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THE "BLACK BOX" OF AUTOMATED TAXATION: A COMPARATIVE STUDY OF ALGORITHMIC ACCOUNTABILITY AND TAXPAYER RIGHTS IN GERMANY AND TAIWAN

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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON COHERENCE, TIME EFFICIENCY, AND POWER BALANCE IN THE UN TAX CONVENTION PROCESS

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Abstract

The modernization of tax administration has reached a pivotal juncture as revenue authorities increasingly replace human discretion with data-driven predictive algorithms and automated risk-scoring frameworks. While these technological shifts enhance administrative efficiency, they introduce an acute institutional friction with the constitutional principles of legal certainty, procedural due process and accountability. This paper examines the black box phenomenon, where the internal logic of algorithmic models becomes opaque, and the resulting crisis of legitimacy in automated fiscal enforcement.

Through a comparative analysis of the law-centric German model, which anchors automation in strict statutory authorization (e.g., §§ 88, 155 AO), and the agile, normative-vacuum approach in Taiwan, this study investigates how tax administrations can harness algorithmic efficacy without dismantling taxpayer safeguards. The research argues that current frameworks, including the German implementation of human-in-the-loop mechanisms, face a crisis of structural hollowization and formalistic oversight. To bridge these regulatory gaps, the paper proposes a normative framework transitioning from a black box to a glass box model. Key ideas include: Requiring revenue authorities to subject AI models to independent evaluations to detect and mitigate systemic data-driven inequalities. Establishing an explicit right for taxpayers to understand the dominant features that triggered an algorithmic risk score in intelligible, non-technical language. Instituting independent technical-legal committees to conduct ex-ante regulatory vetting of tax AI systems prior to deployment.

Finally, the study posits a tectonic shift in tax litigation paradigms, proposing a digital exclusionary rule akin to the police stop-and-frisk path. By shifting the focus of judicial review from the substantive accuracy of the tax bill to the procedural legitimacy of the algorithmic selection process, this framework aims to restore constitutional boundaries on state coercion in the age of sovereign algorithms.

Keywords: automated taxation, algorithmic accountability, risk management system, AI smart-audit selection model, digital constitutionalism

1. Introduction

1.1 The Sovereign Algorithm: Digital Transformation and the Algorithmic Tax State

The modernization of sovereign tax administration has reached a pivotal juncture, driven by a profound paradigm shift in technological infrastructure. Artificial intelligence (AI) and machine learning models have transcended their historical, purely supportive role within administrative internal affairs, expanding substantively into the core decision-making processes of the state's taxing high authority. Revenue authorities face persistent challenges in closing the tax gap globally while managing increasingly constrained administrative and human resources. Digital transformation has led to the systemic deployment of data-driven predictive algorithms, automated risk-scoring frameworks and automated tax assessment systems in response.

This rapid expansion of technological rationality, however, introduces an acute institutional friction with the fundamental tenets of the rule of law in tax law. The traditional doctrine of tax constitutionalism presupposes an administrative system rooted in human comprehensibility, legal certainty and clear accountability. State interventions that impose financial obligations or disadvantageous burdens on taxpayers must inherently provide a granular justification, ensuring that the legal and factual basis of the administrative act is subject to meaningful judicial review. The introduction of advanced, high-level algorithms upends this conceptual foundation. Contemporary tax algorithms operate by analyzing multi-dimensional, non-linear correlations across massive datasets, creating what is widely theorized as the black box phenomenon. Because the inner logic of these computational models evolves autonomously through training data, the precise causal pathway leading to a specific tax determination or an audit selection becomes opaque. Consequently, the tax administration can produce highly accurate revenue outcomes but remains structurally incapable of paternalistically demonstrating the exact rationale behind a potential infringement of a taxpayer's rights.

This tension between administrative efficiency and procedural justice manifests in starkly divergent regulatory strategies across different legal cultures. Under the codified, law-centric tradition of Germany, the legislature has sought to preemptively domesticate technology through formal statutory authorization, embedding automated administrative

acts directly into the tax code. Conversely, in the agile digital environment of Taiwan, tax algorithms have rapidly proliferated under the guise of internal technical assistance, operating within a procedural vacuum devoid of explicit statutory anchors. By investigating this friction, this research seeks to address a critical question in international public law: how can tax administrations harness the undeniable efficacy of algorithmic governance without dismantling the constitutional safeguards of the taxpayer?

1.2 The Triad of Opacity: Legal and Technical Dimensions of the Tax "Black Box"

To properly evaluate the constitutional injuries inflicted by automated taxation, one must construct a rigorous public law taxonomy of algorithmic opacity. Opacity within the tax domain is not a monolithic technical obstacle; rather, it represents three distinct, overlapping layers of un-interpretability that fundamentally disrupt procedural due process.

At first, technical opacity arises from the mathematical complexity inherent in deep learning and neural network architectures. These models function through millions of interconnected, constantly shifting parameters, rendering their internal reasoning process structurally inexplicable, occasionally even to the software engineers who designed them. This structural inexplicability reduces the traditional administrative duty to provide specific reasons and legal bases for an adverse tax decision to a mere formalistic rubber-stamping exercise.

Besides, institutional opacity is deliberately engineered by the state to protect the integrity of the tax system. Tax authorities assert that disclosing the specific weights, parameters or data variables of their risk-scoring models would allow non-compliant taxpayers to reverse-engineer the algorithm. This fear of gaming the system is utilized to justify absolute secrecy, invoking tax confidentiality and public interest overrides. However, this creates an irreconcilable information asymmetry, causing a substantial collapse of the principle of equality of arms in subsequent tax litigation.

In addition, inherent bias represents the normative corruption of automated equity. Machine learning algorithms are inherently backward-looking, reliant on historical training data. If the historical data contains systemic biases against specific socio-economic classes, industries, or geographic demographics, the algorithm will inevitably replicate, automate, and amplify these inequalities under the neutral veneer of mathematical objectivity, silently eroding the constitutional principle of substantive tax fairness.

From a constitutional standpoint, this triad of opacity directly compromises the core elements of a fair trial and the right to good administration. When an algorithm flags a

taxpayer as high-risk for tax evasion, triggering intensive and invasive auditing measures, that algorithmic classification functions as a substantive and disadvantageous intervention. However, due to the insurmountable barriers of opacity, the taxpayer is stripped of any meaningful prior opportunity to be heard; and is left unable to contest the underlying data provenance or the inference logic of the sovereign system.

The catastrophic potential of unconstrained algorithmic risk profiling and data abuse in automated governance is illustrated by the Dutch childcare benefits scandal (*toeslagenaffaire*)[1]. In this case, the Dutch Tax and Customs Administration deployed automated risk-assessment algorithms that systematically targeted roughly 35,000 welfare recipients with dual nationality or low-income backgrounds, falsely accusing them of fraud.[2] The system operated as an unaccountable black box, converting historical socio-economic data into algorithmic suspicion and executing aggressive clawback enforcement. The resulting human toll, ranging from severe financial ruin and physical/mental health crises to the eventual resignation of the Dutch cabinet in 2021, demonstrates that when state algorithms lack explainability and human oversight, administrative efficiency directly collapses into systemic fundamental rights violations. For jurisdictions like Taiwan and Germany, the Dutch experience serves as a clear warning against deploying data-mining models without robust eXplainable Artificial Intelligence (XAI) safeguards and judicial contestability.[3]

1.3 Comparative Framework: The Law-Centric German Model versus the Agile Taiwanese Path

To transcend abstract ethical declarations and offer concrete regulatory solutions, this study adopts a comparative legal framework that contrasts two distinct legal traditions confronting the algorithmic frontier: Germany and Taiwan.

