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The economics of favors

William S. Neilson *
Department of Economics, Texas A&M University, College Station, TX 77843-4228 USA

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Abstract

This paper examines the favors people perform for each other using a stochastic version of the infinitely-Repeated Prisoner's Dilemma (RPD). It is shown that the socially efficient outcome may not be consistent with an equilibrium because some favors are too expensive to perform. On the other hand, it is possible for some socially inefficient favors to be performed. Even so, favor-exchange relationships must be strictly Pareto-improving. The model is also able to address situations in which there are market alternatives to the services being exchanged, and when favors are exchanged among members of large groups or hierarchies. ©1999 Elsevier Science B.V. All rights reserved.

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1. Introduction

It is not unusual for a person to say that someone owes him or her a favor. Typically the person has performed a favor for someone else, and expects the beneficiary to do something in return. The favor-owed party may not currently need a favor, however, and so cannot collect one until the opportunity arises. This stylized framework provides the basis for the model used in this paper to explore why favors are performed, and to explore the characteristics of relationships in which people exchange favors.

Gift-exchange relationships have received a significant amount of attention in the economics literature, but favor-exchange relationships have not. While there are similarities between the two types of relationships, especially the passage of time between one individual's action and the other individual's reciprocating action, the two have important

* Tel.: +1-409 845-9952; e-mail: wsn@econ4.tamu.edu

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differences stemming from the nature of the choices that the participants face. In a gift-exchange relationship, participants choose whether or not to give a gift, when to give it, and how large a gift to give. Much of the economics literature on gift-exchange has focused on why such relationships exist. For example, Camerer (1988) and Landa (1994) provide signaling explanations for the formation of gift-exchange relationships, and Carmichael and MacLeod (1997) show how the institution of gift-giving can arise in an evolutionary framework. Some of the earliest work on gift-exchange was done by anthropologists, especially Mauss (1990). They focus on how ritualized gift exchange facilitates interaction between otherwise-hostile primitive tribes (see also Landa, 1994). Basically, they find that the larger the gift the more obligated the recipient is to the donor, leading to continually escalating gift-giving. [1]

In contrast to a gift-giver, an individual performing a favor decides neither when to perform the favor nor how large a favor to perform. Instead, these parameters are determined exogenously be the situation: the other individual needs a specific favor at a specific time. The only remaining decision is a binary one concerning whether or not to perform the favor. Because of this, chance plays a much larger role in favor-exchange relationships than in gift-exchange relationships. In particular, chance determines which favors are needed in a given period and which favors will be needed in the future. Consequently, in a favor-exchange relationship the person considering performing a favor must decide whether or not to perform it without knowing exactly when he or she will need favors performed in the future or how beneficial those favors will be. This distinction necessitates treating favor-exchange relationships separately from gift-exchange relationships.

The purpose of the paper is to construct a model in which opportunities to perform favors arise, and to investigate what favors are performed. To make the notion of favors explicit, a favor is defined as a costly action that one person can take which yields no personal benefit but which does benefit some other person. The long-term relationship is modeled as an infinitely-repeated two-player game, but with the payoffs of the stage-game determined randomly. [2] In each period there is the possibility that one player gets the opportunity to take a costly action which benefits the other player. Both the size and the assignment of the potential benefit are random, but are known at the beginning of each period before any action is taken. Thus, the stage-game is a modified version of the standard prisoner's dilemma, and, as is usual in the repeated prisoner's dilemma, there are multiple equilibria. [3] The point of the paper is to identify which outcomes are consistent with equilibrium play, and which are not. More specifically, we look at which favors can be performed in *some* equilibrium, and, based on the findings, we discuss the benefits players receive from participating in favor-exchange relationships.

The economics literature has other, standard methods for achieving the 'gains from trade' in the situation described above. There could be an explicit market in which the two parties

[1] Within the sociology literature, Coleman (1990) formulates a model of a relationship of trust, which is closely related to both gift-exchange and favor-exchange relationships.

[2] Both Kimball (1988) and Coate and Ravallion (1993) use a stochastic RPD model similar to the one explored here to analyze informal insurance arrangements, and Winter (1997) uses one to analyze a no-liability tort setting.

