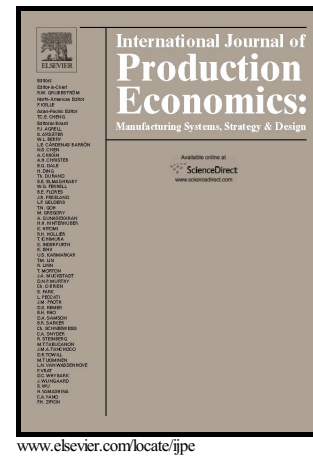


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# Designing contracts for a reverse supply chain with strategic recycling behavior of consumers

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## Abstract

In this paper, we propose five typical contracts to coordinate decentralized reverse supply chains with strategic recycling behavior of consumers. First, a reverse supply chain model with strategic recycling behavior of consumers is developed based on the classical newsvendor problem. Next, after analyzing the wholesale price contract, we find that the collection quantity of used products increases with the wholesale price. Then, we develop a two-stage price contract and find that under this contract the manufacturer could increase the collection quantity by offering a direct incentive to the collector. Afterwards, using the centralized optimal profit as the benchmark, we compare the wholesale price contract with the subsidy contract and the cost-pooling contract respectively. The results show that the subsidy contract is more beneficial to the manufacturer, while the cost-pooling contract is helpful to the collector, yet both lead to lower transfer prices than the wholesale price contract for reverse supply chains. Finally, we design an indemnity contract and conclude that the collector's maximum performance is achieved only when the transfer price equals to the

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