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REPUTATION AND CORPORATE STRATEGY: A REVIEW OF RECENT THEORY AND APPLICATIONS

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A corporate reputation is a set of attributes ascribed to a firm, inferred from the firm's past actions. While the intuition behind reputation-building is hardly new, recent research has formalized the concept. We review this research and then, using examples, illustrate some of the strategic behavioral implications of these formal models.

INTRODUCTION

Recently, a literature has developed formalizing the idea that a firm's reputation is an asset which can generate future rents (Wilson, 1985a). We find these models potentially useful, even though initial models may be simplified and unrealistic, because theorists are discovering new ways to solve more realistic models (see Camerer, 1985). More importantly, such models can provide qualitative insights that may produce more effective corporate decisions.

Reputation-building behavior is strategically important in incomplete information settings—i.e. settings where all players are not equally informed about parameters that define pay-off functions and possible strategies. We focus on situations where one player has private information which other players lack. For example, while ARCO knows the cost of its Alaskan slope oil, other firms can only estimate that cost.[1] If one player knows something that others don't, that player's actions may partially reveal the private information, giving the player a reputation.

We review game theoretic models which formalize reputation-building ideas, then use examples to illustrate some strategic behavioral implications of these models. The examples are chosen to illustrate the wide range of management issues that reputation-building models can analyze. First, we discuss inter-firm situations where reputation-building behavior affects the market actions of players. We then look at intra-firm issues and the influence of reputation-building behavior on organizational efficiency.

THE STRATEGIC IMPORTANCE OF REPUTATION

Game theorists call the set of privately known information a player's 'type'. In our example, ARCO's type is the cost of its Alaskan oil. In general, a firm's type might include its cost functions, plant capacity and location, managerial ability, marketing plans, R&D expenditures, top management values, etc. While each player is assumed to know its own type, players are uncertain about the types of other players. Since a player's type influences preferences, and thus objectives, determining other players' types is an

[1] Of course, even ARCO may not know its costs *exactly*. All we need to assume is that ARCO knows more than other firms do—i.e. its probability distribution of the cost of Alaskan oil has less variance than other firms' distributions.

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important strategic issue.[2]. Players gather data to form beliefs about the types rivals might be. If players observe past history, and types are stable, one clue is the reputation of a player.

For example, if a colleague always fulfills her promises, then you say she has a reputation for reliability. That is, based on her past actions you infer that reliability is one of her attributes she is a 'reliable person'. By doing so, you make judgements about past observations, and use these *signals* to form beliefs in predicting her future actions.

Your colleague has an incentive to invest in her reputation by acting reliably, because her reputation is an intangible asset that earns her rents. You might tell her a secret if she promises not to tell anyone else; another colleague lends her books because she promises to promptly return them. Non-fulfillment of a promise has immediate consequences (often gains—other people thank her for telling them your secret), and long-term consequences (often losses—you never tell her another secret), since a loss of reputation can affect the future actions of other players toward her.

REPUTATIONS IN GAME THEORY

Game theorists use an equilibrium notion to identify a player's optimal strategic behavior (the behavior that maximizes expected utility over the length of the game). The most common equilibrium solution is the Nash equilibrium. The strategies in a Nash equilibrium are 'mutual best responses': a player's choice is optimal given that other players select their equilibrium choices.

However, many times the predictive power of the Nash solution is weak because there are several Nash equilibria. In repeated games, like those which involve reputations, the Nash equilibrium concept supposes that players ignore the consequences of strategies that occur with a *zero* probability in equilibrium play (so-called 'off the equilibrium path' strategies). That is, in a Nash equilibrium it is assumed that players don't consider what could happen in 'subgames' they don't expect to reach.[3] If we can rule out certain off the equilibrium path strategies as irrational we can eliminate some equilibria and, sometimes, pick out one course of play as the unique equilibrium.

Using this idea, Kreps and Wilson (1982a) developed a subtle refinement of the Nash equilibrium, called sequential equilibrium (SE).[4] Unlike Nash, SE defines an equilibrium not solely as an action, but as an action–belief set—given certain beliefs, certain actions are optimal. Beliefs stem from two sources of incomplete information: previous actions of other players (including nature), and conjectures about the likely future actions of players.