[3] The literature on the evolution of altruism uses a similar setting; see Axelrod (1984), Bergstrom (1995), Bergstrom and Stark (1993), and Nowak et al. (1995).

could pay each other for the costly actions,[4] or the parties could write binding contracts governing their behavior. The benchmark model considered here allows neither contracts nor markets, and this model is appropriate for analyzing many situations, either because markets or binding contracts are illegal, or because transaction costs associated with markets or formal contracts are high.

The model fits a number of real-world examples. In logrolling, legislators vote for legislation that helps one member but which all members must pay for, presumably with the agreement that the beneficiary will vote for other legislation in the future (see Coleman, 1982). Workers regularly cover for each other in emergencies. Academics referee papers because they expect to be the beneficiary of the refereeing process in the future. Friends help each other move. In all of these cases, the benefactor chooses neither the timing nor the extent of the favor; the only choice is whether or not to perform it.

Section 2 provides the benchmark model with two players, no markets, and no binding contracts. In Section 3 the benchmark model is broadened to allow for the existence of markets for the services performed as favors, but still ruling out the use of contracts, and in Section 4 the benchmark model is expanded to allow for groups larger than two. The main results are summarized in Section 5.

2. One-on-one relationships

Two risk neutral players, denoted *A* and *B*, are involved in an infinitely-repeated stage game. The payoffs of the stage game vary from period to period according to the realizations of a pair of non-negative, jointly-distributed random variables. These random variables, denoted *a* and *b*, correspond to potential benefits to players *A* and *B*, respectively. The benefits are realized only if the other player takes a costly action, termed a *favor*. Favors are assumed to be all-or-nothing decisions, so that players do not get to choose the size of the favor they perform in a given period, only whether or not they perform it.[5] The cost of the favor is a function of the size of the favor. So, for example, suppose that in a given period player *A* can receive a benefit of size *a* if player *B* performs a favor. Performing the favor costs player *B* an amount$c_B(a) \geq 0$ with $c_B(0) = 0$. If player *B* takes this costly action, we say that player *B* *performs a favor of size a* for player *A*. A similar non-negative cost function, $c_A(b)$, pertains when player *A* performs a favor of size *b* for player *B*.

Each period the parameters *a* and *b* of the stage game are determined stochastically in the following way. First it is determined who the potential beneficiary is, with player *A* being

[4] Kranton (1996) analyzes a setting in which agents can either participate in a decentralized market or participate in a reciprocal exchange relationship with other agents, so her paper provides reasons why agents might choose to exchange favors instead of purchasing services on a market. She finds that the choice between the two exchange settings is affected by the nature of the goods or services being exchanged and the number of other agents involved in the two different types of relationships. The reciprocal relationship modeled here is different from her's, though, and is designed to analyze what favors can be exchanged in equilibrium, and not whether or not favors are exchanged in equilibrium.

[5] This differs from the informal insurance models of Kimball (1988) and Coate and Ravallion (1993) in which the size of the interpersonal transfers are determined endogenously. In their model, favors can always be performed, although they might be smaller than the recipient would otherwise desire.

the potential beneficiary with probability θ, and player B being the potential beneficiary with probability $1-\theta$. If player A is the potential beneficiary, the size of the favor is then drawn randomly from the distribution $F_{\mathrm{A}}(a)$, and if B is the potential beneficiary, the size of the favor is drawn randomly from $F_{\mathrm{B}}(b)$. This process can be summarized by the joint distribution function $F(a,b)$, which has the property that $\mathrm{Prob}\{ab>0\}=0$, so that there is never a period in which players can simply exchange favors within the period. Under this assumption, if favors are to be exchanged they must be exchanged intertemporally, and the stage game is a modified version of the standard prisoner's dilemma in which not performing a favor is a (weakly) dominant strategy. Both players are assumed to discount the future in the same way, with the common discount factor given by δ.

A candidate supergame strategy for player A can be written in the following way: Let S_{A} be a set of values of b, and let S_{B} be a set of values of a. If, for all $t<\tau$, whenever $a_t \in S_B$ player B performed a favor, and whenever $b_t \in S_A$ player A performed a favor, then if$b_\tau \in S_A$, player A performs a favor in period τ. If, instead, for some $t<\tau$, either $a_t \in S_B$ but player B did not perform a favor, or $b_t \in S_a$ but player A did not perform a favor, then player A does not perform a favor in period τ. Note that this strategy can be described by the pair of sets (S_A,S_B), where S_A is the set of favors that A performs for B except in punishment phases, and S_B is the set of favors that A expects B to perform, except in punishment phases. Also note that this strategy is a grim strategy, in that any failures to perform favors in the designated sets are punished forever. Candidate strategies for player B can be constructed in a similar fashion.

