Title:
Supply Chain Coordination in the Presence of Gray Markets and Strategic Consumers

Abstract:
The practice of diverting genuine products to unauthorized gray markets continues to challenge companies in various industries and creates intense competition for authorized channels. Recent industry surveys report that the abuse of channel incentives is a primary reason for the growth of gray market activities. Therefore, it is crucial that companies take the presence of gray markets into consideration when they design contracts to distribute products through authorized retailers. This issue has received little attention in the extensive literature on contracting and supply chain coordination. In this paper, we analyze the impacts of gray markets on two classic contracts, wholesale price and quantity discount, in a supply chain with one manufacturer and one retailer when the retailer has the opportunity to sell to a domestic gray market. Our analysis provides interesting and counterintuitive results. First, a classic quantity–discount contract that normally coordinates the supply chain can perform so poorly in the presence of a gray market that the supply chain would be better off using a wholesale price contract instead. Second, the presence of gray market can also degrade the performance of the wholesale price contract; therefore, a more sophisticated contract is needed for coordinating the supply chain. We show that contracts that solely depend on retailer’s order quantity cannot coordinate the supply chain, and provide the conditions for coordinating the supply chain with price–dependent quantity discount contracts. We also provide comparative statics and show that when there is a gray market, coordinating the supply chain enhances total consumer welfare.

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