A sequential equilibrium requires play to be rational in every subgame of play from any point to the end. In other words, no matter what happens early in the game (even something irrational), a player must choose future actions depending on his beliefs about prior actions and his conjectures about the future actions of rivals.[5] In subgames that are off the equilibrium path, an SE must specify players' beliefs.[6]

A numerical example may help illustrate the subtle difference between the Nash equilibrium and sequential equilibrium. Figure 1 shows a

[2] This reasoning is similar to Porter's discussion of competitor analysis (1980: Chapter 3). Instead of using the type concept, Porter discusses developing a competitor's profile to help managers predict how rivals will most likely respond.

[3] A subgame is defined as being a segment of a multiperiod game where the segment itself is a game within the larger game. See Friedman (1986: 81–82) for a formal definition.

[4] Kreps and Wilson's notion of sequential equilibrium is very closely related to Selten's (1975) notion of a perfect equilibrium. Selten's notion is stronger since a perfect equilibrium is not only optimal against the equilibrium strategies of other players, but also against slight perturbations of these strategies. Therefore, all sequential equilibria are perfect, but not all perfect equilibria are sequential.

[5] Of course we recognize that beliefs can be updated as new information is revealed. Thus a chosen action does not have to be optimal for all future points regardless of beliefs.

[6] Though off-path behavior is never expected, if it is observed an SE mustspecify beliefs so that a player can find an optimal action conditional on his beliefs. Note that moves off the equilibrium path occur with zero probability, by definition. Therefore, a player cannot apply Bayes' rule to calculate PR(beliefs|moves), because this is equal to:

$$\frac{Pr(move|beliefs) \times Pr(beliefs)}{Pr(move)}$$

but Pr(move) was zero. Since a player cannot apply Bayes' rule, some other method must be used to specify Pr(beliefs|move). Theorists have proposed many different ways to 'refine' SE, or choose sensible off-path beliefs, but there is no consensus on which refinement is best, or most empirically valid (see Kreps, 1984a; Grossman and Perry, 1986; Cho and Kreps, 1987; Kohlberg and Mertens, 1986; Banks and Sobel, 1987).

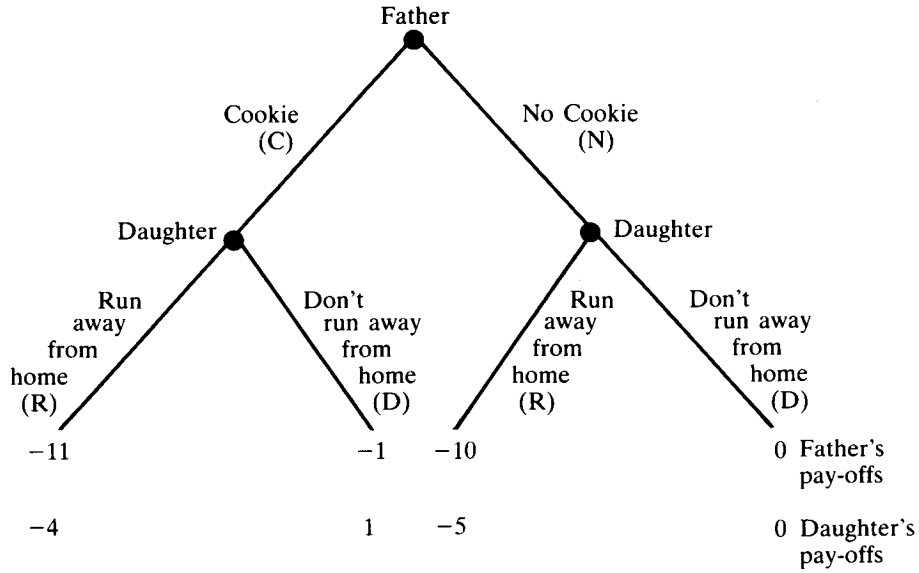

Figure 1. Game to illustrate the Nash equilibrium

simple game. The diagram is interpreted as follows: A father must decide whether to give his daughter a cookie (C) or not (N). The daughter either runs away from home (R) or doesn't (D) after getting a cookie or not. Suppose a cookie is worth 1 utile to the daughter, and −1 to the nutrition-conscious father, and suppose running away costs the daughter 5 utiles and the father 10 utiles. Notice that the daughter observes the father's choice of strategy (C or N) before she decides what to do, so she effectively chooses a contingency strategy specifying a possibly different strategy (R or D) conditional on each of her father's choices.

