Analyzing the impact of inventory leanness on energy efficiency in Korean steel firms

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Abstract

This study empirically analyzes the impact of inventory leanness on energy efficiency in Korean steel firms. Specifically, energy efficiency is defined based on a distance function and production theory and the empirical leanness indicator (ELI) suggested by Eroglu and Hofer (2011) is employed for the inventory leanness of each firm. In addition, to estimate energy efficiency this study relies on the stochastic frontier analysis (SFA), which is a parametric method. The main results of this study are summarized as follows. First, the energy efficiency of two integrated steel mill firms with the highest energy consumption is quite high. Second, inventory leanness has a positive impact on energy efficiency. Third, although inventory leanness has a positive effect on energy efficiency, the marginal effect of inventory leanness on energy efficiency varies from firm to firm. Based on the main findings, this study provides the managerial implication as follows. Managers in charge of operations management or energy management in steel firms need to recognize that the effective implementation of lean practices as well as efficient inventory management helps improve energy efficiency. In other words, it is important for them to keep in mind that two business activities, operations management and energy management, are closely related.

Keywords: Inventory leanness, Energy Efficiency, Stochastic Frontier Analysis

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