

ACTL-CPT Conference „Towards eXplainable Artificial Intelligence (XAI) in Taxation: The Future of Good Tax Governance” 10 March 2023,

University of Amsterdam

“Towards eXplainable Artificial Intelligence (XAI) in Tax Law: The Need for a Minimum Legal Standard”

Presentation by:

Dr. Błażej Kuźniacki, Assistant Professor in Tax & Technology at the ACTL and the CPT researcher, University of Amsterdam and Advisor at PwC Global Tax Policy (The Netherlands)

Marco Almada, Researcher at Department of Law, European University Institute (Florence, Italy)

Presentation outline

1. Introduction: research team and work
2. The need for explanations in tax contexts
3. The value and limits of XAI for tax
4. Evaluating explanations for tax purposes

The research team



Dr. Błażej Kuźniacki, Assistant Professor at the ACTL, University of Amsterdam
Advisor & Senior Manager at PwC Global Tax Policy & PwC Netherlands (International Tax)



Marco Almada, Researcher at Department of Law, European University Institute
Doctoral grant from Fundación Carolina



Dr. Łukasz Górski, Assistant Professor at Interdisciplinary Centre for Mathematical and Computational Modelling, University of Warsaw, Poland



Kamil Tyliński, Data Scientist,
Researcher and Lecturer at the UCL School of Management, the UK

Why XAI in the tax domain?

- AI is increasingly used in tax applications
- However, the use of AI introduces various risks
 - System errors
 - Discriminatory patterns
 - Procedural violations
 - etc.
- Need for understanding of AI

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Childcare benefit scandal: more children were removed from their homes

Society     May 11, 2022



Photo: Depositphotos.com

In the last six years, 1,675 children whose parents were caught up in the childcare benefit scandal have been removed from their homes by social workers, national statistics agency CBS said on Wednesday.

Legal challenges for XAI systems: tax & trade secrecy

The Dutch Ministry of Social Affairs and Employment's statement: "If one were to disclose what data and connections the Inspectie SZW is looking for, (potential) lawbreakers would know exactly on which stored data they would have to concentrate." [Childcare scandal/SyRI case]



Amnesty International' Report (2021) on *Xenophobic Machines*: "Families were trapped in frustrating and opaque procedures that dragged on for years, with some being **driven into poverty and bankruptcy** by the government. These practices led to **devastating financial problems** for the families, ranging from **increased debt and unemployment to forced evictions** when people were unable to pay their rent or make payments on their mortgages. Others were **left with mental health issues and stress on their personal relationships, leading to divorces and broken homes.**"



XENOPHOBIC MACHINES

Balancing values and rights in public sector AI – case law



- ✓ *S. and Marper v. the UK* case (ECtHR, 4.12.2008, the retention of DNA profiles for an indefinite term): “any State claiming a pioneer role in the development of new technologies bears special responsibility for striking the right balance in this regard”
- ✓ *SyRI* case (The Hague District Court, 5.02.2020): “Where SyRI is applied, the SyRI legislation provides insufficient safeguards due to the large amount of data – of various types and from a large number of different sources – that can be processed. Moreover, there is no insight into the risk indicators and risk model nor into the objective criteria underlying the validity of the risk indicators and risk model.”
- ✓ *eKasa* case (17.12.2021, Slovak Const. Court): “The application of technological progress in public administration cannot result in an impersonal state whose decisions are inexplicable, unexplained”
- ✓ *Ligue des droits humains* case (ECJ, 21.06.2022, automated processing of passenger name records): “...given the opacity which characterises the way in which artificial intelligence technology works, it might be impossible to understand the reason why a given program arrived at a positive match. In those circumstances, use of such technology may deprive the data subjects also of their right to an effective judicial remedy enshrined in Article 47 of the Charter.”

What does explanation offer?



- Some AI systems are opaque
- Their use in decisions must nonetheless be justified: duty to give reasons
- Explanations provide a model of how an opaque AI system arrives at its decisions

XAI as a tool for constitutional principles and taxpayer rights

Control

- Ensuring algorithmic effectiveness and adequacy
- Internal controls in tax administration
- Societal oversight: no taxation without representation [17 Dec. 2021, Slovak Constitutional Court, *eKasa* case]

Legal certainty

- Algorithm opacity
- Errors and miscalculations
- Discretion in design

Taxpayer rights

- Fair trial rights (art. 6 ECHR)
- Private and family life (art. 8(2) ECHR) [5 Feb. 2020, the Hague District Court, *SyRI* case]
- Prohibition of discrimination (art. 14 ECHR)
- At EU level: right to a good administration (art. 41 CFR)

XAI as a data protection concern

Right to an explanation

- Recital 71: red herring for XAI?
- Articles 13–15: disclosure of meaningful logic

Data protection by design

- Art. 25 GDPR requires technical and organizational measures
- Backdoor enforcement of CFR rights?

