

## Chapter 8

# The Role of the Mixed Strategies and Selective Inflexibility in the Repeated Games of Business: Multiple Case Study Analysis

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### **ABSTRACT**

*This chapter is focused on the possibilities of game theory as a tool of strategists to interpret practical strategic decision-making situations. Simultaneously, there is a need to simplify presentation of game theory and consider the possibilities of mixed strategies. Practical game situations are relatively complex: even the rules of the game might change during the decision-making process, or at least there is need to change several times the strategy during the game, especially in the case of repeated game. This chapter shows some practical examples how to describe the strategic game situations in a manner relatively easy to understand.*

### **INTRODUCTION**

Contemporary business literature on game theory emphasizes simple game situations in which each player has only one possible move to maximize her/his benefit in the game. This one-shot game principle is easy to learn and understand and, therefore, a popular tool in areas such as business education (Dekker & Van Rooy, 2000). However, practical strategic game situations between the firms contain several steps, rounds and phases and even the rules of the business game are possible to change during the game periods. However, the traditional tools and applicability of game theory have met some criticism among philosophers as in Grüne-Yanoff & Lehtinen (2010).

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This chapter highlights some problems associated with game theory and its applicability in business, especially strategic form games which simplify the game situations of real life because of their restricted visualization into mainly four-fold or nine-fold tables, depending on the number of the available strategies of the players. However, the extensive form games allow wider repertoire of moves and decision-paths which illustrate the game situations. Though relatively flexible visualization of extensive form games, their weight as evidence is limited in the situations where the game arena or rules of the game are changing. Supergames consider repeated game situations. Again, however, the basic assumption is that the payoffs and the structure and the rules of the game are fixed.

This study also emphasizes the fact that the actual business life game situations are flexible and even the “rules of the game” are changing (e.g., due to changes in business environment such as in legislation). Therefore, the flexibility of the strategy is important instead of “here I stand” –strategy, or at least selective inflexibility (cf. Dixit & Nalebuff, 1991). More specifically, this chapter considers the following features of the games in actual business life such as:

1. Though some game situations are temporal one-shot games, they might have long-term reflections on the business arena in the future.
2. Most of the business games are repeated games; that is, the firms will meet each other in the same kinds of circumstances.
3. Because most of the business games are repeated games, typically strategic function form do not provide platform which is adequate for analysis.
4. Though the games are repeated games, it is possible that rules of the game will change during the game process. Then the solution methods of repeated game do not fit to actual game situation.

Mixed strategies describe the situations in which the strategies of the players are flexible. Thus, these strategies fit relatively well to the actual business life situations, but the challenge is that the rules of the game and circumstances of the business environment are assumed to be constant. In business activities, the repeated game is a typical relationship between two (or more) competing firms. Often the game theoretic perspectives of repeated game are focused on one solution, which might be (e.g., collusion equilibrium) (Rusko, 2005; Niyato & Hossain, 2008). Another possibility, after long-term collusion equilibrium, is that some of the colluding firms will cheat and deviate from the collusion to achieve temporally the higher market share and profit. This cheating will lead into the punishment with the perfect competition equilibrium, which might last several periods or even forever (Green & Porter, 1984; Rotemberg, & Saloner, 1989).

This kind of perspective does not entertain the possibility of mixed strategies. By intentionally changing the strategies in the game during the specific series of moves, it is possible to obtain an outcome compared to a pure strategy policy. This chapter will introduce differences between one-shot games and repeated games – and, in the case of repeated games, the differences between pure strategy and mixed strategy policy. We especially consider the possibilities of flexible strategy compared to a pure strategy by using real life business examples from several industries. The visualization of the outcomes are based on the figures with pure strategies and possible area of outcomes of mixed strategies, which are based on the allotment of probabilities; the visualization based on coalition function form (see, e.g., Gardner, 1995; Ferguson, 2005); and on the sets of feasible payoffs (Bennett, Ragland, & Yolles, 1998).

Although hundreds or even thousands of allotted pairs of probabilities of moves, some areas in the set of feasible payoffs are nearly impossible to achieve unintentionally, but often the careful intentional

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