The *future value* of the relationship with strategies denoted by the pair (S_i,S_j) is given by the function $V_i(S_i,S_j)$, which is the discounted expected future value of the relationship based on the distribution F. To construct $V_A(S_A,S_B)$, first note that the expected net gain in every future period is given by

$$\int_{S_A}\int_{S_A} (a - c_A\,(b))\,\mathrm{d}F\,(a,b)\,,$$

which is the expected benefit from receiving favors in S_B and the expected cost of performing favors in S_A. Then

$$\begin{aligned} V_A\,(S_A,\,S_B) &= \sum_{t=1}^{\infty}\delta^t\left[\int_{S_A}\int_{S_B}(a - c_A\,(b))\,\mathrm{d}F\,(a,b)\right] \\ &= \frac{\delta}{1-\delta}\left[\int_{S_A}\int_{S_B}(a - c_A\,(b))\,\mathrm{d}F\,(a,b)\right]. \end{aligned} \tag{1}$$

For player B, $V_B(S_B,S_A)$ is given by

$$V_B\,(S_B S_A) = \frac{\delta}{1-\delta}\left[\int_{S_A}\int_{S_B}(b - c_B\,(a))\,\mathrm{d}F\,(a,b)\right]. \tag{2}$$

Individual rationality requires that a player only performs a favor if the performance of that favor makes him better off than if he does not perform that favor. To characterize the individual rationality constraint, note that the discounted future payoff when neither player performs any favors is zero. Hence a favor is performed by player i in period t only if the discounted expected value of the relationship less the cost of the current favor is positive, so that it is larger than the discounted value of the broken relationship. Suppose that a period occurs in which player B has the chance to receive a benefit of $b_t > 0$, with $b_t \in S_A$, so that player A is supposed to perform a favor. Player A's decision is between performing the favor and getting current and discounted future payoffs equal to $V_A(S_A,S_B) - c_A(b_t)$, or not performing the favor and receiving nothing. Clearly, A performs the favor if and only if $V_A(S_A,S_B)-c_A(b_t) \geq 0$, and this condition must hold for every $b \in S_A$. In particular, it must hold for the highest-cost favor in S_A. Let $b^*(S_A)$ denote the favor in S_A that imposes the highest cost on A, so that $c_A(b^*(S_A)) \geq c_A(b)$ for all $b \in S_A$. In the event that the highest-cost favor is drawn, no matter how unlikely this event is, player A will only perform the favor if the current cost is outweighed by the future benefits, so that $V_A(S_A,S_B)-c_A(b^*(S_A)) \geq 0$. Since $b^*(S_A)$ is the highest-cost favor in S_A, it follows that for all $b \in S_A$, $V_A(S_A,S_B) - c_A(b) \geq V_A(S_A,S_B) - c_A(b^*(S_A)) \geq 0$, and player A's individual rationality constraint reduces to

$$V_A\left(S_{A,}S_B\right) - c_A\left(b^*\left(S_A\right)\right) \geq 0. \tag{3}$$

A similar line of reasoning establishes that player B's individual rationality constraint is

$$V_A\left(S_B, S_A\right) - c_B\left(a^*\left(S_B\right)\right) \geq 0, \tag{4}$$

where $c_B\left(a^*\left(S_B\right)\right) \geq c_B\left(a\right)$ for all $a \in S_B$.[6]

A subgame perfect equilibrium of the game is constituted by a pair of sets S_A and S_B which satisfy the individual rationality constraints (3) and (4). Not surprisingly, there is a continuum of equilibria. Even so, the model still provides answers to some interesting questions, the first two of which regard outcomes which are *not* equilibria. The first of these is obvious.

Observation 1. It may be impossible to support some exceptionally costly favors in equilibrium[7]. The Folk Theorem states that if players discount the future sufficiently little, any 'cooperative' outcome can be attained. Yet, in this model some cooperative outcomes cannot be attained. The reason for the difference is that in this setting the discount factor need not be close to one. The individual rationality constraints then imply that some favors are too costly to perform. If, for example, there exists a value of b such that $c_A(b) > V_A(S_A, S_B)$ for any (S_A, S_B) combination, then favors of size b are not performed. It would be impossible for player A to gain enough profit from the relationship to recover the cost incurred by performing the favor.