Intuitively, the daughter wants to extort a cookie from her father by threatening to run away if she gets no cookie (i.e. choosing the R branch if her father chooses the N branch). Indeed, the equilibrium in which the father plays C and the daughter plays D if C, R if N is a Nash equilibrium. Each player's strategy is a best response to the other player's strategy. However, father: N, daughter: D if C, D if N is also a Nash equilibrium. Thus, the Nash equilibrium concept gives no clear prediction or advice in this game since it allows two very different equilibria.

However, there is something peculiar about the Nash equilibrium (father: C daughter: D if C, R if N). If the father does play N (i.e. in the N 'subgame'), the daughter's running away strategy is no longer optimal—running away is only useful as a *threat* to extort a cookie. But it is not a credible threat, since she will back down if called upon to use it: playing N is costly to the daughter and doesn't give her any benefits. The cookie-extortion Nash equilibrium is not a sequential (or perfect) equilibrium because its strategies are not rational in every conceivable subgame—the 'R if N' part of the daughter's strategy is not optimal if N is played. However, (father: N, daughter: D if N, D if C) is a sequential equilibrium, since it is the only sequential equilibrium, it provides a clear prediction (or piece of advice) about actual play.[7]

We should add that while these solution concepts are sometimes difficult to solve mathematically, their underlying logic is appealing. Furthermore, experimental evidence suggests that these concepts are reasonably good descriptions of actual play in a fairly complicated game (see Camerer and Weigelt, forthcoming).

SEQUENTIAL EQUILIBRIUM AND REPUTATION

In the cookie game there is no reputation

[7] One can think of less childish strategic analogues, like threats to quit jobs over matters of principle, or threats to start price or share wars. We discuss some of these below.

since each player's potential pay-offs are known (though their actual strategy choices are not). Let us add the ingredients for reputation-building. Suppose there is some probability, perhaps very small, that the daughter will run away if she gets no cookie, even though it appears irrational for her to do so. Call such a child a 'self-destructive' type, and call a child who won't irrationally run away a 'normal' type. Suppose further that the daughter knows which type she is, that her type is fixed over time, and that her father only knows the probability, S, that his daughter is self-destructive. Now if the game is repeated—once a day, for instance—then some reputation-building arises. One can prove that it is rational for a normal-type daughter to threaten to run away (as if she were really self-destructive), because her threats will extort cookies from her father. The normal-type daughter may have to run away occasionally even though she doesn't want to, to invest in a reputation for self-destructiveness that earns her future rents (cookies). Note that the daughter's reputation is the *perception* of her true type (by her father), not her true type. Also, in a long game, only a tiny amount of uncertainty about player's types can induce rational reputation-building behavior (Kreps and Wilson, 1982b; Milgrom and Roberts, 1982).

In general reputation models, players who don't know Player A's true type, form a probability distribution over the range of A's possible types. Realizing this, Player A takes actions which influence these beliefs so that he receives favorable long-term benefits. These actions, such as imitating the behavior of another type, work because players infer types from past observed behavior. The cookie game in Figure 1 is a whimsical example designed to illustrate the difference between Nash and sequential equilibria. There are many examples which are directly relevant to strategic management research (see below, and Wilson, 1985a; Roberts, 1986). Indeed, we argue that the study of sequential equilibria in incomplete-information games may begin to finally fulfill the potential for applications of game theory to strategy research. This is especially true since most games relative to business strategy involve conditions of dynamics and incomplete information—conditions where phenomena such as credible threats can arise. Early game-theoretic models were based on complete information games where one must assume that all players are rational, and no player has any asymmetric information. These are unrealistic assumptions in games between (or within) firms, but we can relax these assumptions and model the games as games of incomplete information (e.g. Weigelt and MacMillan, forthcoming), relatively easily.

MANAGERIAL APPLICATIONS

Using prices as signals

Economists have long recognized that entrants decide to enter new markets based on their expectations of post-entry profitability (see Scherer, 1980). Even when entrants know a lot about costs and demand, the incumbent firms' strategic response to entry is never fully known. However, incumbents may send signals to potential entrants about their likely response to entry.