As a primary jurisdiction within the European Union, Germany represents a strict law-centric approach to tax automation. Constrained by the traditional principles of statutory legality and the strict bound-nature of tax assessments, the German legislature amended the Fiscal Code (*Abgabenordnung*, AO) to insert Section 155, Paragraph 4,

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[1] See Hadwick & Lan, *Lessons to Be Learned from the Dutch Childcare Allowance Scandal: A Comparative Review of Algorithmic Governance by Tax Administrations in the Netherlands, France and Germany*, 13 World Tax J. 4 (2021).

[2] See Amnesty International, *Xenophobic Machines: Discrimination through Unregulated Use of Algorithms in the Dutch Childcare Benefits Scandal*, Amnesty International Report (2021).

[3] See Kuźniacki *et al., Towards eXplainable Artificial Intelligence (XAI) in Tax Law: The Need for a Minimum Legal Standard*, 14 World Tax J. 4, p. 11 (2022); Binder, *Artificial Intelligence and Taxation: Risk Management in Fully Automated Taxation Procedures, in* Regulating Artificial Intelligence 295–310 (Thomas Wischmeyer & Timo Rademacher eds., Springer 2020).

providing an explicit statutory authorization for fully automated administrative acts[4]. This statutory mechanism enables the automated issuance of tax assessments without human intervention, but restricts its application to low-risk cases, such as standard employee income tax returns. Furthermore, this domestic framework must now operate within the supra-national regulatory matrix of the European Union, specifically the stringent risk-tiering architecture of the EU AI Act and the fundamental right to human oversight codified under Article 22 of the General Data Protection Regulation (GDPR). The German model thus illustrates a rigorous attempt to subject the algorithm entirely to the rule of law through rigid statutory limitations.

In sharp contrast, Taiwan exemplifies an agile-technological approach. The National Taxation Bureaus under the Ministry of Finance have successfully deployed sophisticated AI smart-audit selection models across multiple tax categories[5]. These systems utilize machine learning and big data analytics to detect anomalous transactions in e-commerce networks, expose hidden rental income within the housing market, and identify discrepancies in import-export customs data, yielding extraordinary administrative results in combatting tax evasion. However, this technological power exists within a normative vacuum. Unlike Germany, Taiwan lacks an explicit statutory provision equivalent to § 155(4) AO. The tax authority characterizes these AI systems as mere internal preparatory tools or auxiliary mechanisms for administrative discretion, thereby attempting to bypass the requirement of statutory reservation. In practice, an algorithmic high-risk classification operates as a de facto presumption of guilt. It effectively shifts the practical burden of proof onto the taxpayer, who must disprove the algorithm's automated conclusions, creating a severe crisis of legitimacy regarding the presumption of innocence in tax penalty proceedings.

By evaluating these two divergent models, this research aims to determine how a non-EU jurisdiction, such as Taiwan, can bridge the regulatory gap. In the absence of direct supra-national mandates like the EU AI Act, this paper proposes a normative framework to transition tax administration from a "black box" to a glass box model. It argues that the preservation of taxpayer rights in the algorithmic era requires the codification of an explicit right to understand the core reasons of automated scores, mandatory periodic bias audits, and the establishment of independent technical-legal oversight committees. Through this comparative research, the study offers critical insights for the evolution of global tax policy and the survival of constitutionalism in the age of sovereign algorithms.

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[4] See Buoso, *Fully Automated Administrative Acts in the German Legal System*, European Review of Digital Administration & Law – Erdal, 2020, Vol. 1, Iss. 1-2, June-December, p. 115; *von Freeden* in: *Hübschmann/Hepp/Spitaler*, Abgabenordnung – Finanzgerichtsordnung, Kommentar, 289. Lieferung, 11/2025, § 155 AO 1977, Rz. 56.

[5] Taiwan initiated the integration of AI into tax audit procedures in 2021 and has since scaled its deployment extensively. The technical implementation, data governance and operational scope of these artificial intelligence systems are examined in Chapter 3.

2. The German Model: Legalized Automation under §§ 88, 155 AO

Germany represents a fundamentally law-centric and rule-bound approach to digital administration. Guided by the constitutional principle of the legality of administration enshrined in Article 20, Paragraph 3 of the Basic Law (*Grundgesetz*, GG), any exercise of sovereign administrative authority requires a clear statutory basis6. When applied to the tax arena, this strict dogmatic tradition meant that the introduction of automated processing systems could not merely rely on executive discretion or internal policy. Instead, it necessitated explicit legislative intervention to reconcile the deployment of algorithms with traditional procedural guarantees and the rule of law.

This chapter analyzes the dual statutory pillars governing automated taxation in Germany: § 155(4) AO, which legalizes fully automated tax assessments, and § 88(5) AO, which reconfigures the traditional ex *officio* investigation principle through the statutory codification of computerized risk management systems (*Risikomanagementsysteme*).

2.1 Fully Automated Administrative Acts: § 155(4) AO and Dark-Room Processing

The formal legislative authorization for the tax administration to issue administrative decisions without human intervention was established via § 155(4) AO. This provision permits tax assessments and other tax-related determinations to be generated entirely through automated systems, a process known in German administrative practice as dark-room processing[7].

Under § 155(4) AO, a fully automated assessment is permissible only when two primary conditions are met8. On the one side, the tax law must explicitly allow automated processing for the specific type of tax, or the taxpayer must have submitted their return

[6] S. Jarass in: *Jarass/Pieroth*, Grundgesetz für die Bundesrepublik Deutschland, 19. Auflage 2026, Art. 20 Rn. 75-76.

[7] S. Seer in: *Tipke/Kruse*, Kommentar zur AO und FGO, 173. Lieferung, 11/ 2022, § 155 AO 1977 Rz. 42.

[8] S. *von Freeden* in: *Hübschmann/Hepp/Spitaler*, Abgabenordnung – Finanzgerichtsordnung, Kommentar, 289. Lieferung, 11/2025, § 155 AO 1977, Rz. 57.

in a structured digital format that facilitates machine-readability. On the other side, the system can only process cases where there is no legal room for discretionary administrative appraisal or where the automated validation rules do not encounter anomalies requiring human review.

In practice, dark-room processing is primarily utilized for routine, high-volume mass administration cases[9], such as simple employee income tax returns. If the digital tax return aligns perfectly with pre-existing data reported by third parties (such as employers or insurance providers) and does not trigger any built-in risk filters, the system automatically computes the tax liability, appends the electronic signature of the authority, and issues the tax assessment.

From a doctrinal perspective, § 155(4) AO shifts the traditional understanding of administrative accountability. The administrative act remains legally attributed to the competent tax office, but the human public official is entirely bypassed during the evaluation and decision-making phases. The statutory legitimacy of the decision rests on the presumption that the underlying software code flawlessly mirrors the substantive tax code, thereby converting statutory mandates directly into binary logic.

2.2 The Reconfiguration of the Ex Officio Principle: § 88(5) AO and Risk Management Systems

While § 155(4) AO deals with the output, the automated issuance of the tax assessment, § 88 AO governs the input and processing phase, specifically the intensity of administrative fact-finding. Traditionally, § 88(1) AO mandates the ex *officio* investigation principle[10], which requires the tax authority to investigate all circumstances relevant to the tax case, including those favorable and unfavorable to the taxpayer.

