Stable Farsighted Coalitions in Competitive Markets

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In this paper, we study dynamic alliance formation among agents in competitive markets. We look at $n$ agents selling substitutable products competing in a market. In this setting, we examine models with deterministic and stochastic demand, and we use a two-stage approach. In Stage 1, agents form alliances (coalitions), and in Stage 2, coalitions make decisions (price and inventory) and compete against one another. To analyze the stability of coalition structures in Stage 1, we use two notions from cooperative games—the largest consistent set (LCS) and the equilibrium process of coalition formation (EPCF)—which allow players to be farsighted. Thus, in forming alliances, players consider two key phenomena: First, players trade off the size of the total profit of the system versus their allocation of this total pie, and second, they weigh the possibility that an immediate beneficial defection can trigger further counter defections that in the end may prove to be worse than the status quo. In particular, one such example is that of the grand coalition—which we show to be stable in the farsighted sense—even though players benefit myopically by defecting from it. We also provide conditions under which a situation of a few lone players competing against a large coalition is stable. We examine the impact of the size of the market ($n$), the degree of competition, the effect of cost parameters, and the variability of the demand process on the prices, inventory levels, and structure of the market. We discuss the possible strategic implications of our results to firms in a competitive market and for new entrants.

Key words: competition; farsightedness; coalitions; cooperative games

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