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Collaboration in contingent capacities with information asymmetry. (English) Zbl 1210.91074
Nav. Res. Logist. 54, No. 4, 421-432 (2007).

Summary: We study the optimal contracting problem between two firms collaborating on capacity investment with information asymmetry. Without a contract, system efficiency is lost due to the profit-margin differentials among the firms, demand uncertainty, and information asymmetry. With information asymmetry, we demonstrate that the optimal capacity level is characterized by a newsvendor formula with an upward-adjusted capacity investment cost, and no first-best solution can be achieved. Our analysis shows that system efficiency can always be improved by the optimal contract and the improvement in system efficiency is due to two factors. While the optimal contract may bring the system's capacity level closer to the first-best capacity level, it prevents the higher-margin firm from overinvesting and aligns the capacity-investment decisions of the two firms. Our analysis of a special case demonstrates that, under some circumstances, both firms can benefit from the principal having better information about the agent's costs.

MSC:

91B40 Labor market, contracts (MSC2010)
90B30 Production models
90B50 Management decision making, including multiple objectives

Cited in 1 Document

Keywords:

assembly system; information asymmetry; principal-agent model; capacity investment; horizontal collaboration

Full Text: [DOI](#)

References:

- [1] Anupindi, *Manufact Serv Oper Manage* 3 pp 349– (2001)
- [2] Bernstein, *Manage Sci* 40 pp 1293– (2004)
- [3] Siebel, IBM take CRM on demand,. URL = <http://www.internetnews.com/ent-news/article.php/3086451>, 2003.
- [4] "Supply chain coordination with contracts," *Handbooks in Operations Research and Management Science: Supply Chain Management*, (Editors), Elsevier Science, North-Holland, 2003.
- [5] Cachon, *Manage Sci* 47 pp 629– (2001)
- [6] , Lateral capacity collaboration: Quantity, price, and incentives, Working Paper, A. B. Freeman School of Business, Tulane University, New Orleans, 2005.
- [7] Corbett, *Oper Res* 49 pp 487– (2001)
- [8] Corbett, *Manage Sci* 46 pp 444– (2000)
- [9] Corbett, *Manage Sci* 50 pp 550– (2004)
- [10] , *Game Theory*, MIT Press, 1991. · [Zbl 1339.91001](#)
- [11] , , "The role of market intermediaries for buyer collaboration in supply chains," *Applications of Supply Chain Management and E-Commerce Research in Industry*, , , (Editors), Kluwer Academic Publishers, 2004, Chapter 3, pp. 87–118.
- [12] Ha, *Nav Res Logist* 48 pp 41– (2001)
- [13] , *Dynamic Optimization: The Calculus of Variations and Optimal Control in Economics and Management*, 2nd ed., North-Holland, New York, 1991.
- [14] , *A Theory of Incentives in Procurement and Regulation*, MIT Press, Cambridge, MA, 1993.
- [15] Larivieie, *Manufact Serv Oper Manage* 3 pp 293– (2001)
- [16] , Promised leadtime contracts and renegotiation incentives under asymmetric information, Working Paper, Stanford University, Stanford CA, 2003.
- [17] Mahajan, *Res Market* 1 pp 201– (1978)

- [18] Myerson, *Econometric* 47 pp 61– (1979)
- [19] , " Coalitions and global strategy," *Competition in Global Industries*, (Editor), Harvard Business School Press, Boston, MA, 1986, pp. 315–344.
- [20] , *Supply chain contracting: non-recurring engineering charge, minimum order quantity, and boilerplate contracts*, Working Paper, Stanford University, Stanford, CA, 1999.
- [21] Rudi, *Manage Sci* 47 pp 1668– (2001)
- [22] Strategic Forum, *Strategic forum sets out new targets for change*. Strategic forum for construction report, URL = <http://www.strategicforum.org.uk> 2004.
- [23] Tomlin, *Manufact Serv Oper Manage* 5 pp 317– (2003)
- [24] Wang, *Manufact Serv Oper Manage* 5 pp 252– (2003)

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