

Chapter 15

Agents' Risk Relations in a Strategic Tax Reporting

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ABSTRACT

Tax evasion is a classic problem in the field of economics and has been intensively studied over the last few decades. So far, research has been focused, and reasonably followed, on extensions from the original model developed by Allingham and Sandmo (1972). This chapter has taken the initiative to analyse and discuss the behaviour of taxpayers and the relation with risk when they act strategically. In this sense, the authors propose to replicate and discuss the three main conceptual functions of the brain (expressed by Spinoza) when agents do their strategic options concerning tax evasion risk. Output results demonstrate a tendency for strategic taxpayers to first react in detriment of structured and complex reasoning. The assumption, commonly used in tax evasion literature, that taxpayers are exclusively rational, is liable of being refuted. Even the strategic taxpayers are reluctant to follow only their reason.

INTRODUCTION

The first element, which constitutes the actual being of the human mind, is the idea of some particular thing actually existing. (In Ethics, Spinoza, 1677)

Tax evasion has been intensively studied in many scientific fields like economics, psychology and artificial intelligence. The decision to evade or comply to taxes is individual, and each agent has his/her own reasons to choose either behaviour.

One key factor in this decision is the position each agent has towards risk. In this case, the risk of being caught evading taxes. This factor is particularly important when agents act strategically.

Acting strategically, it means that agents are rational and “put strategic thinking into practice” (Olson, 1965). Strategic thinking involves the integration of several types of mental skills and techniques, as well as certain habits and attitudes, in the context of defining the problem to be solved from an initially ambiguous situation to solving it. There is an element of risk in strategic problem

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solving because complexity causes uncertainty (Loehle,1996). Agents reason strategically about the advantages and disadvantages of alternative courses of action and choose the path which is more feasible to maximise their utility (Olson,1965; Cowell,1990). Therefore, agents activate more their logic reasoning instead of reacting based on intuitions, feelings or simple heuristics, when they report their income.

These rational actions and reactions can be seen as organised in a game, following the principles of interactive decision theory (Aumann, 2008). In the specific case of tax evasion, strategic taxpayers play several rounds against tax authority (Lucena & Gaspar,1987; Bernasconi,1998). Strategic taxpayers compare the opportunity of having extra benefits coming from underreporting income against the risk of being audited by inspectors. On the other hand, the tax authority has to guarantee the collection of taxes conditioned by a budget.

The interaction among agents could be played several times until the tax authority becomes satisfied with the tax report. In some countries, where the tax system enables information asymmetry among agents, this phenomena happens frequently. For example, taxpayers report eight times in the same year, trying to cheat tax authorities. These multiple reports are adjustments done to the original report after tax authorities reject it. These behaviours exemplify the action after reasoning about the pros and cons of taking risk on tax evasion, versus reaction to opponent position inside the game between taxpayers and tax authority. Taxpayers act or react to the policies implemented by tax authority and to the benefits allowable by underreporting. Reaction and reasoning are two of the mind functions presented by Spinoza. (Spinoza, 1677) Spinoza argued that mind has three major conceptual functions: reaction, reasoning and reflection. Reflection, in tax evasion, occurs when taxpayers begin to imitate each other, based on empathetic feelings.

So, it is important to figure out if taxpayers use these mind faculties when they face risk in a tax

evasion context. If so, does a strategic taxpayer reacts after reasoning about risk or reacts before judgement about the risk itself. Are strategic taxpayers merely rational, as was described above? Which of the conceptual mind functions inducts more tax evasion?

To tackle this problem, we decided to integrate the reasoning behind the interactive decision theory into a multi-agent system, in order to build a model that exposes tax evasion phenomena and respective intrinsic characteristics about risk. Our main goal was to represent a heterogeneous society where distinct agents can interact each other and take their positions about tax evasion using their risk attitude. This simulation is very important, since analyses the influence of each mind function in the decision to comply or evade.

In section 2, we review the most relevant literature, making the case for our approach. In section 3, we outline the specificities of problem and its related concepts. Section 4 describes the model we propose, and the thinking process behind the corresponding abstract game. In section 5 we analyse our results and discuss the future impact and developments of research on the strategic tax reporting. Finally, on section 6, we draw out our conclusions.

REVISITING THE LITERATURE

Tax evasion modelling was firstly brought by the famous model from Allingham and Sandmo (1972) or by the model of Srinivasan (1973) introduced one year later. Both models were sustained upon the neoclassical economic theory. Models were suiting the work done about economic crime (Becker,1968). According to both authors, a taxpayer chooses what amount of his income he might ascribe within the concealed gains and the losses of being found. This model follows a portfolio choice approach and revealed some problems since forecasts a much higher percentage of tax evasion than what really is. For instance, the prob-

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