order to enhance the predictive function and guide the procedural choices, avoiding clogging the tax courts with disputes with an uncertain outcome or desisting from pursuing judgments that are already pending.[99]

The financial administration could then make use of sophisticated 'predictive' software, such as those already in use in various sectors of the legal system, to 'prevent' situations of fraud and to identify taxpayers at high risk of evasive or elusive conduct.[100]

X. 'Predictive Justice' Software as *Ad Adjuvandum* Tools for Orienting the Activity of the Tax Judge

In the judicial field, 'predictive justice' software,[101] based on the indexing of data and the use of metadata and sophisticated algorithms, such as syntactic

[97] L.T. McCarty, 'Reflections on "Taxman": An Experiment in Artificial Intelligence and Legal Reasoning' 90(5) *Harvard Law Review*, 837-840 (1977); S. Dorigo, 'Intelligenza' n 7 above, 729; Id, 'L'intelligenza' n 12 above, 199, fn 2.

[98] On topic, see B. Alarie et al, 'Using Machine Learning to Predict Outcomes in Tax Law', available at http://tinyurl.com/4j2ta2df (last visited 10 February 2024); S. Dorigo, 'Intelligenza' n 7 above, 742; Id, 'L'intelligenza' n 12 above, 199-203.

[100] S. Dorigo, 'Intelligenza' n 7 above, 741-742; R. Cordeiro Guerra, n 9 above, 94.

[99] S. Dorigo, 'L'intelligenza' n 12 above, 203; F. Farri, 'L'attività d'indirizzo', in L. del Federico and F. Paparella eds, *Diritto tributario digitale* n 8 above, 175.

[100] F. Farri, 'Digitalizzazione' n 5 above, 131.

[101] V. Morignat, 'L'IA, dalle predizioni alle decisioni', in A.F. Uricchio et al eds, *Intelligenza Artificiale* n 18 above, 63; C. Sacchetto, 'Intelligenza Artificiale, Giustizia Predittiva e nuovi confini del Processo Tributario', in F. Montalcini et al, *Diritto tributario telematico. Nuovi confini* (Torino: Giappichelli, 2021), 259; G. Pasceri, *La predittività delle decisioni. La funzione giurisprudenziale e la responsabilità delle parti nell'utilizzo dell'intelligenza artificiale* (Milano: Giuffrè, 2022), 126.

analysis tools and machine learning systems, which, by crossing a large amount of data input (decision-making contents), seeks a correlation between them and deduces an application model (probability of decision-making orientation). Such software fully conforms to common law systems, in which the principle of binding precedent applies (so-called '*stare decisis*'), and is useful also in civil law systems, including tax matters,[102] while retaining an autonomous significance.

In fact, in continental legal systems, characterized by the *ius scriptum*, the jurisprudential precedent – although it has no binding effect, as it is not included among the sources of law - could guide the judge's reasoning, providing him with useful arguments to justify his decision.[103]

In this context, even if the human judge can make use of artificial intelligence systems as an auxiliary function in support of the *jus dicere* activity[104] to identify and elaborate the principles of law, the jurisprudential precedents and the arguments suitable for orienting his reasoning and motivating the decision,[105] the possibility of imagining a 'robot' tax judge seems completely strange and remote. Intelligent machines are not yet able to fully replace the human decisionmaker, since the latter - far from being based on mere mechanism - often requires a *quid pluris* of sensitivity, which, at present, the cold algorithm does not seem able to provide.[106] Furthermore, it would be difficult to guarantee that a final robotic decision would be regarded as fully justifiable in law and fact on appeal.[107]

