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

Presentation by:
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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

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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
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.”
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?

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<thead>
<tr>
<th>Tax authorities</th>
<th>Taxpayers</th>
<th>Adjudicators</th>
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<tr>
<td>• Justification of individual decisions</td>
<td>• Understand individual decisions</td>
<td>• Evaluating arguments and facts</td>
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<tr>
<td>• Internal control over systems</td>
<td>• Factors for contestation</td>
<td>• Systemic perspective</td>
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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😊

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