

Dynamic Deception

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ABSTRACT

We model dynamic deception exercises in Ponzi schemes, war, terrorism, industrial/political espionage, and insider trading. We introduce a new class of competitive continuous time games with an informed player choosing an action intensity, or equivalently mixing between two pure strategies. We allow for the case in which the action intensity is bounded from above (a feasibility constraint) or unbounded. The informed player's actions are partially observed by a rival, or sequence of rivals.

In the unique equilibrium, the informed player biases his intensity toward his myopically advantaged action. Despite the fact that the uninformed player's beliefs are a martingale, her equilibrium actions will be negatively serially correlated, and thus mean revert.

We provide economic formulations and analyses of espionage, disinformation, and obfuscation. Notably, we establish a globally concave value of information (espionage). Disinformation is always substantial, while obfuscation rises as the public grows more uncertain.

First taking a knife-edged special case of our model in payoff space, and then the limit of our solution as the bound on the informed player's action is removed, we recover Back and Baruch's (2004) model of insider trading.