[102] In the tax field, often characterized by serial disputes, on 'predictive justice', understood as the possibility of predicting the outcome of a judgment through the aid of special algorithms capable of extracting the meaning of previous decisions to find the solution of new cases, see S. Carunchio, 'Giustizia predittiva e processi telematici: sfide pratiche ed etico giuridiche' *Fiscal focus*, 2 March 2019, 1-3; A. Vozza, 'Intelligenza artificiale, giustizia predittiva e processo tributario' *Il fisco*, 3154-3158 (2019); L. Tremolada, 'Giustizia predittiva, l'intelligenza artificiale migliore amica dell'avvocato' *Il Sole 24 Ore*, 10 March 2020, available at http://tinyurl.com/4nb433nu (last visited 10 February 2024); F. Farri, 'La giustizia predittiva in materia tributaria' *Rivista di diritto tributario – supplemento online*, 12 October 2022, 1-5; A. Marcheselli, 'Intelligenza artificiale e giustizia predittiva: il bivio tra Giustiniano e il Leviatano e il pericolo coca cola' *Rivista di diritto tributario – supplemento online*, 20 October 2022, 1-5; E. Marello, 'Il punto su… Popper, "Prodigit" e giustizia predittiva' *Rivista di diritto tributario – supplemento online*, 24 October 2022, 1-4; F. Farri, 'Il punto su… intelligenza artificiale e processo tributario nel prisma della riforma fiscale' *Rivista di diritto tributario – supplemento online*, 26 November 2023, 1-5; P. Giacalone, 'Intelligenza artificiale, giustizia predittiva e processo tributario: problemi e prospettive' *Rivista di diritto tributario*, 299-338 (2023); E. Marello, 'Prodigit: alcune domande di metodo e qualche semplice proposta' *Rivista di diritto tributario – supplemento online*, 1 February 2023, 1-3; V. Mastroiacovo, 'Prevedibilità, predittività e umanità del giudicare in materia tributaria' *Rivista di diritto tributario – supplemento online*, 14 February 2023, 1-5; F. Odoardi, 'Il processo tributario nell'era dell'economia digitale', in L. del Federico and F. Paparella eds, n 8 above, 281.

[103] On topic, see M. De Felice, 'Su probabilità, precedente e calcolabilità giuridica', in A. Carleo ed, *Il vincolo giudiziale del passato. I precedenti* (Bologna: il Mulino, 2018), 37.

[104] F. Patroni Griffi, 'La decisione robotica e il giudice amministrativo', 28 August 2018, available at http://tinyurl.com/yc868yh5 (last visited 10 February 2024).

[105] S. Dorigo, 'L'intelligenza' n 12 above, 212.

[106] S. Dorigo, 'Intelligenza' n 7 above, 748-749.

[107] C. Sacchetto, 'Intelligenza' n 103 above, 261; S. Dorigo, 'L'intelligenza' n 12 above, 211.

By contrast, in applying tax rules that require an economic evaluation of the case, artificial intelligence could have important room to maneuver for the purpose of processing economic and mathematical data suitable for allowing the judge to weigh the rationality of the operation with respect to normal parameters of conduct of the taxpayer, in order to enhance, in an *ad adiuvandum* perspective, the predictive function with respect to the activity carried out by the natural person judge, avoiding any form of mechanism.[108]

Artificial intelligence would thus have a residual value within the tax jurisdiction, allowing the judging body to find the argumentative supports of its decision and preserving the function of the judge (human being) called to adapt the abstract rule to the peculiar characteristics of the concrete case.[109]

XI. The Auxiliary Function of Intelligent Systems in International Tax Planning: The Multilateral Instrument Matching Database

Even in the context of international tax planning,[110] intelligent systems could perform a subsidiary function, through programs which, using complex algorithms, indicate the optimal structure of a corporate group and the best allocation of the income of the participating companies (holding and subholding) so that they can operate in certain jurisdictions.[111]

To counter and stem the practices of aggressive tax planning,[112] the OECD recognized the need to update and coordinate some provisions of the pre-existing international conventions against double taxation, by resorting to the use of intelligent databases, such as, for example, the Multilateral Instrument Matching Database,[113] a sort of algorithm, characterized by complexity of operation and management, which, by combining the provisions of the Multilateral Convention (MLI)[114] - adopted to modify those that already exist - and the rules of individual

[108] S. Dorigo, 'L'intelligenza' n 12 above, 212.

[109] ibid 212-213.

