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Title	Exposure Problem in Multi-Unit Auctions

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Abstract	We characterize the optimal bidding strategies of local and global bidders for two heterogeneous licenses in a multi-unit simultaneous ascending auction (SAA) like the one used in the 2008 Canadian Advanced Wireless Spectrum license auction. The global bidder wants to win both licenses to enjoy synergies; therefore, she bids more than her stand-alone valuation of a license. This exposes her to the risk of losing money even when she wins all licenses. We determine the optimal bidding strategies in the presence of an exposure problem. By using simulation methods, first, we show that the probability of inefficient allocations in the simultaneous ascending auction can be up to 9 per cent. Second, we show that the global bidder can end up with a loss with 6 per cent probability depending on the distribution. We also investigate the relation between inefficient allocation and the revenue of SAA and VCG auctions.