USE OF BENFORD’S LAW IN THE CASE SELECTION OF EX-POST CLEARANCE CUSTOMS AUDITS IN AUSTRIA

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12 July 2019
Aim of cooperation of JRC with Austria’s customs administration

Fraud by undervaluation: Importers declare fake and too low values

Benefit for Austria’s customs administration:
• Additional risk indicator for case selection of ex-post clearance customs audits

Benefit for the JRC:
• Data from AT for research purposes
• Feedback from real cases

⇒ Improvement of algorithm
⇒ Improvement of case selection
Customs data for Benford Analyses

• 10 M import items
• 40,000 companies
• 7,000 different type of goods
• Period: 2011 – 2018

• Filters:
  ▪ Only items with duty rate > 0 %
  ▪ Only items with duties calculated based on the value
  ▪ No declarations for which it is known that the declared mass is wrong
Analytical Approach – Supervised Learning

Whole population of companies x years

Audited companies x years

Companies x years for which an audit is possible = Scoring set

No hit (Surplus < 10,000 €)

Hit (Surplus ≥ 10,000 €)
Analytical Approach – Supervised Learning

Creation of models that detect patterns in the data

Customs declarations for which an audit is possible = Scoring set

Event probability
Data (incomplete)

- For Top5 of imported goods:
  - Type of goods, statistical value
  - Variation in price per kg, variation in mass per unit
  - Calculated gaps of statistical value using JRC’s Monthly Fair Price and Estimated Fair Price
  - Routes of transports, means of transports
- Tax advance return: (calculated) profit, turnover, ...
- Results of past audits (customs, wage tax, income tax, VAT, ...)
- Network information: Risky dispatcher, carriers, directors, shareholders
- Basic data: industry, age and legal form, number of employees
- **Benford test results from the JRC**

500 relevant input variables
Thank you for your attention! Questions are welcome!

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