Incumbents prefer no entry to entry, since sharing a market reduces profits. Thus, incumbents want to discourage entry by making their markets look unattractive to potential entrants. One available strategy is aggressive price cutting. Carried to the extreme of pricing below marginal cost, this action is known as predatory pricing. Firms are sometimes accused of using predatory pricing to drive rivals out of markets. However, many economists argue against the logic of such behavior since rivals realize that any predatory pricing scheme is only temporary, since the predatory firm must eventually increase prices to stay in business (McGee, 1958).

Yamey (1972) suggested that firms adopt predatory pricing behavior to eliminate current rivals and signal a reaction to future entry attempts, therefore influencing the behavior of future potential rivals. Kreps and Wilson (1982b) and Milgrom and Roberts (1982) used a reputation-building model to formalize this idea. Incumbents deter entry by establishing a reputation for 'toughness' (measured by the willingness to use price-cutting tactics). The long-term rents derived from reputation-building make the price cutting threat credible to potential entrants.

Before sketching the intuition behind these formal models, we examine how the lack of complete information affects the optimal actions

of players. An incumbent is faced with protecting its market against a finitely large number of potential entrants. It can either allow entry and share the market (S), or it can fight entry through predatory actions (P). An entrant can either enter the market (E) or not enter (N). Assume a complete information situation where all players know the pay-offs of other players. Table 1 matches the possible strategy combinations with their associated pay-offs.

In his seminal paper, Selten (1978) showed that with complete information and a finite number of possible entrants, incumbents will never prey.[8] The logic is simple. Assume the incumbent faces 15 potential entrants. What would be the incumbent's strategic choice when facing the fifteenth (and last) entrant? Facing the last entrant an incumbent will share the market since long-term reputational effects don't enter the decision. No matter what strategy the incumbent follows in the preceding 14 periods, in the last period he will share the market.

What about the fourteenth round? The incumbent's choice in the fourteenth round has no influence on the strategic choice of either the incumbent or the entrant in the fifteenth round (since both know the pay-offs, both know that the incumbent will share the market). If the incumbent's choice has no effect on subsequent play, the long-run effects do not enter the decision, and the incumbent will share the market in the fourteenth round too. Through backward induction the logic of predation unravels: realizing this, entrants always enter the market immediately and incumbents don't fight them.

Table 1

		Entrant (E)	
		Enter	No entry
Incumbent (I)	Share	2,2	5,1
	Prey	0,0	5,1

Note: Incumbent's pay-off listed first, entrant's second.

A firm's reputation becomes important in an incomplete information environment, when entrants do not know the incumbents' pay-offs with certainty. Kreps and Wilson assigned a probability to the condition that preying may be the incumbent's dominant strategy (as if some firms *enjoy* playing tough), while Milgrom and Roberts said that maybe a firm was somehow committed to always preying on firms who attempt to enter their territory.[9] Both methods model the idea that if there is a small probability that sharing a market is not optimal at every stage of the game, then reputation effects can deter future entry.

The mathematics is complex but the intuitive logic is straightforward. Assume the entrant is unsure of the incumbent's pay-off. For simplicity, assume the incumbent is one of two possible types—tough (the incumbent realizes non-monetary utility from preying) or weak (the incumbent realizes no non-monetary utility from preying). Weak types now have an incentive to mimic the behavior of tough incumbents, by acting tough and preying on entrants. By doing so they establish a reputation for being tough types, and discourage latter entrants from entering their markets. Mimicry works because entrants do not know an incumbent's true type (tough or weak), so they look for signals. The past history of an incumbent's actions—the firm's reputation—thus becomes an asset that generates rents, because if a weak incumbent convinces potential entrants that it might be tough, then its markets won't be entered and it will realize higher total pay-offs. For more technical details see the papers cited above, or see Camerer and Weigelt (forthcoming) or Ordeshook (1986) for tutorial discussions.

Examples of apparent reputation-building behavior are not hard to find. When Procter and Gamble introduced Folger's coffee in the northeast it met ferocious competition from Maxwell House (see Karnani and Wernerfelt, 1985). Though this strategy was more costly to Maxwell House than letting Folger's in, it

[8] Note that it is easily shown that as the number of possible entrants approaches infinity, the number of periods in which the incumbent should prey also tends toward infinity. When the number of periods is infinite, one can get equilibria in which incumbents prey even within complete information games.