Scope of application

- Personal: mostly limited to data about natural persons
- Territorial extension

The AI Act's limited impact in tax



Article 13: requires transparency for high-risk AI

Requirement centred on understanding outputs, not processes

Organizational requirements also do not entail need for explanation

Some push towards XAI in EP



Tax AI systems are not, for the most part, high-risk AI



Protection of trade and state secrets

Synthesizing the current legal framework

Few, if any, explicit requirements for XAI in national and international law

Tax has not been the subject of specific explanation demands

Yet, national constitutions and international human rights both demand some degree of justification

Explanations may help in discharging this duty

Need for minimum legal standard

XAI is only part of the puzzle



What the law requires is usually *justification*: legal reasoning



XAI techniques are geared toward *understanding* the inner workings of a system



Explanations are not enough to provide justification, but they are often needed to understand the factual and legal grounds

Limits to XAI



- Explanations are of little value if they are not understood
- Explanations might be prone to gaming in adversarial contexts (Bordt et al. 2022)
- Explanations only address technical sources of opacity (Busuioc et al. 2022)

What stakeholders need from explanations?

Tax authorities

- Justification of individual decisions
- Internal control over systems

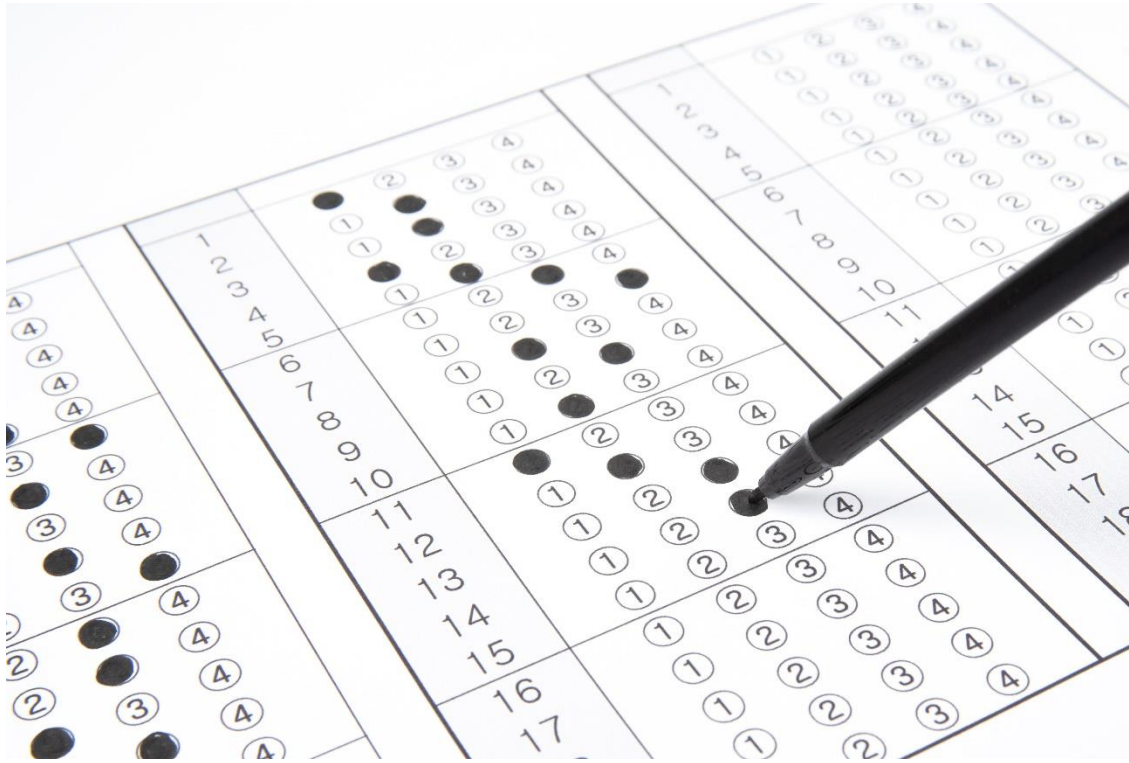
Taxpayers

- Understand individual decisions
- Factors for contestation

Adjudicators

- Evaluating arguments and facts
- Systemic perspective

What makes a good explanation in tax AI?



- Our work: focus on post-hoc explanations of decisions involving AI
- Three criteria for evaluation (Speith 2022)
 - Comprehensibility
 - Fidelity
 - Assessability

Conclusions

- ✓ The technical complexity of AI systems is an obstacle for taxpayers in understanding how decisions affect their rights
- ✓ These technical obstacles are compounded by legal barriers of tax and trade secrecy
- ✓ XAI techniques have the potential to help stakeholders address these technical and legal limitations, but their use is rarely obligatory under ordinary law provisions
- ✓ Next steps (underway) => presentation of Kamil & Łukasz
 - Legal research: giving concreteness to general explanation requirements from principles
 - Technical research: applying XAI techniques to meet the specific demands of tax



Thank you for your attention😊

Contact:



Dr. Błażej Kuźniacki

Assistant Professor at the CPT-ACTL, University of Amsterdam

Advisor & Senior Manager at PwC Global Tax Policy & ITS Teams

E mail: b.kuzniacki@uva.nl



Marco Almada, Researcher at Department of Law,

European University Institute

Doctoral grant from Fundación Carolina

E mail: marco.almada@eui.eu