However, under conditions of modern mass administration, a comprehensive manual review of every tax return is a structural impossibility. To resolve the acute tension between limited administrative resources and the constitutional mandate of uniform taxation (under Article 3(1) GG)[11], the German legislature enacted the Act for the Modernization of the Tax Assessment Procedure (*Gesetz zur Modernisierung des Besteuerungsververfahrens*) in July

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[9] S. *Wernsmann* in: *Hübschmann/Hepp/Spitaler*, Abgabenordnung – Finanzgerichtsordnung, Kommentar, 270. Lieferung, 9/2022, § 85 AO 1977, Rz. 44; *Drüen* in: *Hübschmann/Hepp/Spitaler*, Abgabenordnung – Finanzgerichtsordnung, Kommentar, 263. Lieferung, 6/2021, § 88 AO 1977, Rz. 4.

[10] S. Seer in: *Tipke/Kruse*, Kommentar zur AO und FGO, 182. Lieferung, 8/2024, § 88 AO 1977, Rz. 8; *Grafe*, Der Amtsermittlungsgrundsatz als Ausfluss des Rechtsstaatsgebots (?) Eine intradisziplinäre Betrachtung differierender„Amtsermittlungsgrundsätze" im deutschen Recht, GVRZ 2025, S. 26.

[11] See Englisch & Kube, *Constitutional Requirements for Substantive Tax Law in Federal Republic of Germany*, Review of International and European Economic Law, Vol. 2 Iss. 3, 2023, p. 5-6; Frans, Legal Framework for Taxation, 1996, p. 16-17.

201612. This amendment introduced § 88(5) AO, providing a nationwide statutory basis for the mandatory implementation of automated Risk Management Systems (RMS)13.

Pursuant to this framework, the statutory purpose of the RMS is not merely to maximize fiscal revenue, but rather to guarantee the systemic integrity of the tax system by preventing structural non-enforcement. The system functions by subjecting incoming tax returns to a series of algorithmic parameters and cross-checks. Cases deemed low-risk are routed directly to fully automated processing under § 155(4) AO, while high-risk or anomalous cases are kicked out of the pipeline for human review.14 Through this mechanism, the law effectively reinterprets the ex *officio* investigation principle: the duty to investigate is no longer an individualized obligation applied uniformly to every case, but a systemic obligation managed globally through algorithmically driven risk allocation.

2.3 The Structural Tension: Internal Law, Judicial Protection, and the Black Box Barrier

Despite the formal statutory clarity provided by §§ 88(5) and 155(4) AO, the practical operation of the German model generates significant constitutional and procedural friction, particularly concerning transparency and judicial protection.

The primary vector of this friction lies in the legal classification of the risk management parameters. In German administrative jurisprudence, the mathematical models, risk criteria and algorithms that constitute the RMS are classified as internal administrative rules[15]. Because these parameters are internal directives intended to guide administrative behavior rather than external statutes creating direct citizen rights, they do not possess independent external legal force.

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[12] Gesetz vom 18.07.2016 – BGBl. I 2016, Nr. 35 vom 22.07.2016, S. 1679.

[13] § 88 (5) AO: For the purpose of assessing the necessity of further investigations and audits to ensure the uniform and lawful determination of taxes and tax refunds, as well as the crediting of tax amounts withheld at source and advance payments, the tax authorities may employ automated systems (risk management systems). In doing so, the principle of administrative efficiency shall also be taken into account. The risk management system must meet at least the following requirements:

1. ensuring that, through random selection, a sufficient number of cases are selected for comprehensive examination by tax officials;
2. examination by tax officials of those matters identified by the system as requiring audit;
3. ensuring that tax officials are able to select cases for comprehensive examination;
4. regular review of the risk management systems to assess whether they are achieving their objectives.

Details regarding the risk management systems may not be disclosed insofar as such disclosure could jeopardize the uniformity and lawfulness of taxation. In the sphere of taxes administered by the state tax authorities on behalf of the Federal Government, the supreme tax authorities of the states shall determine the details of the risk management systems, in agreement with the Federal Ministry of Finance, in order to ensure the uniform enforcement of tax laws throughout the Federation.

[14] S. *Seer*, a.a.O. (Rn. 10), Rz. 67.

[15] S. *Seer*, a.a.O. (Rn. 10), Rz. 64.

Consequently, the taxpayer's procedural standing is significantly constrained. First of all, a taxpayer cannot independently challenge their case selection by the RMS. There is no individual right demanding that the tax office refrain from subjecting a return to a more intensive manual or automated review. Second, if a taxpayer argues that their return was singled out for an intensive audit while other similarly situated taxpayers bypassed scrutiny via automated channels, such a claim of unequal treatment under Article 3(1) GG invariably fails. Under the jurisprudence established from the German federal fiscal court (*Bundesfinanzhof*, BFH), there is no equality in illegality[16]. If the final tax liability determined by human auditors is substantively correct and lawful, any irregularity or asymmetry in how the system flagged the case for audit becomes legally irrelevant. Judicial remedies are only available against the final external tax assessment, not the internal algorithmic routing that led to its creation.

Compounding this isolation is the explicit legislative mandate for algorithmic secrecy. § 88(5) S. 4 AO establishes a conditional secrecy reservation[17], stipulating that the specific details and parameters of the risk management system must be kept confidential to prevent taxpayers from adapting their reporting behavior to circumvent detection[18].

This creates a profound black box phenomenon. While the legislature has successfully constructed a glass casing of formal statutory authorization around the automated administration, the actual logical gears, the automated criteria that determine whether a citizen faces the scrutiny of a human auditor or the swift passage of a machine, remain hidden from public and judicial view. This institutional asymmetry challenges the traditional tenets of procedural justice, as the taxpayer is left to defend against outputs generated by an invisible, unreviewable internal logic.

[16] There are many cases from the BFH, arguing this perspective, s. BFH, Beschluss vom 12. Oktober 2000 – V B 66/00 –, 11; BFH, Beschluss vom 18. Juli 2002 – V B 112/01 –, BFHE 199, 77, BStBl II 2003, 675, Rz. 21; BFH, Beschluss vom 26. September 2007 – V B 8/06 –, BFHE 219, 245, BStBl II 2008, 405, Rz. 6, 20; BFH, Beschluss vom 15. Januar 2008 – VIII B 61/07 –, Rz. 7; BFH, Beschluss vom 1. Juli 2010 – V B 62/09 –, Rz. 7; BFH, Urteil vom 17. Mai 2017 – V R 52/15 –, BFHE 258, 124, BStBl II 2018, 218, Rz. 37;

[17] S. *Seer*, a.a.O. (Rn. 10), Rz. 84.

[18] The tax authority may refuse to provide information on any reasons, whether involving sensitive data or trade secrets. Taxpayers have almost no opportunity to contest such denials or to gain access to comprehensive administrative information.

3. The Taiwanese Path: An Auxiliary Discretionary Model Oriented Toward Intelligent Audit Selection and Risk Forecasting

3.1 The Operational Reality: From Tax Digital Transformation to Algorithmic Enforcement

In recent years, Taiwan has emerged as a highly agile pioneer in integrating data science into tax administration. Driven by the tax digital transformation service project, the Ministry of Finance (MOF) has systematically shifted from traditional, sample-based human audits to proactive, predictive algorithmic enforcement. At the core of this technological leap is the so call AI intelligent audit selection model[19], an advanced framework that utilizes machine learning and big data analytics to identify high-risk tax evasion patterns with unprecedented precision.