[110] C. Garbarino, 'Pianificazione fiscale internazionale' *Digesto delle discipline privatistiche, sezione commerciale, Aggiornamento* (Milanofiori Assago: UTET Giuridica, 2008), IV, 670-683.

[111] R. Cordeiro Guerra, n 9 above, 94.

[112] F. Amatucci, 'L'adeguamento dell'ordinamento tributario nazionale alle linee guida OCSE e dell'UE in materia di lotta alla pianificazione fiscale aggressiva' *Rivista trimestrale di diritto tributario*, 3-15 (2015); P. Pistone, 'La pianificazione fiscale aggressiva e le categorie concettuali del diritto tributario globale' *Rivista trimestrale di diritto tributario*, 395-404 (2016); L.V. Caramia, 'Pianificazione fiscale aggressiva e nuovi obblighi informativi: le mandatory disclosures rules', in A.F. Uricchio and G. Selicato eds, *Summer School in Selected Issues of EU Tax Law as EU Law* (Molfetta: Duepuntozero, 2018), 249; P. Pistone, *Diritto tributario internazionale* (Torino: Giappichelli, 2019), 71.

[113] Available at http://tinyurl.com/2hftyx5x (last visited 10 February 2024). On topic, see D. Canè, 'Intelligenza artificiale e sanzioni amministrative tributarie', in S. Dorigo ed, *Il ragionamento giuridico* n 9 above, 319-320.

[114] N. Bravo, 'The Multilateral Tax Instrument and Its Relationship with Tax Treaties' 8(3) *World Tax Journal*, 279-282 (2016); M. Lang et al eds, *The OECD Multilateral Instrument for Tax*

bilateral treaties, it identifies, within the latter, the current text, indicating the changes that have occurred.[115]

XII. Artificial Intelligence and Potential Evasion: The Intelligent Customs Control Based on Machine Learning and the Interpretation of the General Anti-Abuse Clauses

Artificial intelligence, in tax matters, if used with coherence and awareness, could also make it possible to select and contrast situations of potential evasion,[116] as has already happened in other foreign legal systems. This is the case of Brazil, which has recently introduced an intelligent customs control system - based on machine learning and called SISAM[117] - with which the probability of fiscal irregularity of an import operation is weighted and the appropriateness of a physical customs control by the competent authorities is assessed, through an estimate in terms of cost-benefits, all in order to guide decision-making processes (for example, do not carry out an inspection as the values involved in the operation are not such as to justify human intervention).[118]

However, a clarification is appropriate: in the phase of selecting the taxpayers to be audited, with a view to administrative simplification, it is possible to rely solely on the assessment of technologically advanced systems, since this is consistent

Treaties: Analysis and Effects (Alphen aan den Rijn: Wolters Kluwer, 2018); A. Della Carità and L. Bonfanti, 'Riserve, opzioni e algebra booleana nella Convezione multilaterale BEPS' *Corriere tributario*, 2661-2670 (2017); D. Canè, 'In vigore dal 1° luglio la convenzione multilaterale BEPS. Funzione, struttura ed effetti', 23 July 2018, available at www.dirittobancario.it; S. Dorigo, 'L'impatto della Convenzione multilaterale BEPS sul sistema dei trattati contro le doppie imposizioni: verso un diritto tributario internazionale dell'incertezza?' *Rivista trimestrale di diritto tributario*, 559, 559-565 (2018); D. Kleist, 'The Multilateral Convention to Implement Tax Treaty Related Measures to Prevent BEPS. Some Thoughts on Complexity and Uncertainty' 1 *Nordic Tax Journal*, 31-35 (2018); S. Dorigo, 'Il Multilateral instrument e le sue contraddizioni: il mito del multilateralismo tra conferme e ridimensionamenti' *Novità fiscali*, 88-90 (2019); C. Califano, *L'arbitrato* n 65 above, 93; S.A. Rocha, 'Risk Society and International Tax Multilateralism', in Id and A. Christians eds, *A Multilateral Convention for Tax. From Theory to Implementation* (Alpheen aan den Rijn; Kluwer Law International, 2021), 140-145.