[9] Since preying is irrational in the short run, one could interpret the probability of a firm being committed to the prey strategy as the probability that the firm always acts irrationally.

presumably signalled to P&G the likely response if other regions were invaded. When Union Carbide test-marketed a disposable diaper in Bangor, Maine, P&G flooded the market with promotions and price discount coupons for its Pampers diapers. Grossman (1980:23) reported how IBM 'mistakenly' underpriced its 4300 mainframe computers by 5–7 per cent. A year later the company 'admitted' its mistake and raised prices. However, the true intentions of IBM were never made clear. As the article reported:

> at least one maker of plug-compatible computers—copycat machines that sell for less than IBM's but run on IBM software—was forced out of the market, and others were badly crippled.

It is difficult to know whether the firms in these examples are actually tough types, or are weak types mimicking tough types. However, as long as there is a small probability that tough-type firms exist, reputation-building behavior by weak types can be rewarding.

In these models, an incumbent's reputation for toughness generates future profits, since it makes the firm's market appear unattractive because of the credible threat of predation. Other types of reputation-building strategies are available. Instead of establishing a reputation for toughness a firm could establish a reputation for weakness, in the sense of market fundamentals— e.g. high raw material costs, high buyer power (see Easley, Masson and Reynolds, 1985). While beliefs about low post-entry margins stop market entry, these perceived low margins are not caused by beliefs of post-entry predatory actions, but rather from beliefs concerning market factors.

Reputation and product quality

Though consumers make their decision choice at the point of purchase, the quality of many products is not known until they are consumed. Producers of high-quality goods therefore want to signal their product's quality to consumers before the purchase decision. In a series of articles, Nelson (1970, 1974) discusses the power of consumers in various product markets. He classifies consumer products as belonging to one of the two broad groups—search products or experience products. Customers can determine the quality of a search products' relevant characteristics before purchase, while those of an experience product are only known after consumption. For example, the design of a tie is known before purchase, the taste of a frozen dinner after it is eaten.

Obviously, misleading advertising for search products is costly since consumers notice any false claims before their purchase decision, and simply decide not to purchase. However, what is the cost of misleading advertising for experience goods? Since product quality is unknown until after purchase an incentive apparently exists for low-quality product producers to advertise their products as being of high quality. Since consumers cannot differentiate between high and low-quality experience goods before consumption, can high-quality producers *credibly* signal the quality of their products?

Nelson used a separating equilibrium argument to claim that producers of high quality products credibly signal quality through the amount of money spent on advertising.[10]. If consumers are more likely to be repeat purchasers of high quality products than of low-quality products, an initial sale has more value to high-quality producers, and they should be willing to spend more money to attract first-time customers. Low-quality producers will not attempt to imitate high-quality ones (through advertising) because they do not receive the profits from repeat purchases, and thus find it too expensive to advertise as much. The advertisement's informational content is not important (especially since consumers cannot judge the reliability of the ad's claims before purchase). The mere fact that a producer spends money to alert consumers to his product is a credible signal of product quality. Several authors used Nelson's ideas in developing formal models where producers signal and maintain a reputation for high product quality levels through the use of advertising and pricing strategies.

Milgrom and Robert's model (1986) uses both

[10] Intuitively, consider a pooling equilibrium as one where players of several types choose the same strategy. For example, in our entry-deterring model all types (weak and tough) acted as tough types. A separating equilibrium is one where only players of one type choose some strategy. As we shall see in the product quality model only producers of high-quality products will spend money for advertising.

price and advertising expenditures to signal product quality about newly introduced products. They argue that signalling models must include price because if prices vary systematically with quality, price becomes a sufficient signal so advertisements can be ignored. The model is sequential in nature; that is, the firm first chooses a price (P) and advertising budget (A) for its new product. Consumers, being uncertain of the product's quality, make their initial purchase decision after observing P and A. After trying the product consumers gain more information about its quality[11], and the firm makes its post-introductory price and advertising choices. Consumers again observe these choices and make their purchase decision based on these choices, and the information they gained from their prior purchase.

Using the idea of sequential elimination of dominated strategies[12], Milgrom and Roberts show that separating equilibria are the only plausible ones. Producers of low-quality products never mimic high-quality producers by choosing the same levels of P and A.[13] The authors also show that signalling with price and advertising is cheaper than signalling with price alone. The optimal combination of price and advertising signalling depends on cost differences across quality types.

