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Dual sourcing: responsive hedging against correlated supply and demand uncertainty. (English) [Zbl 1407.90039](#)

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Summary: This article analyzes dual sourcing decisions under stochastically dependent supply and demand uncertainty. A manufacturer faces the trade-off between investing in unreliable but high-margin offshore supply and in reliable but low-margin local supply, where the latter allows for production that is responsively contingent on the actual demand and offshore supply conditions. Cost thresholds for both types of supply determine the optimal resource allocation: single offshore sourcing, single responsive sourcing, or dual sourcing. Relying on the concept of concordance orders, we study the effects of correlation between supply and demand uncertainty. Adding offshore supply to the sourcing portfolio becomes more favorable under positive correlation, since offshore supply is likely to satisfy demand when needed. Selecting responsive capacity under correlated supply and demand uncertainty is not as straightforward, yet we establish the managerially relevant conditions under which responsive capacity either gains or loses in importance. Our key results are extended to the broad class of endogenous supply uncertainty developed by *M. Dada* et al. [“A newsvendor’s procurement problem when suppliers are unreliable”, *Manuf. Service Oper. Manage.* 9, No. 1, 9–32 (2007; doi:10.1287/msom.1060.0128)].

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