

**Wiley Series in Computational
and Quantitative Social Science**

Agent-based Modeling of Tax Evasion

**Theoretical Aspects
and Computational Simulations**


$$EU[X] = (1 - \alpha)U[I - \theta X] + \alpha U[(1 - \pi)I + (\pi - \theta)X]$$

$$(1 - \alpha)(-\theta)U'[I - \theta X] + \alpha(\pi - \theta)U'[(1 - \pi)I + (\pi - \theta)X] = 0$$

$$EI[I] = (1 - \alpha)(I - T[(1 - \lambda)I]) + \alpha(I - T[I] - \lambda P[\lambda]I)$$

$$\frac{\partial EU[X]}{\partial X} \Big|_{X=0} = (1 - \alpha)(-\theta)U'[I] + \alpha(\pi - \theta)U'[(1 - \pi)I] > 0$$

Edited by
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Matthew Koehler
Sanith Wijesinghe

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Agent-based Modeling of Tax Evasion

Theoretical Aspects and Computational Simulations



The only single-source guide to understanding, using, adapting, and designing state-of-the-art agent-based modeling of tax evasion

A computational method for simulating the behaviour of individuals or groups and their effects on an entire system, agent-based modeling has proven itself to be a powerful new tool for detecting tax fraud. While interdisciplinary groups and individuals working in the tax domain have published numerous articles in diverse peer-reviewed journals and presented their findings at international conferences, until *Agent-based Modeling of Tax Evasion* there has been no authoritative, single-source guide to state-of-the-art agent-based tax evasion modeling techniques and technologies.

Featuring contributions from distinguished experts in the field from around the globe, *Agent-Based Modeling of Tax Evasion* provides in-depth coverage of an array of field tested agent-based tax evasion models. Models are presented in a unified format so as to enable readers to systematically work their way through the various modeling alternatives available to them. Three main components of each agent-based model are explored in accordance with the Overview, Design Concepts, and Details (ODD) protocol, each section of which contains several sub elements that help to illustrate the model clearly and that assist readers in replicating the modeling results described.

- Presents models in a unified and structured manner to provide a point of reference for readers interested in agent-based modeling of tax evasion
- Explores the theoretical aspects and diversity of agent-based modeling through the example of tax evasion
- Provides an overview of the characteristics of more than thirty agent-based tax evasion frameworks
- Functions as a solid foundation for lectures and seminars on agent-based modeling of tax evasion

The only comprehensive treatment of agent-based tax evasion models and their applications, this book is an indispensable working resource for practitioners and tax evasion modelers both in the agent-based computational domain and using other methodologies. It is also an excellent pedagogical resource for teaching tax evasion modeling and/or agent-based modeling generally.

Sascha Hokamp, PhD is a member of the Research Unit for Sustainability and Global Change (FNU) and of the Center for Earth System Research and Sustainability (CEN), Universität Hamburg. His research topics include illicit activities (tax evasion and doping in elite sports) and the shadow economy.

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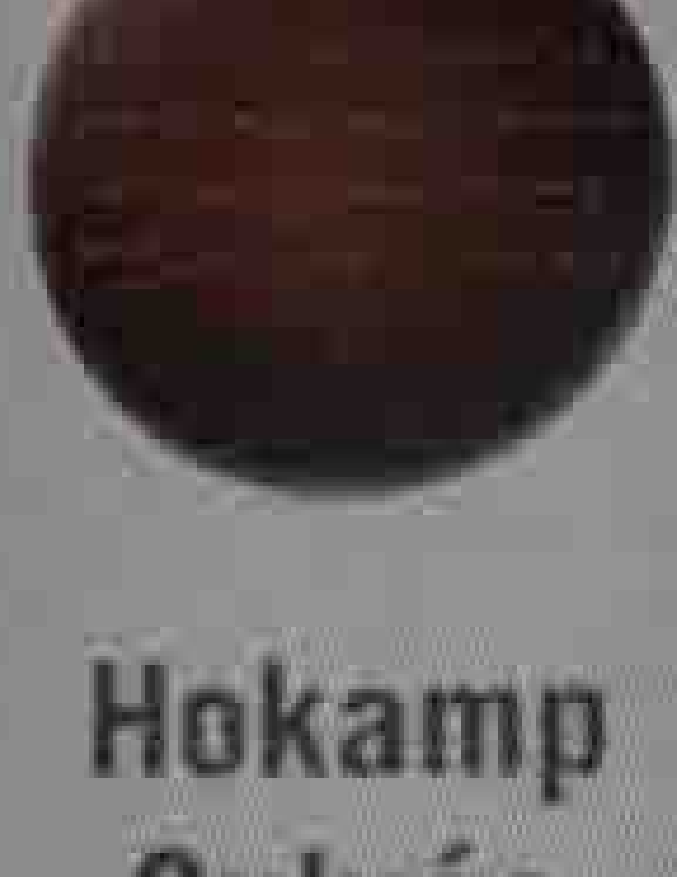
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Computational Social Science is an interdisciplinary field undergoing rapid growth due to the availability of ever increasing computational power leading to new areas of research. Embracing a spectrum from theoretical foundations to realworld applications, theWiley Series in Computational and Quantitative Social Science is a series of titles ranging from high level student texts, explanation and dissemination of technology and good practice, through to interesting and important research that is immediately relevant to social / scientific development or practice. Books within the series will be of interest to senior undergraduate and graduate students, researchers and practitioners within statistics and social science.

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To our families

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