Milgrom and Roberts note (1986: 799) that while they address the advertising of experience goods, one can apply the model to any strategy choice involving expenditures that do not provide direct information about products, improve costs, or increase demand. Such expenditures include: outlets in a high rent district, corporate contributions to social causes, or sponsorship of athletic events (e.g. the John Hancock Sun Bowl).

Klein and Leffler (1981) develop an alternative model where producers signal product quality with both advertising and price. They assume that producers choose the quality level of their products, and that high-quality producers command a price premium for their products which is realized as excess profits. If these assumptions are true, and consumers cannot verify a product's true quality until after purchasing it, what mechanism prevents a producer from 'cheating', that is selling a low-quality product at high-quality prices?

The authors use the following logic. As in Milgrom and Roberts' model, they assume that high-quality goods are characterized as having repeat sales. Producers value these repeat sales since they earn excess profits from each sale. A producer who attempts to cheat will not realize future repeat sales since his reputation is damaged, and consumers stop buying his products. So high prices signal high quality.

However, the excess profits should attract new firms into the market. Klein and Leffler (1981) claim that excess profits are 'competed' away upfront—that is, firms must invest in non-salvageable firm-specific assets before consumers buy their products.[14] Examples of such investments include: logos, advertising, initially selling high-quality products at 'introductory discount' low-quality prices (Shapiro, 1983), outlets in high rent locations, and contributions to socially responsible causes. So, while prices alone signal a product's quality level, advertising (or some other non-salvageable firm-specific asset) is needed to gain initial sales, and compete away excess profits.[15]

These formal models help explain why apparently uninformative advertising does signal product quality, and why consumers should pay a premium for 'designer label' products. Corporate image advertising (Obsession cologne, Jordache 'basic' commercials), and extensive use of a firm-specific logo are important, because they represent the firm's investment in non-salvageable

[11] Milgrom and Roberts note that assuming communication between users and non-users of the product, non-users receive additional information about the product's quality without buying it.

[12] A strategy is said to dominate another strategy if the player receivesat least the same pay-off against any of his rivals' chosen strategies, and a higher pay-off for a subset of his rivals' chosen strategies. Intuitively, a player never wants to use a dominated strategy because his pay-off will *at best* equal his pay-off from using the dominating strategy.

[13] Though the authors note that pooling equilibria are possible if onemakes severe informational requirements of consumers in the sense of consumers knowing the profit functions of high-quality producers.

[14] Allen (1984) shows that firms do not have to compete away these excess profits since smart consumers will know that encouraging price competition between high-quality producers will lead to a collapse of the equilibrium.

[15] The mentioned papers are only a few examples from a large existing literature where product quality is signalled via the use of multiple signals. Interested readers should see Grossman (1981), Kohlleppel (1983), Kihlstrom and Riordan (1984), Holmstrom and Weiss (1985), and Wilson (1985b).

goodwill. Such actions signal that the firm uses its reputation as collateral in guaranteeing high-quality products.

Reputations in the service sector

Reputations play a strategically important role in service markets because, like experience goods, the pre-purchase evaluation of service quality is vague and partial (e.g. law, medicine, accounting, investment services). Product quality models do not always apply to services because of advertising restrictions, although other types of reputation-building models may apply. Wilson (1983) suggested that firms gain credibility for their financial statements by 'renting' the reputations of outside auditors. Because statements are audited, investors put more faith in the reliability of stated performance. An auditing firm that maintains short-term pay-offs by catering too much to clients will see its future market rental value for reputation decline if investors begin to question the firm's objectivity. Eichenseher and Shields (1985) offer empirical evidence that publicly traded corporations increasingly use Big-Eight auditing firms because of a growth in director liability lawsuits. Big-Eight firms are used because their reputation for integrity is uniformly higher than smaller auditing firm. Their findings support those of De Angelo (1981) in suggesting that Big-Eight firms worry more about their reputations because they have more clients to lose than smaller auditing firms do.

