Ambiguous Contracts*

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In this paper we introduce a model of *ambiguous contracts*, capturing many real-life scenarios where agents engage in contractual relations that leave some degree of uncertainty. In this paper we introduce a model of *ambiguous contracts*, capturing many real-life scenarios where agents engage in contractual relations that leave some degree of uncertainty. Our starting point is the celebrated hidden-action model and the classic notion of a contract, where the principal commits to an outcome-contingent payment scheme for incentivizing an agent to take a costly action.

An *ambiguous contract* generalizes this notion by allowing the principal to commit to a set of two or more contracts, without specifying which of these will be employed. A natural behavioral assumption in such cases is that the agent engages in a max-min strategy, maximizing her expected utility in the worst case over the set of possible contracts.

We show that the principal can in general gain utility by employing an ambiguous contract, at the expense of the agent's utility. We provide structural properties of the optimal ambiguous contract, showing that an optimal ambiguous contract is composed of simple contracts. We then use these properties to devise poly-time algorithms for computing the optimal ambiguous contract. We also provide a characterization of non-manipulable classes of contracts — those where a principal cannot gain by employing an ambiguous contract. We show that linear contracts — unlike other common contracts — are non-manipulable, which might help explain their popularity. Finally, we provide bounds on the *ambiguity gap* — the gap between the utility the principal can achieve by employing ambiguous contracts and the utility the principal can achieve with a single contract.

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CCS Concepts: • **Theory of computation → Algorithmic game theory and mechanism design**.

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