[115] S. Dorigo, 'Intelligenza' n 7 above, 735; R. Cordeiro Guerra, n 9 above, 94.

[116] V. Visco, 'Cosa insegna la e-fattura: la tecnologia dimezza l'evasione' *Diritto e pratica tributaria*, 1671-1673 (2019).

[117] R. Köche, 'L'intelligenza artificiale a servizio della fiscalità: il sistema brasiliano di selezione doganale attraverso l'apprendimento automatico (SISAM)', in S. Dorigo ed, *Il ragionamento giuridico* n 9 above, 333; H. De Brito Machado Segundo and L.N. Hernández Rivera, 'Artificial intelligence and tax administration: uses and challenges in Brazil', in S. Dorigo ed, *Il ragionamento giuridico* n 9 above, 355.

[118] R. Cordeiro Guerra, n 9 above, 97-98, which focuses attention on the criticalities that would ensue to a system programmed in an absolute utilitarian key, that is, according to a cost-benefit criterion: in this case, the 'taxpayer whose control could result in greater recovery would be subjected to verification, so omitting control over the tax evader almost certainly but for modest amounts in absolute terms'; S. Armella, 'Rettifica del valore doganale sulla base di banche dati' *Diritto e pratica tributaria*, 2471-2489 (2023).

with the objective of cross-referencing large quantities of data to identify anomalies that still have to be investigated in depth. In the ascertainment phase, on the other hand, it is necessary to limit the probative weight of the findings deriving from the aid of intelligent machines, since these can only be used as a starting point to be corroborated, even in cross-examination, with other elements that emerged during the preliminary investigation.[119]

With reference to the interpretation of the general anti-abuse clauses, widespread in international tax law – since it is not a purely mechanical or reconnaissance operation, as an activity that starts from the literal data and, through a process based on multiple factors, judges whether or not the concrete case can be traced back to the abstract regulatory paradigm – the use of artificial intelligence systems must be excluded until it is possible to recognize in them some form of consciousness and sensitivity, capable of supplanting the hermeneutic activity carried out by the human being.[120]

As things stand, therefore, also because of the seven 'capital vices' from which AI is affected (imperfection, opacity, insufficiency, inhumanity, convenience, inaccuracy, and incompleteness),[121] an 'exclusively' robotic administrative decision supported by parallel 'robotic' reasoning is inconceivable, since this is a situation in which the duty to state reasons is not adequately fulfilled. In fact, in the most advanced algorithmic applications, it is not always possible to reconstruct in an easy and linear manner the logical-legal path that has led to a given decision. A motivation based on algorithmic results that are hardly comprehensible would not place the taxpayer in a position to easily exercise his right of defence, making it necessary to resort to technical consultants in order to try to understand its content.[122]

The technical formula expressed by the algorithm, while simulating human reasoning, must be accompanied by explanations that translate it into the underlying legal rule, so as to make it readable and comprehensible.[123] An algorithm based on a formula that is not knowable, at least in its essential instructions, does not make it possible to verify the conformity of the formula used with the legislative dictate.[124]

At a legal level, developing, implementing and operating algorithms constitutes, in fact, an important means of regulating and exercising power in a context characterized by the digital revolution.[125]

[119] C. Francioso, 'Intelligenza' n 8 above, 65-93.

[120] B. Kuźniacki, 'The Marriage of Artificial Intelligence and Tax Law: Past, Present and Future', available at http://tinyurl.com/2uyw2dmh (last visited 10 February 2024).

[121] A. Gambino, 'I sette vizi capitali dei giudici-robot (tra blockchain e AI)' *Diritto Mercato Tecnologia*, 13 December 2018, 1-4.

[122] C. Francioso, 'Intelligenza' n 8 above, 52-53, 85.

[123] Consiglio di Stato 8 April 2019 no 2270, n 80 above.

[124] C. Francioso, 'Intelligenza' n 8 above, 89.

[125] V. Mastroiacovo, n 104 above, 7.