The operational success of this algorithmic turn is visible across several major tax categories. In the realm of business tax (VAT), the tax authority has deployed risk-oriented AI selection modules to cross-examine complex supply chains and digital footprints[20]. By systematically analyzing transaction networks, invoice issuing ratios and discrepancies between declared turnover and cross-border cash flows, the AI model has successfully uncovered massive underground networks, such as a major upstream beauty supply chain that evaded over NTD $170 million in revenue[21].

A more profound application of machine learning is found in Taiwan's recent crackdown on the historically opaque rental housing market. Under projects initiated by the MOF statistics department and local bureaus like the tax authority of Kaohsiung, a

19 *See* Chang *et al.*, *A Discussion on Enhancing Tax Services through Artificial Intelligence*, Public Finance Review, Vol. 50 Iss. 5, 09.2021, p. 96; press release from Taiwan's Ministry of Finance, National Taxation Bureau Uses AI-Assisted Audits to Expose Tax Non-Compliance, 30.03.2026, https://www.mof.gov.tw/singlehtml/384fb3077bb349ea973e7fc6f13b6974?cntId=e5c79193ec0046a39c5c952207134442.

20 *See* press release from Taiwan's Ministry of Finance, AI-Driven Selection Exposes Over NTD $100 Million in Unreported Invoices, 21.07.2025, https://www.mof.gov.tw/singlehtml/384fb3077bb349ea973e7fc6f13b6974?cntId=d32300935ef74e22ad0c1b21466b7fe3.

21 *See* AI Audit Selection Success! National Taxation Bureau Exposes NTD $170 Million in Unreported Invoices, Resulting in NTD $12.75 Million in Back Taxes and Penalties, The Liberty Times, 21.07.2025, https://ec.ltn.com.tw/article/breakingnews/5115308.

two-stage AI risk-scoring model was developed to uncover undisclosed rental income.[22] In the first stage, the predictive model utilized supervised learning algorithms trained on historical audit data to compress administrative burdens; empirical results demonstrated that auditing a mere 30% of the selected cases could capture over 80% of effective non-compliance cases, increasing audit efficiency by approximately 188%. In the second stage, the algorithm's scope was expanded to search for hidden landlords by synthesizing multi-dimensional external data, achieving a remarkable 50% accuracy rate in trial cases.[23]

Crucial to this infrastructure is the role of the financial information center, which orchestrates massive cross-departmental data governance. To feed the predictive models, the administration bridges horizontal silos, merging tax data with external databases from the Ministry of the Interior (household registration), the Ministry of Health and Welfare (health insurance), the Ministry of Labor (labor insurance) and the national immigration agency. As administrators note, this data preprocessing and feature engineering consume upwards of 80% of the entire model development time24, highlighting that the Taiwanese path is fundamentally anchored in an aggressive, comprehensive state surveillance of data.

3.2 The Legal Vacuum: Technological Agility vs. The Statutory Principle

While Germany represents a law-centric approach where automation is tightly bound by statutory codification (such as § 155(4) and § 88(5) AO), Taiwan offers a stark contrast: a model characterized by extreme technological agility operating within a profound legal vacuum. The deployment of AI audit selection mechanisms has occurred entirely through internal administrative directives and technical pilot programs, completely bypassing legislative oversight and lacking any explicit statutory authorization.

The tax administration justifies this omission by framing these AI models merely as internal auxiliary discretionary tools. Under this dogmatic view, because the algorithm does not automatically issue a final tax assessment, but rather serves as an administrative filter to aid human tax officers in precise selection. It is categorized only as an internal

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[22] The following data comes from the press release of the tax authority of Kaohsiung, From Efficiency to Precision: The National Taxation Bureau of Kaohsiung Enters a New Era of AI-Powered Intelligent Taxation, 25.11.2025, https://www.ntbk.gov.tw/singlehtml/8edee6a2f90d4254a5e8d38c1db38137?cntId=5351c5200f074cfdb220439ad7d7155f.

[23] *Ibid.*

[24] *See* Chang, *Application and Development of Artificial Intelligence in the Tax Domain*, National Human Resources Forum, No. 35, 25.04.2025, https://www.exam.gov.tw/NHRF/News_EpaperContent.aspx?n=3778&s=49776&type=D78770E01F7001AC.

preparatory act. In result, the state argues that it does not trigger the strict requirement of the principle of legal reservation (*Gesetzesvorbehalt*)[25].

However, this legal formalist defense obscures the coercive, externalized effects that the algorithm exerts on the populace. In practice, an algorithmic high-risk score automatically shifts the administrative burden of proof and exposes the taxpayer to aggressive and resource-intensive audits. Furthermore, the psychological pressure generated by these opaque algorithmic tools is actively weaponized by the state to induce compliance. For instance, prior to launching seasonal AI-driven audits, regional tax authority issue public warnings urging businesses and online retailers to self-inspect, voluntarily report and retroactively pay past discrepancies to avoid severe penalties under Article 44 of the Taiwan Tax Collection Act[26].

By treating the black box of audit selection as a purely internal technicality, Taiwan's tax authority shields its algorithms from judicial review and public accountability. Taxpayers have no statutory right to know the underlying criteria, weights or parameters that designated them as high-risk targets. This unchecked expansion of algorithmic power creates an unconstitutional friction with both the principle of legality in taxation[27] and the constitutional right to due process[28]. The current Taiwanese framework essentially allows administrative convenience to override the rule of law, demonstrating how technological optimization, when decoupled from legislative anchoring, risks transforming modern tax administration into an unreviewable automated panopticon.

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[25] The principle of legal reservation (or statutory reservation) dictates that the state cannot arbitrarily interfere with the fundamental rights and freedoms of citizens. It requires that any government action restricting these rights must be authorized by a specific, democratically enacted parliamentary law. In Taiwan, according to the Judicial interpretation No. 443, the limitation of human rights (freedom) should be made by law or rules authorized by law.

[26] § 44(1) of the Taiwan Tax Collection Act: Where a profit-seeking enterprise fails to provide or obtain documents to or from others or to keep documents as required by the law, a fine in an amount no more than five percent (5%) of the total amount of the relevant documents as verified and determined shall be imposed on such enterprise.

[27] Taiwanese Judicial interpretation No. 420: In relation to laws involving taxation, they should be construed in accordance with the principle of taxation by law and the respective purposes of the laws, balancing therewith the economic purposes and the principle of equality in substantive taxation.

[28] Taiwanese Judicial interpretation No. 709: With respect to the content of the principle of due process of law under the Constitution, the legislature should promulgate corresponding legal procedures after taking into consideration the types of underlying basic rights, the intensity and scope of the restrictions, the public interests pursued, the proper functions of the decision-making authority and the availability of alternative procedures or the cost of the possible respective procedures.

4. Algorithmic Opacity and the Protection of Taxpayer Rights: A Comparative Legal Evaluation

4.1 Balancing the Principle of Legal Clarity and Information Asymmetry in Administrative Acts

In the contemporary landscape of fiscal governance, characterized by mass administration and the pursuit of technical rationality, the deployment of algorithms and big data profiling has become indispensable for tax administrations seeking to maintain enforcement efficacy and bridge the tax gap. However, this structural shift from human discretion to data-driven predictive modeling fundamentally destabilizes the traditional principle of legal clarity, a cornerstone of the rule of law governing administrative actions.

