



Limited records and reputation bubbles [☆]

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Abstract

This paper offers a tractable and fully rational model to study the economics of reputation in a dynamic market with limited record-keeping, i.e., a market in which new entrants observe only the last few periods of play of the long-run player instead of the full history of the market. We show that trust is gradually granted to the opportunistic long-run player despite the fact that his type is perfectly observed by the short-run opponents, and the perfectly informed short-run players ride and drive up “reputation bubbles” at the expense of their uninformed successors. We characterize equilibrium payoffs uniformly over time, which is useful for analyzing ongoing repeated relationships where the starting moments have passed.

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1. Introduction

Reputational concerns are an important dimension of informal incentives in dynamic markets, and reputation models play a central role in the economics of long-run relationships. Typically, our models assume that agents see the full history of past transactions. In reality, however,

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reputation inference is often based on limited information. For instance, in many countries, access to borrower's credit history is limited, insurance companies only observe the most recent driving records that are cleared after a fixed period of time, and the Better Business Bureau in the U.S. only reports customer complaints from the last 36 months.¹ In less formal markets, information is conveyed by word of mouth, and in many new and fast-growing markets, the lack of transparency over past transactions is often due to the relatively slow development of monitoring institutions.

In this paper we analyze a reputation model with limited record keeping capturing that common feature of markets. We show how reputation effects change qualitatively as a result of limited records by comparing our results to the existing reputation literature. Our results hopefully shed light on the role of record keeping and could be used in further research to answer questions about the optimal design of online reputation systems.

In our fully rational model there is a sequence of new agents who enter over time (one per period) and interact with a long-run player who can be either of a commitment or an opportunistic type. Under the assumption of limited records of the long-run player's past actions, we show that all equilibria are characterized by recurrences of "reputation bubbles", along which short-run players ride and drive up the reputation bubble by granting increasing amount of trust to the opportunistic long-run player under perfect knowledge of his type – which does not happen in existing reputation models. The strength of our characterization comes from the fact that it works for all large discount factors, and it is independent of the size of the finite records or the exact values of the prior belief, as long as the prior assigns positive probability, no matter how small, to a commitment type. We show that the long-run player must achieve a high reputation payoff if the records are long but finite. Our payoff bound is uniform across time and across all equilibria. A large literature initiated in [12] under complete records has devoted efforts to bound payoffs at the beginning of the game, whereas many applications we economists investigate feature ongoing repeated relationships where the starting moments have passed. Thus our payoff result could shed light on these ongoing relationships (see also [11]). Via an example, we show that with complete records there exist equilibria with a very low payoff for the long-run player in the long run. Hence, no such uniform reputational payoff property exists in games with complete records. In other words, the natural assumption of limited records yields a model of reputation with sharp behavioral and payoff predictions at any time of the game.

In our model in each period the long-run and short-run players act simultaneously (our model is equivalent to a sequential move game in which the short-run player moves first). The short-run player chooses an action $y \in [0, 1]$ which indicates how much he trusts the long-run player who in turn decides how much to exploit the trust. The long-run player's action is $x \in [0, 1]$, where a lower action represents more exploitation. As usual in the reputation literature, we assume that the long-run player might be potentially a commitment type who always plays a fixed non-opportunistic action $c > 0$. A short-run player entering the game sees the long-run player's actions in the most recent K periods. For tractability, we assume that a short-run player does not know how many interactions have occurred before his entry, but has a Bayesian prior over the times at which he enters the game.

¹ Limited records are also common in online markets. For instance, at Elance.com, an online labor market, the default view of user feedback for contractors contains information from the last 12 months. Additionally, "star ratings" in online markets are often combined with a list of individual reviews ranked by date. If users do not read all reviews and are more likely to read recent ones than old ones (say, the first page), then our model of limited records applies to such markets as well.

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