SRP

Application of Benford’s Law in the e-Audit tool
“SRP – Summary Risk Profiling” of the German Tax Administration

12 years of experience in the field

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SRP is ...

1. A picture is worth a thousand words.

2. An audit-grid is better than one single method.

- Effectively focusing an audit
- High-quality overview over increasing amount of (taxpayer's) data
- Combines & links several modern audit-methods
- Data-analysis toolkit
What is the background of SRP?

- Designed as a toolkit for tax authorities
- Many different challenges:
  - Rapidly increasing amounts of data
  - Increasingly smart methods of manipulation
  - Increasingly concealed connections between affiliated companies
- All challenges primarily require overview + understanding of data
Components of SRP

**Time-based / time series analysis**
- Single-scaled
- Double-scaled
- Serial
- Sliding
- Fuzzy logic → from rough to detail

**Frequency-oriented**
- Digit analysis
  - Equipartition of One-Unit-Spot (amounts >= 100)
  - Benford distribution of second leading digit
- Lognorm distribution of values
- Normal distribution of log. values
- Mathematically secured via likelihood tests (displayed as propability of mismatch)
Perfectly suitable for detecting single audit issues
Pharmacy

Restaurant

Development of the monthly sums
(absolutely)

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(absolutely)

Indispensable prerequisite for appropriate application: thorough understanding of methods

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Restaurant

Weekdays' averages

Pharmacy

Restaurant

Indispensable prerequisite for appropriate application: thorough understanding of methods
Stochastic template - BL

Data: Daily cash revenue of 3 years of a restaurant

Result: Clear clue of manipulation by thinking up the sum of the daily cash revenue
Stochastic template - BL

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Probability of mismatch: 99.8517%

Goals:
- Trials (frequency):
- Single expectation:

Examined data: weekday(s) 5
Stochastic template – Top Cut

Data: Daily cash revenue of 3 years of a restaurant

Result: Clear clue of manipulation by reducing the earnings on profitable days
Stochastic template – Structure Analysis

Data: 1 Mio. Journal Entries of an ECR of a petrol station

Result: Why decreases the turnover from fuel from 2014 to the following years?
Stochastic template – Structure Analysis

Data: 1 Mio. Journal Entries of an ECR of a petrol station

Result: Why is the turnover from beverages on Mondays five times higher than on any other day?
Geographical distribution of application

- > 2,000 tax auditors in all German Federal States
- Coop-projekt with German customs authorities
- Increasing distribution throughout the Netherlands
- Coop-project with Serbian tax-authorities (IMF project)
- Coop-projects with Bosnian tax-authorities (World Bank Group & IMF projects)
- Very vital network
Experiences

- Started in 2007
- Distribution of SRP since 2008
- 1 week of basic training
- Additional seminars (depending on local position): 3 days
- Regional workshops
- Seminars for managers, legal departments and criminal law enforcement

**Monitoring** (first 3 years of SRP in Schleswig-Holstein):
- 250 tax-auditors
- > 1,000 cases
- Additional taxes due to SRP usually > 10,000 € / case
- Criminal proceedings confirmed findings of SRP every single time
- **NO case of unjust accusation**
Summary

- Accumulated experience:
  - Audits
  - Trainings
  - Implementation / Concepts
  - Some positive and promising verdicts
  - Currently reviewed by the German Bundesrechnungshof

- Quick and high acceptance among auditors

- Application on any kind of business regardless of company’s size

- Door-opener for data-visualisation

- Only condition: data
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