Under § 155(4) AO, the mechanics of fully automated tax assessments enables the revenue authority to issue binding administrative acts without human intervention in low-risk cases. Concurrently, § 88(5) AO legitimizes the institutionalization of RMS designed to screen and filter tax returns for potential non-compliance through automated machine learning algorithms. To safeguard the operational integrity of these predictive models and prevent taxpayers from utilizing reverse engineering to exploit thresholds and evade fiscal obligations, § 88(5) S. 4 AO mandates a strict secrecy preservation principle. This provision effectively shields the algorithmic parameters, criteria and weighting matrices from public and individual disclosure, institutionalizing a technical black box.

4.1.1 Compliance Scrutiny Under EU Data Protection Law

From the perspective of supranational European law, this state-enforced algorithmic opacity confronts the rigorous text of Article 22(1) GDPR. Article 22(1) establishes a categorical prohibition against decisions based solely on automated processing, including profiling, which produce legal effects concerning a data subject or similarly significantly affect them. Although Article 22(2)(b) GDPR permits member states to enact domestic derogations authorizing such automated sovereign acts[29], this exceptional competence is

[29] The mere fact that Member States may enact domestic derogations authorizing automated decision-making under Article 22(2)(b) GDPR does not render such national legislation inherently compliant with EU law, nor does it guarantee the legality of individual administrative acts issued pursuant to such provisions.

strictly conditioned upon the implementation of suitable measures to safeguard the data subject's rights, freedoms and legitimate interests.

4.1.2 Compliance Assessment: Does the German Framework Pass the Test?

This study posits that the current statutory configuration of AO fails to satisfy the compliance benchmarks mandated by Article 22(2)(b) GDPR for the following reasons:

The constitutional purpose of the principle of legal clarity is to guarantee that administrative actions remain inherently predictable to the citizens. This predictability empowers individuals to foresee the legal consequences of their conduct and structure their affairs accordingly. Then, by invoking the confidentiality *privilege* to classify all risk selection criteria as state secrets under the banner of preventing tax circumvention, the German state effectively hollows out the material substance of legal clarity. Moreover, taxpayers are relegated to a position of absolute informational asymmetry. Deprived of the knowledge of why or through which variables they have been cataloged as high-risk targets, individuals are stripped of their procedural right to seek timely legal remedies or engage in legitimate tax planning. In balancing administrative efficiency against fundamental procedural guarantees, the German framework overreaches, prioritizing fiscal convenience to the detriment of the minimum standards of rule-of-law predictability.

4.2 Conflicts and Reconciliations Between Procedural Transparency and Tax Secrecy

The normative trajectory of modern European digital regulation, articulated through Articles 13 to 15 GDPR and fortified by the EU AI Act, is anchored upon the paradigm of high-level algorithmic transparency. Specifically, Article 15(1)(h) GDPR enshrines the data subject's right of access, which explicitly guarantees individuals the right to obtain from the data controller meaningful information about the logic involved in automated decision-making systems, alongside an explanation of the significance and envisaged consequences of such processing.

Conversely, German tax jurisprudence and dominant academic doctrine, exemplified by the strict adjudication of BFH, vehemently defend the absolute confidentiality of RMS. The prevailing German view asserts that any individual or public disclosure of the underlying risk parameters would trigger a structural enforcement deficit, thereby systematically sabotaging tax equity and jeopardizing state revenues. To solidify this defense, the German

legislature enacted § 32c(1) No. 1 AO[30], a domestic claw back provision that severely circumscribes the taxpayer's GDPR right of access. This statutory restriction dictates that the revenue authority may refuse to provide information regarding automated logic if disclosure threatens to impair the proper performance of the tasks within the authority's competence, specifically where it allows inferences to be drawn regarding the design of the RMS or planned audit strategies.

4.3 Compliance Scrutiny Under the EU Proportionality Principle

The complete suppression of procedural transparency under the banner of § 32c AO cannot withstand the strict strictures of the principle of proportionality and the least intrusive means test under EU law. Algorithmic transparency within public administration is not an all-or-nothing proposition. While the state possesses a legitimate interest in restricting access to the raw source code or precise mathematical thresholds to preserve the efficacy of its anti-fraud systems, resorting to an absolute embargo on all technical information exceeds what is strictly necessary to achieve that objective.

Under contemporary European standards of fundamental rights protection and algorithmic accountability, the absolute black box must be replaced by a glass box model. True reconciliation requires the institutionalization of a statutory *duty to explain core reasons*. While the revenue authority need not reveal the granular algebraic formulas, it must communicate the dominant features that triggered the algorithmic risk score (e.g. atypical cross-border transfer pricing patterns or abnormal depreciation fluctuations) in intelligible, non-technical language. Consequently, the blanket immunity carved out by § 32c AO represents an unconstitutional expansion of administrative opacity that fails the European standard of transparency.

4.4 Substantiation vs. Formalization of Human-in-the-Loop Mechanisms

To mitigate the systemic errors, statistical biases, and discriminatory anomalies inherent in algorithmic profiling, Article 22(3) GDPR and Article 14 of the EU AI Act jointly mandate the institutionalization of robust human-in-the-loop (HITL) oversight

[30] §§ 32a, 32b and 32c AO collectively establish a structural derogation from the GDPR's transparency requirements within the German tax administration. While §§ 32a and 32b AO define the substantive criteria under which a tax authority may be exempted from the duty to inform a data subject (primarily to safeguard the efficacy of official tasks, public security, or the confidentiality of third-party interests), § 32c AO serves as the operative link that extends these exemptions to the data subject's right of access under Article 15 GDPR. Consequently, the interplay of these provisions effectively enables tax authorities to invoke the confidentiality justifications established in §§ 32a and 32b AO as a procedural bar to deny taxpayers meaningful information regarding the logic and risk-assessment parameters of automated decision-making systems.

mechanisms[31]. The constitutional rationale of HITL dictates that automated systems must remain subordinate to substantive human supervision. Human overseers must possess the requisite technical competence, institutional independence and psychological autonomy to actively identify and counteract automation bias, retaining the absolute authority to override algorithmic determinations whenever they deviate from lawful and equitable standards.

However, an empirical and doctrinal audit of digitized German tax administration reveals that this high-standard European mandate faces an acute crisis of structural hollowization and formalistic rubber-stamping. This pathology is clearly demonstrated by the operational reality of the Maxi AI tax assistant currently deployed by the financial administration of the state of Hesse[32].

The Maxi-system serves as a sophisticated, high-risk algorithmic instrument designed to assist frontline tax officers in evaluating tax evasion, detecting money laundering anomalies, and profiling non-compliance risks. *Prima facie*, the automated procedure appears fully compliant with the rule of law because the final tax assessment is formally signed and issued by a human official, thereby satisfying the formalistic requirement of an ultimate human determination. Nevertheless, an examination of the institutional and cognitive environment reveals two fatal structural flaws.

On the one hand, under the constraints of mass administration, frontline tax officers are confronted with an overwhelming volume of daily cases. Under rigorous performance evaluations and strict institutional processing deadlines, officials possess neither the

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[31] Article 22(3) GDPR: In the cases referred to in points (a) and (c) of paragraph 2, the data controller shall implement suitable measures to safeguard the data subject's rights and freedoms and legitimate interests, at least the right to obtain human intervention on the part of the controller, to express his or her point of view and to contest the decision.

