

Reconsidering production coordination: A principal-agent theory-based analysis

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ABSTRACT

Production coordination is a common phenomenon in supply chains. Unlike the existing literature, we examine the production coordination problem from the perspective of asymmetric information: how a manufacturer (leading firm) coordinates the relationships with its subsidiary firm(s) and, subsequently, how market returns influence the leading firm's expected utilities, agency cost and the subsidiary firm's expected incomes. We develop an incentive contract model with asymmetric information based on principal-agent theory. Comparative analysis and simulations are conducted to test the model. Results show that the leading firm's expected utilities and agency cost and the subsidiary firm's expected incomes are significantly affected by the subsidiary firm's capability, cost coefficient, absolute risk aversion factor and output variance (common factors); sharp differences among the leading firm's expected utilities and agency cost and the subsidiary firm's expected incomes were found due to different market returns. Thus, the proposed approach (incentive contract model) can help leading firms apply incentives to optimize production modes to obtain production coordination while considering common factors; market returns differences are included in the new model, in contrast to previous approaches.

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