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Negotiation analysis using the theory of moves—Theoretical background and a case study

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Abstract

A branch of game theory—the Theory of Moves (TOM) proposed by Brams (1994a, *Theory of moves*. Cambridge University Press: Cambridge), is used to model the negotiations on agriculture during the Uruguay Negotiation Round of World Trade Organization (WTO). The paper presents general principles underlying the TOM and demonstrates that it is well suited to describe the negotiation process. Moreover, the results of the TOM game prove that the Common Agricultural Policy of the European Union (CAP) was shaped by the international negotiations on agriculture during the Uruguay Round of WTO.

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1. Introduction

Game theory seeks to explore how people make decisions in the setting of conflict. As it provides methods for logical analysis of situations in which decision-makers interact, it is frequently used in political sciences. One of the relatively new branches of game theory proposed by Brams (1994a) is called the Theory of Moves (TOM). Although based on the classical theory of games, TOM introduces several changes in its rules to make it a dynamic theory. Similar to the classical

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theory, the TOM focuses on interdependent strategic situations in which the outcome depends on the choices that all players make. However, it thoroughly changes the principle of play by giving participants, before they make the next move, insight into the outcomes of potential decisions. Therefore, by demanding that players foresee the consequences of making both moves and counter moves, TOM adds the element of future into conflict analysis.

The TOM has been applied to a series of cases drawn from politics (Brams, 2001, 2011; Kiryluk-Dryjska, 2012; Mor, 1995; Simon, 1996; Zeager & Bascom, 1996), psychology (Brams, 1997), literature (Brams, 1994b; Brams & Jones, 1999) and the Bible (Brams, 2011).

In this paper, TOM is applied to illustrate the negotiations on agriculture during the WTO Uruguay Round. Some observers (Coleman & Tangermann, 1999; Grant, 1997; Ackrill, 2000; Swinbank & Daugbjerg, 2006) suggest that these negotiations became the reason for one of the major revisions of the Common Agricultural Policy (CAP) of the European Union known as the McSharry reform. The reform introduced a radical shift in the type of CAP instruments replacing price intervention with a system of direct payments to farmers and structural support for rural development. None of the previous or subsequent reforms altered the CAP to such extent. The principles of the McSharry reform have been carried forward in the successive reforms: Agenda 2000, the 2003 reform, also known as the Luxembourg or mid-term review, and 2008 reform, also known as the Health Check, attempting to make the CAP more market oriented[1].

Game theory concepts have been used to analyze the problem of EU-international relations in agriculture. Putnam (1988) uses two-level game to capture the interplay between actors involved in a negotiation process; Coleman and Tangermann (1999) utilize the concept of linked games, while Landau (1998) uses the policy networks analysis. The objective of this paper is to demonstrate how TOM can be used to theoretically analyze the negotiations of policy reforms using the example of CAP reforms under WTO pressure.

The outline of this paper is as follows. First, I describe general principles underlying the TOM. Next, I present its practical application to the game of negotiation on agriculture during the Uruguay Round of WTO. Finally, I conclude with a discussion of some of the limitations of this approach.

2. The theory of moves as a conceptual tool for the analysis of WTO negotiation

TOM combines an extensive form and a normal form of the classical game theory. A game is played on a payoff matrix, like a normal form game. The players, however, can move from one outcome in a payoff matrix to another, so the sequential moves of an extensive form game are built into the normal form. To achieve this, a normal form game is transformed into a dynamic one using backward induction. Thereby, TOM embeds extensive-form calculations within the normal form, deriving advantages of both forms: the ‘nonmyopic’ thinking of the extensive form disciplined by the economy of the normal form (Brams, 2001).

[1] Apart from continuing the changes introduced by McSharry reform, Agenda 2000 also included the development of a comprehensive strategy toward rural areas. The 2003 CAP reform contained mainly revision of the market policy (further reduction of the intervention prices), decoupling of direct support (introduction of single income payments based on historical payments), compulsory cross-compliance (reduction of direct payments in cases of non-respect of EU standards related to environment, food safety, animal welfare), and strengthening of rural development policy. Health Check converted market intervention into a safety net and increased modulation reducing direct payments to farmers and transferring the money to the rural development.