Investment Incentives in Near-Optimal Mechanisms

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Abstract :
In many real-world resource allocation problems, optimization is computationally intractable, so any practical allocation mechanism must be based on an approximation algorithm. We study investment incentives in strategy-proof mechanisms that use such approximations. In sharp contrast with the Vickrey-Clark-Groves mechanism, for which individual returns on investments are aligned with social welfare, we find that some algorithms that approximate efficient allocation arbitrarily well can nevertheless create misaligned investment incentives that lead to arbitrarily bad overall outcomes. However, if a near-efficient algorithm "excludes bossy negative externalities," then its outcomes remain near-efficient even after accounting for investments. A weakening of this "XBONE" condition is necessary and sufficient for the result.