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Risky Debt, Investment Incentives, and Reputation in a Sequential Equilibrium: Discussion

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DISCUSSION

CHESTER S. SPATT*: This interesting paper by Professors John and Nachman [5] draws together some central issues in mainstream finance with emerging techniques to examine reputation-based phenomena in a variety of market contexts. The paper is a nice synthesis of several strands in the literature. These include the Kreps and Wilson [6, 7] approach to sequential rationality and reputation, the idea developed in Spatt [10] in studying the reputation aspects of debt contracts and debt repayment that in the presence of correlated opportunities the firm's first period actions can reveal information about second period opportunities, and the Myers [8] analysis of the underinvestment problem that emerges from the incentive conflict between debtholders and equityholders. This paper examines the underinvestment problem studied by Myers [8] in an agency setting by introducing repeated play in a two-period model with correlated investment opportunities by the firm. Reputation incentives reduce the frequency of underinvestment in the first period so that the Myers [8] phenomenon arises in muted form at that date. In the first period underinvestment still occurs, but to a lesser degree than in a single period economy. The equityholders in the first period undertake the project in relatively more states of the world than in a one-period setting, although the project is then still not undertaken in as many states as the full information Pareto outcome. The first-period actions provide the market information about subsequent opportunities. The equityholders favor investment relatively more often than in a single-period model in that the first-period investment signals a more favorable distribution of second-period opportunities.

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John and Nachman [5] offer interesting insights about the underinvestment problem in corporate finance, but there are several restrictive aspects of the analysis. The paper identifies an interesting equilibrium with a simple form that is a natural dynamic extension of the analysis in Myers [8]. However, the authors do not establish the uniqueness of equilibrium in their model. Multiplicity of equilibria, in fact, is a common difficulty in reputation models. While there is no generally accepted method to narrow attention to a particular equilibrium, one interesting technique is used in the infinite horizon reputation model of Dybvig and Spatt [2]. They focus on the equilibrium that is Pareto optimal in the set of equilibria. While such an approach has its limitations, it does offer a natural criterion for selecting among the equilibria. Within the context of John and Nachman [5] the model and definition of equilibrium apply directly to the case of mixed strategies, but the nontrivial problem of characterizing randomized (mixed) strategy solutions is not explored and the nature of any such equilibrium is not studied. An interesting (but difficult) modeling alternative to the framework of the authors would allow the firm to invest in a fraction of a constant returns investment whose total scale was limited to a fixed value (e.g., I). Such an approach requires a continuous investment choice and strategy set, but would considerably enrich the alternative strategies open to the firm. In some respects, allowing such a continuous investment decision is much richer than the binary choice allowed within the paper. I conjecture that in such an environment there exists equilibria other than a dichotomous solution. For example, the possibility of a solution in which the first-period investment is such that the fraction of the project undertaken increases continuously in the state seems plausible.

The John and Nachman [5] model also restricts attention to an economy in which the investment decision is made only twice. I suspect that the underinvestment problem is mitigated to a greater degree as the horizon gets longer (e.g., Townsend [11] in a bilateral insurance problem shows that the problem of private information is reduced by a longer term relationship between the parties and Kreps and Wilson [6] examine the dependence of their reputation equilibrium upon the number of periods). Indeed, in some infinite horizon settings the efficiency cost of the lack of observability of the agent's action can be completely eliminated (e.g., Rubinstein and Yaari [9] in a bilateral insurance problem without discounting and Dybvig and Spatt [2] in a reputation setting provided the extent of discounting is not too large).

An alternative to the finite horizon formulation of reputation is to consider an infinite horizon game and avoid the need to introduce correlation in the investment opportunity sets. The infinite horizon approach is used in Dybvig and Spatt [2] to obtain simple characterizations of the nature of equilibrium in their reputation setting. For some values of the discount factor, distribution of consumer information lags and the relative one-period gain from cheating, Dybvig and Spatt [2] were able to show that the full information allocation arises. They also characterize the magnitude of the departures from this allocation. The simplicity of the infinite horizon approach to reputation has much to recommend in the John and Nachman [5] setting and would be an interesting alternative in their context. Of course, the infinite horizon approach does not require that the game continues forever, but only that there is no fixed bound on the length of

the game (in fact, an "infinite horizon" game can terminate in finite time with probability one).

I expect multiperiod formulations will prove increasingly useful in understanding the incentive conflicts between equityholders, debt claimants, and the firm's managers. One such interesting research line studies the time profile of reputation acquisition and the choice of investment projects (see Diamond [1], presented at the same session as the John and Nachman [5] paper). Another is the important work of Holmstrom [3] and Holmstrom and Costa [4] on a manager's selection of projects in a setting in which there is a moral hazard problem, but the market and manager learn the manager's true ability level over time. Diamond [1] and Holmstrom [3] obtain richer horizon effects than can be detected in a two-period model.

One of the important roles of the John and Nachman [5] analysis is to illustrate for finance researchers that agency costs in financial markets can be greatly exaggerated in one-period analyses. This suggests that the standard one-period agency paradigm can yield misleading results on the nature of the firm's capital structure and may not be a very powerful approach to the capital structure puzzle.

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