It is therefore necessary for the result of algorithmic processing to be part of the reasoning and to be legally comprehensible, without the need for technicians, who, in some cases (eg, that of neural networks), would not even be able to fully reconstruct the logical path of the automated decision.[126]

On the other hand, it is also true that the claim of full comprehensibility of the entire decision-making process at the basis of the algorithm would render the most advanced artificial intelligence systems unusable, since AI could be expected to produce a transparent result, ie one based on unambiguous reasoning that can be interpreted without misunderstandings, rather than the full comprehensibility of the logical-descriptive process.[127]

The proposal for a European regulation on artificial intelligence COM (2021) 206 final of 21 April 2021 also seems to point in this direction. It calls for intelligent systems to be designed and developed in such a way as to guarantee a sufficient margin of transparency to enable users to interpret the reasoning that led to the algorithmic decision and to use it appropriately.[128]

From this perspective, the interpretation of general anti-abuse clauses requires a capacity for adaptation and mediation on the part of human intelligence, which is difficult to replace by an algorithm or any other automated tool because the subjective aspect predominates, linked not only to preparation and experience of the jurist but also to the ability to balance interests to reach a truly fair decision.[129]

If, on the other hand, intelligent machines perform a supplementary and instrumental function, acting as a mere technical aid capable of supporting the legal reasoning of the human person without taking over, there are no impediments to their possible use.[130]

In the case of activities that are not merely preparatory, it is necessary to guarantee the right to human intervention in the decision-making process and to provide for strict standards of justification.[131]

The compromise solution - in compliance with constitutional and European principles governing tax matters - makes it possible to attribute a non-marginal role to intelligent systems in directing the choices of the financial administration, while at the same time supporting the implementation of forms of preventive dialogue between the fiscal authority and the taxpayer,[132] to configure a post-

[126] C. Francioso, 'Intelligenza' n 8 above, 86, fn 147; N. Sartori, *I limiti probatori nel processo tributario* (Torino: Giappichelli, 2023), 73.

[127] G. Fioriglio, 'La Società algoritmica tra opacità e spiegabilità: profili informatico-giuridici' *Ars Interpretandi*, 53, 60-61 (2021); C. Francioso, 'Intelligenza' n 8 above, 63.

[128] C. Francioso, 'Intelligenza' n 8 above, 63.

[129] S. Dorigo, 'L'intelligenza' n 12 above, 213.

[130] id, *Intelligenza* n 7 above, 740-741.

[131] C. Francioso, 'Intelligenza' n 8 above, 92.

[132] M. Basilavecchia, 'Il contraddittorio endoprocedimentale tra norme e principi alla luce dell'art. 5-ter d.lgs. n. 218/97', in A. Cuva and A. Damascelli eds, *L'accertamento tributario alla prova del contraddittorio endoprocedimentale obbligatorio* (Bari: Cacucci, 2021), 11-27; R. Cordeiro Guerra, 'Luci ed ombre nel nuovo contradditorio preventivo obbligatorio', in A. Cuva and A.

modern conception of the tax relationship based on compliance[133] and, as such, to relegate conflict situations to an *extrema ratio*.[134]

Damascelli eds, *L'accertamento tributario alla prova del contraddittorio endoprocedimentale obbligatorio* (Bari: Cacucci, 2021), 29-40; L. Salvini, 'Il nuovo contraddittorio tra contribuente e Amministrazione Finanziaria', in A. Cuva and A. Damascelli eds, *L'accertamento tributario alla prova del contraddittorio endoprocedimentale obbligatorio* (Bari: Cacucci, 2021), 63-73; S.R. Gianoncelli, *La definizione dell'accertamento* (Pisa: Pacini Giuridica, 2023), 1-31; A. Viotto, 'Il contraddittorio endoprocedimentale nella legge delega per la riforma fiscale' *Rivista di diritto tributario – supplemento* online, 9 September 2023, 1-10.

[133] V. Ficari, 'Gli "interessi" pretensivi del contribuente: dagli "strumenti" di collaborazione e partecipazione alle "definizioni consensuali" ' *Rivista trimestrale di diritto tributario*, 59-67 (2022).

[134] S. Dorigo, 'L'intelligenza' n 12 above, 213.