Anecdotal evidence supporting these findings was contained in a *Wall Street Journal* article about the Grant Thornton accounting firm. A partner of the firm took $125,000 in bribes from the now bankrupt E.S.M. Government Securities Inc. in return for falsifying financial statements. As the *Journal* reported (1986: 6)

> The nation's 11th-largest accounting firm is having problems obtaining new clients and partners, retaining current clients, and keeping its executive suite intact... The firm's travail illustrates the pressures on a professional firm—whether it be in accounting, law, architecture or another field-when its reputation is threatened.

Dranove (1983) uses similar logic in developing a reputation-building model for the physician–patient relationship. The physician can use her superior information to achieve short-term gains by prescribing unnecessary treatment for which she gets paid. However, such actions endanger her long-term rents from future treatments since a physician's reputation is manifested in past prescriptions.

Paralleling the logic of the product quality models, Rogerson (1983) shows that increasing the fixed-entry costs of service increases the probability of high-quality service. Such entry costs are operationalized as large investments in expensive office furnishings, prestigious addresses, training requirements, and licensing fees. He shows that maintaining a reputation for high quality results in fewer customers becoming dissatisfied and leaving, and increases the probability that present customers will provide positive word-of-mouth advertising.

Beatty and Ritter (1986) documented a similar effect in investment banking. On average, initial offerings are underpriced, presumably because of the *ex-ante* uncertainty about an offering's 'aftermarket' value. The issuing firm cannot credibly signal its true value because most firms only 'go public' once, so it has no future incentive to maintain a good reputation. However, the long-term reputational incentive of investment bankers can signal issue quality, since investment banking firms sponsor many such issues. Both market parties find that reputation effects are strategically important. If the offerings are overpriced, the investors are reluctant to buy the firm's subsequent sponsored offerings. If issues are underpriced too much, firms contemplating initial offerings will realize that more cash can be raised by using an investment firm that better matches offering prices to market expectations.

One quasi-service market where reputation-building appears important is the selection and conduct of corporate directors. Firms which hire 'celebrity-type' directors could be renting the director's reputation. Small firms find this especially important, because they must signal their integrity and interest in realizing profits to capital markets and other resource-suppliers.

Reputation-building is two-sided, since the firm uses directors to build its reputation, while a director uses his position to build personal reputation. As White (1985: 194) states:

> Hirsch [1982], on the basis of intensive interviewing . . . found that directors have little sense

in representing any organization in their role as board member. Rather the membership is part of one's *own* job description, one's process in advancing in reputation and contacts.

The reputation-building duality gives directors incentives to protect shareholder interests. Since a firm appoints 'celebrity-type' directors primarily because of their beneficial reputational effects, any known association with a poorly performing firm may cost directors future appointments.[16] They protect the interests of shareholders because by so doing they protect their celebrity status.

Reputations as screening mechanisms

We discussed how informed players use reputation-building behavior to credibly signal information to uninformed players. Uninformed players can also use reputation as a screening strategy to determine (though often imperfectly) the true type of another player. Generally, such screening models are useful when moral hazard or adverse selection conditions exist.[17]

Stiglitz and Weiss (1983) applied a reputation-based screening model to credit (and labor) markets. The bank is the uninformed player because it is difficult for loan officers to determine a borrower's true type (pay back the loan or renege) before granting the loan. A borrower, while informed, has an incentive to act as a 'payback' type, even if he plans to renege. Since the bank must move first by granting the loan, it institutes a screening mechanism so it doesn't give loans to 'renege' types. The player's past credit history (his reputation) is the screening mechanism.

Using the reputation-based idea that behavior is intertemporally linked, the authors show that an equilibrium for banks is to refuse credit to borrowers who fail to repay earlier loans. The banks use a player's reputation (his credit history) to screen applicants and lend to those having a high probability of paying back the loan.

Wolfson's (1985) empirical study supported this idea. In syndications, general partners have incentives to increase their short-term profits at the expense of limited partners (for example, by taking up-front payments, high management fees, etc.) Recognizing this, the SEC requires that an audited statement of past performance be included in the prospectus of any future partnership a general partner wants to form. Potential limited partners (the uninformed player) can thus use these statements as a screening device in deciding whether they want to join the syndication.

Corporate culture

Organizational theorists argue that a firm's culture can influence strategy implementation and performance (see Jelinek, Smircich and Hirsch, 1983; Jones, 1983; Wilkins and Ouchi, 1983). Recently, several formal reputation-building models show why corporate culture can support an efficient, implicit contract system within firms (Kreps, 1984b; Cremer, 1986; Camerer and Vepsalainen, forthcoming).