Article 14 (1)-(3) EU AI Act: 1. High-risk AI systems shall be designed and developed in such a way as to ensure that their operation is sufficiently transparent to enable deployers to interpret a system's output and use it appropriately. An appropriate type and degree of transparency shall be ensured with a view to achieving compliance with the relevant obligations of the provider and deployer set out in Section 3.

2. Human oversight shall aim to prevent or minimise the risks to health, safety or fundamental rights that may emerge when a high-risk AI system is used in accordance with its intended purpose or under conditions of reasonably foreseeable misuse, in particular where such risks persist despite the application of other requirements set out in this Section.

3. The oversight measures shall be commensurate with the risks, level of autonomy and context of use of the high-risk AI system, and shall be ensured through either one or both of the following types of measures:

(a) measures identified and built, when technically feasible, into the high-risk AI system by the provider before it is placed on the market or put into service;

(b) measures identified by the provider before placing the high-risk AI system on the market or putting it into service and that are appropriate to be implemented by the deployer.

[32] While RMS is developed at the federal level, individual German states also deploy proprietary AI systems, such as the "Maxi" tax assistant developed by the financial administration of the State of Hesse, see, e.g., press release from the Ministry of Finance Hesse, Hessische Finanzverwaltung bringt KI-Assistenten für ihre Beschäftigten an den Start, 22.09.2025, https://finanzen.hessen.de/presse/hessische-finanzverwaltung-bringt-ki-assistenten-fuer-ihre-beschaeftigten-an-den-start.

temporal capacity nor the systemic incentives to conduct a meaningful, *de novo* substantive review of cases flagged by the AI model. On the other hand, the inner workings of machine learning and neural network models, governed by intricate multi-variable correlations and latent parameters, are opaque to the average tax bureaucrat. Lacking training in data science and computational statistics, traditional administrative officials are epistemically incapable of reconstructing or interrogating the causal logic behind a specific risk score generated by the Maxi assistant.

Deprived of technical comprehension and stripped of the time necessary for independent evaluation, frontline tax officials inevitably succumb to automation bias, defaulting to blind psychological deference toward the system's outputs. This administrative alienation, wherein human participation is preserved in name but entirely subordinated to algorithmic authority in substance, degenerates into a semiotic placebo or symbolic oversight. It fails to meet the standard of substantive human control articulated in the EU AI Act for high-risk public sector applications.

Because it lacks accompanying institutional counterweights, such as mandated periodic bias audits or independent transdisciplinary technical-legal oversight committees, the current German implementation of the HITL mechanism is hollowed out. To escape this formalistic trap, tax jurisprudence must transition from a superficial signature requirement to an empirically and technologically empowered logical review. Only by actively equipping tax officials with data literacy and enforcing structural review periods can digital tax governance be brought back into alignment with the demands of due process of law and digital constitutionalism.

5. Establishing a Normative Framework for Algorithmic Accountability and Due Process in Digital Tax Administration

As AI and big data profiling technologies permeate the core of fiscal enforcement, the operational paradigm of tax administrations is undergoing a fundamental metamorphosis from reactive tax auditing to proactive algorithmic prediction. Legislative mechanisms such as fully automated tax assessments under § 155(4) AO, RMS under § 88(5) AO, and the AI intelligent audit selection mechanisms increasingly deployed by revenue authorities worldwide underscore an undeniable trajectory toward absolute administrative efficiency and the optimization of fiscal enforcement. However, the inherent black box nature of machine learning, coupled with systemic biases and the unconstrained expansion of state data ingestion, presents an unprecedented challenge to traditional doctrines of due process of law and the constitutional protection of taxpayer rights.

To move beyond vague normative demands for transparency, the transition to a glass box model must adopt the minimum legal standards of XAI tailored for tax governance.[33] In tax authority–to–taxpayer (TA2T) relations, the state's constitutional obligation of formal motivation requires a high threshold of explainability, proportional to the degree of administrative discretion exercised.[34] Tax authorities cannot rely on black-box predictions; they must provide taxpayers with local post-hoc explanations, specifically detailing the precise features, weights and counterfactual factors that generated a specific risk score or audit target[35].

Furthermore, institutionalizing algorithmic accountability mandates a dual oversight architecture. First, the system requires differentiated information rights: while taxpayers are entitled to intelligible, non-technical explanations regarding why their case was flagged rather than bypassed (counterfactual reasoning), tax courts and independent technical-

33 *See* Kuźniacki *et al.*, *Exploring explainable AI in the tax domain*, Artif Intell Law 33, p. 555 (2025).

34 *See* Bibal et al., *Legal Requirements on Explainability in Machine Learning*, 29(2) Artif. Intell. and Law 149, p. 155-156 (2021).

35 *See* Kuźniacki *et al.*, *supra note* 33, p. 557–559.

legal committees must receive granular, global post-hoc model data[36], including training dataset parameters and feature weighting matrices, to conduct substantive legal review without compromising trade or tax secrecy[37]. Second, the architecture must integrate comprehensive algorithmic auditing. Prior to and during deployment, tax AI systems must undergo mandatory periodic algorithmic audits to detect data drift, statistical bias and unintended function creep38. These audits function as an indispensable line of defense to prevent historic enforcement prejudices from being hardcoded into sovereign algorithms.

5.1 Drawing from European Legal Benchmarks: Imposing Mandatory Periodic Algorithmic Bias Audits

In formulating an effective regime for algorithmic accountability within public administration, GDPR and EU AI Act establish the premier global benchmarks for technology regulation[39]. Because the power to tax represents one of the most coercive expressions of state sovereignty, the deployment of AI risk-scoring and case-selection systems deeply encroaches upon citizens' constitutional rights to property, informational privacy, and equal treatment. Therefore, drawing from European governance models to categorize tax AI systems under the regulatory rubric of high-risk systems and imposing a statutory obligation of mandatory periodic bias audits upon revenue authorities constitutes the indispensable first line of defense against algorithmic despotism.

Algorithmic bias within fiscal administration is rarely a product of malicious programming; rather, it is endogenously generated by historical prejudices or systemic distortions embedded within the training data. In tax enforcement, if a machine learning model is trained exclusively on historical audit records compiled by human tax officers, it will inevitably trigger a pernicious, self-reinforcing feedback loop. For example, if historical human enforcement disproportionately targeted cash-intensive industries, e-commerce startups or specific demographic sub-groups due to prevailing administrative heuristics, the AI model will interpret these correlations as objective indicators of high non-

36 *See* Finck *et al.*, *Post-Hoc explanations fail to achieve their purpose in adversarial contexts. In: Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*, p. 893.

37 *See* Busuioc *et al.*, *Reclaiming transparency: contesting the logics of secrecy within the AI Act. European Law Open.* 2023;2(1), p. 89.

38 *See* Raji *et al.*, C*losing the AI Accountability Gap: Defining an End-to-End Framework for Internal Algorithmic Auditing. In: Proceedings of the 2022 ACM Conference on Fairness, Accountability, and Transparency*, p. 35.

