Measuring the Benefits of Financial Services in Procurement Contracts

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Abstract

In this paper we investigate the interplay between operations and financial decisions within the context of a two-echelon supply chain. A retailer purchases a single product from a supplier and afterwards sells it in the retail market to a random demand. The retailer, however, is budget-constrained and is therefore limited in the number of units that he may purchase from the supplier. We investigate two alternative forms of financing that the retailer can use to overcome the limitations imposed by the budget constraint. First, we consider the case of external financing in which a third party financial institution (e.g., a bank) offers a commercial loan to the retailer. Second, we consider the case of internal financing in which the supplier offers financial services to the retailer in the form of a procurement contract. The type of contracts that we consider allow the retailer to pay in arrears a fraction of the procurement cost after demand is realized. We show that when agents are risk neutral both the supplier and the retailer (and the entire supply chain) are better off using internal financing rather than relying on external financing. A striking result of our analysis is that under internal financing the overall profit of the supply chain is non-monotonic in the retailer’s initial budget.

Keywords: Procurement Contracts, Budget Constraint,; Financial Services; Supply Chain Management