The logic is straightforward. Assume that employers want to specify all possible contingencies which could arise in the employer–employee relationship, but find that writing them down is an impossible task. A simple alternative is an informal contract where the employee gives the employer a broad range of authority to resolve unforeseen contingencies, or to judge, *ex post,* an employee's reaction to the unforeseen. In agreeing to such a contract the employee must trust that the process achieves equitable results. Their faith comes from the firm's reputation for using clear, well-known, 'unwritten rules' in responding to unforeseen contingencies, and for judging employees fairly when they apply those rules. The unwritten rules *are* the corporate culture. Managers must maintain a good reputation for applying cultural rules fairly and successfully , if they expect employees to work hard, and have successful efforts to coordinate production.

[16] Especially because directors are only elected for relatively short terms, so present performance affects both the probability of being re-elected and being appointed to additional boards.

[17] Moral hazard exists when players have the incentive not to exert effortto fully protect themselves against some hazard. For example, fire insurance weakens the incentive for caution (like double-checking the stove before leaving the house). The inability to get a player to reveal unfavorable information that is known to her, but not to other players, is known as adverse selection effects. For instance, the seller of a used car has more information about the car's true condition than the buyer, but in lieu of warranties has no incentive to reveal defects.

These views of corporate culture emphasize now-familiar aspects of reputation models: a commonly known culture (hence the value of public rituals and ceremonies) that is ideally embodied in 'cognitively economical' stories and anecdotes, often involving memorable people like corporate founders.

SUMMARY AND CONCLUSION

We illustrated a wide range of corporate situations where reputation-building behavior affects strategic choice by generating future rents. The ingredients for reputation-building are commonly found in corporate strategic settings: two or more players, information asymmetries, a rich set of strategic options, and a dynamic context.

If reputation-building models are to have a positive impact on the strategy area, researchers must address whether the models provide a descriptive theory of how decision-makers behave. Several empirical studies indicate that reputational effects are important. Tsui (1984) found that personal reputation or stature is a determinant of success in intrafirm decision-making. Experimental studies found that coalition members within an organizational setting consider the reputation effects of current actions when members expect to interact with the same players in the future (Murninghan, 1985; Bettenhausen and Murninghan, 1985). In other experimental studies Miller and Plott (1986) found that sellers in product markets try to develop reputations for selling high-quality products, and commanded premium prices for doing so; DeJong, Forsythe and Lundholm (1985) found strikingly similar results in an agency setting; Daughety and Forsythe (1987, forthcoming) found reputation-building behavior in duopoly settings; and Roth and Schoumaker (1983) found that past histories of players affected bargaining outcomes. Anecdotal evidence supports the notion that firms consider reputations to be valuable assets, as evidenced by the annual *Fortune* 500 survey of corporate reputations. In an experiment where beliefs were controlled enough to formally test the precise predictions of SE, Camerer and Weigelt (forthcoming) found that a reputation-building model described subject's behavior reasonably well.

Integrating the idea of reputation with present strategy notions may be useful. For example, strategy researchers have noted the shortcoming of applying static IO concepts to a dynamic strategic analysis (Porter, 1981; Teece, 1984). Using reputation models may help, since the models consider the beliefs and expectations of players. Kreps and Spence (1985) argue that the evolutionary development of a market is a key variable that should be used in strategic analysis. Any implicit collusive agreements (e.g. market norms) depend on the beliefs and expectations of market players, which in turn depend on the history of their past interactions. In a recent article, Roberts (1986) uses elements of reputation-building to build models of competitive dynamics.

Organizational theorists might also use reputation models to formalize the idea of a firm as a political organization where special interest coalitions affect decision-making through bargaining. Several theories of coalition building already recognize the important role of reputation-building behavior (e.g. Komorita and Chertkoff, 1973).

Many research questions and opportunities remain which pose a significant challenge to researchers and practitioners alike. Integrating theory and research findings into a prescriptive for better business practices is a difficult task that requires the cross-fertilization of ideas from several disciplines. We hope that the qualitative insights provided by the theory of reputation-building models are developed and used in integrative strategic planning models.

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