39 Although tax audit selection systems are not explicitly named in Annex III of the EU AI Act, they qualify as high-risk AI systems under the criteria. These systems operate at the intersection of multiple high-risk categories: they function as public authorities' tools for evaluating eligibility for benefits and essential services (Annex III, Point 5a); they perform sophisticated financial fraud detection and risk assessment (Annex III, Point 5b); and they serve as critical infrastructure support for law enforcement authorities in the investigation and detection of financial non-compliance and criminal offenses (Annex III, Point 6e). Due to their profound impact on taxpayers' fundamental rights and the inherent risks of systemic profiling, such systems satisfy the criteria for high-risk classification under the regulatory framework of the EU AI Act.

compliance risk. Consequently, the system will continuously flag these specific sectors for intensified scrutiny, yielding an even higher volume of non-compliance instances within that pool. Feeding this distorted output back into the system reinforces and amplifies the algorithm's preexisting biases. This technical alienation traps marginalized or newly emerging economic actors in a cycle of structural inequality, violating the constitutional principle of tax equity.

To disrupt this self-fulfilling prophecy of data-driven profiling, the legal framework must mandate periodic algorithmic bias audits. This mechanism requires revenue authorities to subject operational tax AI models to comprehensive, independent evaluations conducted by specialized internal oversight bodies or certified third-party auditors. The scope of these audits must systematically encompass three analytical dimensions. Firstly, auditors must rigorously evaluate whether the training datasets are statistically representative and actively detect the presence of data drift or sample selection biases that could distort the model's predictive equity over time. The system must be tested against formal fairness metrics to ensure that the algorithm does not generate disproportionate false positives, erroneously labeling compliant taxpayers as high-risk tax evaders, based on arbitrary or discriminatory socio-economic variables. Oversight bodies must continuously monitor operational systems to ensure that autonomous optimization and weight adjustments do not cause the model to deviate from its original statutory mandates, thereby preventing the algorithm from executing unauthorized administrative discretion. Institutionalizing these periodic audits ensures that advanced technological tools remain tightly anchored to the principle of administrative legality.

5.2 Safeguarding Substantive Due Process for Taxpayers: Codifying the Duty to Explain Core Algorithmic Reasons

The principle of due process of law constitutes the bedrock of fundamental rights protection against arbitrary state encroachment. Within traditional administrative law, when an authority issues an unfavorable or intrusive administrative act, it bears a statutory duty to state the underlying reasons (as exemplified by § 121 AO)[40]. However, in the context of AI-driven automated tax governance and automated risk-scoring, this traditional protective mechanism faces an acute crisis of technical hollowing out. When a taxpayer is flagged as a high-risk target by a predictive model, triggering highly invasive, systemic field audits, a revenue authority cannot be permitted to satisfy its explanatory burden by merely reciting boilerplate phrases such as automated system anomaly detected or internal risk parameters met. Such superficial justifications relegate the taxpayer to

40 S. *Seer* in: *Tipke/Kruse*, Kommentar zur AO und FGO, 167. Lieferung, 8/2021, § 121 AO 1977, Rz. 1; *Pautsch in: Pautsch/Hoffmann*, VwVfG, 2., neu bearbeitete Auflage, § 39 VwVfG, Rn. 7.

absolute opacity, effectively obliterating their procedural right to information and their substantive right to construct a legal defense.

Consequently, the core of digital due process lies in the formal codification of a specific duty to explain core algorithmic reasons. This normative mechanism does not demand that tax administrations unreservedly disclose their entire proprietary source code or hyper-complex underlying algebraic formulas to the public, an extreme approach that would not only jeopardize commercial trade secrets and software patents but also create severe moral hazards by allowing non-compliant actors to reverse-engineer thresholds and evade their fiscal obligations. Instead, the doctrine requires the tax administration to communicate the dominant features that drove the algorithm's risk determination in an intelligible, non-technical language.

The institutionalization of this targeted explanatory duty yields two primary procedural benefits. The revenue authority must explicitly disclose the primary variables that triggered the algorithmic intervention, such as anomalous input-output invoice ratios, unprecedented asset depreciation fluctuations, or cross-transaction tracking with known high-risk supply chains. This disclosure restores the taxpayer's ability to comprehend the factual basis of the state's sovereign intrusion. Additionally, armed with an understanding of the critical predictive factors, the taxpayer can mount a targeted defense to rectify contextual misinterpretations or data entry errors inherent in automated processing. For instance, a legitimate cross-border corporate asset reallocation that an algorithm misconstrues as an anomalous money laundering pattern can be clarified and rebutted. By transitioning the duty to state reasons from an ex-post procedural formality to an active, concurrent safeguard, digital tax administration can properly align itself with the constitutional spirit of taxpayer protection acts.

5.3 Establishing Transdisciplinary Technical-Legal Committees and Ex-Ante Regulation

Given the non-linear evolution of machine learning architectures and the deep obscurity of neural networks, traditional judicial review and ex-post remedies are structurally ill-equipped to counter systemic algorithmic errors. When confronted with highly complex deep learning models during litigation, judges frequently encounter severe technical cognitive deficits. They lack the institutional capacity to interrogate the internal integrity of an algorithm, detect latent statistical biases, or determine whether the system violated the prohibition against improper interconnection. Relying solely on retrospective judicial interventions creates an unacceptably high risk of unreviewable administrative arbitrariness. To dissolve the blind spots that separate the legal and technological disciplines, the normative framework must pioneer an institutional innovation: the

establishment of an independent, transdisciplinary technical-legal committee tasked with enforcing rigorous ex-ante regulation.

This committee must be structurally independent of the executive branch and composed of experts from diverse disciplines, including administrative and tax law scholars, fiscal practitioners, data scientists, algorithmic ethics experts and software engineers[41]. The core mandate of the technical-legal committee is to subject all tax IT systems, fully automated assessment models and AI case-selection algorithms to mandatory pre-deployment compliance and constitutional impact assessments. The committee's ex-ante regulatory oversight is structured around three primary functions.

At first, the committee must verify that any proposed model possesses a baseline level of logical interpretability and traceability. It must categorically bar extreme black box models, where the causal connection between data input and risk output is fundamentally unreconstructable, from being deployed in sovereign law enforcement. Then, the committee must audit the external parameters and data sources ingested by the AI model (such as third-party digital footprints or social media data). It must ensure that these inputs maintain a strict rational nexus to legitimate fiscal optimization, thereby preventing the state from utilizing tax AI as a trojan horse for panoptic social surveillance or digital authoritarianism. Finally, an algorithm may only be deployed as an auxiliary instrument of tax administration after receiving a formal compliance certification from the committee. This ex-ante gatekeeping mechanism effectively encodes constitutional principles directly into the technical architecture of the system from its inception.

5.4 The Tectonic Shift in Tax Litigation Paradigms: From the Legality of the Assessment to the Legality of Algorithmic Selection

The foundational theoretical insight of this study is that the systemic integration of AI risk-scoring and predictive case-selection models will precipitate a tectonic shift in the doctrine and practice of tax litigation. Under traditional tax law dogmatics, reflected both in the orthodox German interpretation of § 88(5) AO and in the prevailing judicial precedents of many civil law jurisdictions, the internal mechanism by which a tax authority selects a specific case for an audit has been treated as an internal administrative rule.

