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Procurement Volatility in Agri Supply Chains: Role of Intermediaries in Sugarcane in India*

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Abstract

Sugar is officially designated as an essential commodity in India and the industry is highly regulated. Industry consultations revealed that persistent volatility in procurement and processing of sugarcane in the upstream stage of this agricultural supply chain, is a continuing social, financial and managerial problem for farmers, mills and downstream activities. In this paper we develop a system thinking model of the procurement process based on primary field interviews and secondary industry data, and reveal how actions of two key actors – farmers and the sugar mill – interact to result in endogenous mechanisms that amplify procurement volatility. We find that actions intended to manage the volatility, have an unintended destabilizing effect due to feedback loops and delays associated with responses by the different players. Through our field interviews and secondary data analysis, we also find that firms have responded to the volatility through the use of intermediaries and aggregators who temper such procurement volatility by reducing the delays and managing the effects of feedback loops, thereby addressing both financial and managerial challenges. We modify our base model to include these actors and through that provide an explanation for the impact of intermediaries and aggregators on the system's behavior. We conclude with a discussion on the implications and challenges of using such intermediaries and aggregators.

Keywords: agricultural supply chain, developing country, procurement volatility, regulation, structural models, system thinking.