Traditional jurisprudence maintains that a taxpayer possesses no subjective public right to demand that the state refrain from auditing their tax returns. Under this legacy

[41] Like the other administrative authorities, the technical-legal committee must be structured to ensure rigorous, critical oversight of the fundamental rights implications of AI in administrative governance. To prevent the 'fox guarding the henhouse' phenomenon, the appointment process must guarantee the committee's objective independence from the executive branch. It is essential that the composition of the committee avoids an overrepresentation of fiscal authorities or government-affiliated officials, instead favoring a transdisciplinary body of independent scholars, data scientists, and ethicists who can critically evaluate algorithmic impacts without conflicts of interest.

paradigm, as long as the final tax assessment is substantively accurate under the governing tax statute, meaning the ultimate tax liability was calculated correctly based on objective facts, the judiciary remains indifferent to whether the initial case-selection process was procedurally flawed, structurally unfair or statistically biased. The trial remains confined to the backend product of the audit, while the illegality of the selection process itself is rendered judicially invisible, treated as a procedural defect cured by the final determination of the correct tax liability.

However, in an era dominated by automated AI predictions, exempting the case-selection process from judicial review creates a profound deficit of constitutional legitimacy. The epicenter of contemporary tax litigation must move forward, shifting from the backend review of the substantive legality of the tax assessment to the frontend scrutiny of the procedural legality of the algorithmic selection process.

This doctrinal displacement exhibits a powerful jurisprudential isomorphism with the constitutional review of a police stop-and-frisk or a profiling-based vehicular interception within criminal procedure and police power dogmatics. The structural parallel between these domains of sovereign intervention is delineated below.

5.4.1 The Nature of Sovereign Intervention

In the traditional criminal and police law paradigm, sovereign intervention is characterized by law enforcement officers initiating a physical stop, detention or search of an individual based on specific criminal suspicion or behavioral profiling. This finds a direct digital counterpart in the emerging tax administration framework. In this new paradigm, an AI predictive model processes massive datasets to flag a specific taxpayer as a high-risk non-compliance target. This automated profiling serves as the functional equivalent of a physical stop, as it acts as the primary trigger for a highly invasive and systemic audit.

5.4.2 The Core Focus of Judicial Litigation

Under classical police dogmatics, the judicial inquiry focuses not on the substantive result, whether the defendant was actually in possession of contraband, but rather on the procedural propriety of the act. Specifically, the court examines whether the officer possessed reasonable suspicion[42] at the inception of the stop or whether the intervention was tainted by discriminatory profiling.

[42] As AI-driven systems increasingly achieve high accuracy in identifying non-compliance from mass datasets, the focus of tax litigation is likely to shift from the substantive legality of the tax assessment to the procedural legitimacy of the selection process. In this emerging paradigm, taxpayers may find limited opportunity to contest the final tax liability on substantive grounds, thereby elevating the algorithmic case-selection mechanism itself to the center of legal scrutiny, particularly concerning issues of discriminatory profiling and data interpretation errors.

Similarly, digital tax litigation is shifting its focus away from the substantive outcome of whether the taxpayer ultimately owed additional taxes. Instead, the inquiry centers on selection legitimacy. The court must determine whether the algorithm that targeted the taxpayer was infected by systemic biases, violated the rational nexus requirement, or operated with a degree of technical arbitrariness that offends the principle of administrative legality.

5.4.3 Remedial Legal Consequences

The most profound parallel lies in the remedial response to unlawful state action. If a traditional police stop is deemed unconstitutional, the exclusionary rule is triggered. Under the "fruit of the poisonous tree" doctrine[43], any physical evidence discovered during the subsequent search is suppressed, effectively vitiating the prosecution's case regardless of the defendant's actual guilt.

In the realm of digital tax administration, a parallel doctrine of exclusionary of the source emerges. If the initial algorithmic selection is found to be illegal, whether due to a violation of accountability standards, a lack of required explanation or the bypassing of mandatory certified audits, the selection itself is rendered void. This structural invalidation does not only affect the selection, it fundamentally undermines the entire audit process, stripping the final tax assessment of its lawful foundation and constitutional validity.

Consequently, the courtroom of the near future will be radically reoriented. Taxpayers will no longer direct their primary arguments at dense ledger entries or dry accounting metrics. Instead, they will launch direct constitutional assaults on the legitimacy of the algorithm utilized to target them.

If a revenue authority deploys a case-selection algorithm that has flouted mandatory periodic bias audits, failed to provide an intelligible explanation of its dominant features, or bypassed the ex-ante vetting of the technical-legal committee, the selection act itself constitutes a severe infringement of the taxpayer's constitutional right to informational self-determination and substantive due process. Just as an unconstitutional stop-and-frisk invalidates a subsequent criminal prosecution, this technologically corrupted sovereign intrusion destroys the legal validity of the subsequent tax audit. The procedural illegality of the AI selection process operates as a fatal structural defect that cannot be cured by the objective accuracy of the final tax calculation.

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[43] Even the fruit of the poisonous tree doctrine does not apply in Germany, the exclusionary rule exists in the German Code of Criminal Procedure. In Germany, the issues focused on the exclusion of the evidence and its "far effect" (Fernwirkung des Beweisverwertungsverbotes), s. *Dann* in: *Esser/Rübenstahl/Saliger/Tsambikakis*, Wirtschaftsstrafrecht, § 136 StPO, Rn. 29; § 136a StPO, Rn. 38.

5.5 Summary

In sum, the construction of a normative framework for digital tax administration extends far beyond the technical optimization of revenue collection or the maximization of administrative velocity. Its ultimate constitutional objective is to reestablish the lawful boundaries of sovereign intrusion into the private lives and economic liberties of citizens within an algorithmically dominated society. By institutionalizing mandatory periodic bias audits, codifying the duty to explain core algorithmic reasons and establishing independent, transdisciplinary technical-legal committees for ex-ante regulation, democratic states can transform the technical black box into a accountable glass box. Forcing a paradigm shift in tax litigation, where courts actively review the algorithmic legitimacy of the initial case selection, ensures that technological progress does not come at the expense of fundamental liberties, thereby vindicating the core principles of digital constitutionalism within the fiscal domain.

6. Conclusion

The transition toward algorithmic sovereignty in tax administration represents more than a technical upgrade. It is a fundamental constitutional rupture that necessitates a new architecture of accountability. As fiscal enforcement migrates from human-led audits to predictive black box models, the preservation of the rule of law depends on the successful implementation of a glass box framework. It suggests that the future of digital tax jurisprudence will not be remained in traditional ex-post remedies, but in a transdisciplinary oversight system that embeds constitutional values directly into the algorithmic code.

The evolution of tax governance must center on ex-ante regulation through independent committees that bridge the gap between data science and administrative law. By mandating periodic bias audits and codifying a specific duty to explain core reasons, the state can resolve the current information asymmetry that leaves taxpayers defenseless against automated scores. This development ensures that the rational nexus required for sovereign intervention is maintained, preventing tax AI from becoming a tool for unreviewable digital authoritarianism.

A decisive shift in judicial practice is impending, where the epicenter of litigation moves from the substantive accuracy of the tax bill to the procedural legitimacy of the algorithmic selection. In this emerging paradigm, courts will apply a digital exclusionary rule to address systemic flaws in AI targeting. If a selection process is found to be biased or opaque, it will be treated as a poisoned source that invalidates the entire audit, regardless of the underlying tax liability. This isomorphism with criminal procedure ensures that the state’s power to stop and frisk digital data is subject to the same constitutional rigors as physical intervention.

Ultimately, the goal of digital constitutionalism within the fiscal realm is to redefine the boundaries of state coercion in an automated society. The institutionalization of algorithmic accountability ensures that technological progress serves the principles of equity and due process rather than bypassing them. By transforming the tax administration into a transparent and accountable glass box, the legal system can harness the efficiency of AI without sacrificing the fundamental rights that anchor a democratic state.