Observation 2. It may be impossible to achieve the socially efficient solution in equilibrium. This is a direct implication of Observation 1. Since the payoffs are utility values, discussion of social efficiency requires an ability to perform interpersonal comparisons. To this end, let $m_i(u)$ be the monetary payoff which yields a level of utility of u for player

[6] While analytically convenient, the grim strategy also implies that people are extremely unforgiving: if a partner ever fails to perform a designated failure, the relationship is terminated forever. It is entirely possible to use more forgiving strategies. These would raise the payoff from deviating, making the individual rationality constraints hold for fewer values of a and b. Even so, all of the subsequent analysis still holds, since it relates directly to the individual rationality constraints.

[7] An example is provided by Coate and Ravallion (1993).

i. Then, if $m_A(c_A(b)) < m_B(b)$, player B is willing to pay more for the favor than it costs player A to perform it. Efficiency requires that all such favors be performed. Let $S_A^* = \{b : m_A(c_A(b)) < m_B(b)\}$ and let $S_B^* = \{a : m_B(c_B(a)) < m_A(a)\}$ The efficient solution is (S_A^*, S_B^*), and for it to be an equilibrium it must satisfy the individual rationality constraints (3) and (4). However, if there exists a value $a \in S_B^*$ such that $c_B(a) < V_B\left(S_B^*, S_A^*\right)$, or a value $b \in S_A^*$ such that $c_A(b) < V_A(S_A^*, S_B^*)$, the efficient solution cannot be supported.

Observation 3. There exist equilibria in which inefficient favors are performed. Suppose that the combination (S_A, S_B) satisfies the individual rationality constraints and can therefore be supported in a subgame perfect equilibrium. Furthermore, suppose that there exists some $b \in S_A$ such that $m_B(b) < m_A(c_A(b))$. Such a favor is inefficient for player A to perform, since the cost of performing it outweighs the benefit to player B. Nevertheless, failure to perform the favor results in a termination of the relationship, and so player A performs it.

Observation 4. It is impossible for one player to extract all of the surplus, leaving the other player with nothing. According to the individual rationality constraints, the relationship must be worth at least as much as the cost of the most expensive favor. For individual A, for example, the individual rationality constraint (3) states that $V_A(S_A, S_B) \geq c_A(b^*(S_A))$, where $b^*(S_A)$ is the most costly favor required of individual A in equilibrium. So, individual A strictly benefits from the relationship whenever a state of the world occurs in which A is called upon to expend less than $c_A(b^*(S_A))$, which occurs with positive probability. Thus, both parties receive strictly positive expected surplus from the relationship.

Observation 5. If one player is too 'needy', no favor-exchange relationship can exist. First consider what happens when one individual becomes "needier" in the sense that it becomes more likely that the individual needs a favor. Fix F_A and F_B and suppose that when the probability that player A needs a favor is θ_0, the pair (S_A, S_B) is consistent with equilibrium. When θ rises to θ_1, the probability that player A needs a favor rises, so player A becomes needier. Let $V_i(S_i, S_j; \theta)$ denote the future value of the relationship to player i when the probability that A needs a favor is θ. When θ rises, V_B falls and V_A rises, making B's individual rationality constraint tighter and A'*s* more slack. Because of this, (S_A, S_B) may not be consistent with equilibrium after θ rises to θ_1, because B's individual rationality constraint may no longer be met. If so, there are two ways that the sets of favors can change to restore equilibrium. First, S_A can expand so that A performs more favors for B. Second, S_B can contract so that B performs fewer favors for A. Both of these changes make the relationship more valuable for B and less valuable for A.

Eventually, as θ become sufficiently close to one, the relationship becomes unsustainable. To understand why, suppose that F_B places probability one on a single outcome b, so that player B only needs favors of size b. So, with probability $1-\theta$ player B can receive a benefit of b.[8] This distribution places all of its weight on B's best outcome. Let $S_A = \{b\}$ so that player A performs the favor whenever the opportunity arises. Then $V_B(S_B, S_A) < (1–\theta)b$ for any non-empty set S_B of favors to be performed by B. As θ rises to one, V_B must fall below zero.

[8] This example is illustrative because F_B places all of its mass on one outcome, which can be thought of as B's 'best' outcome. In a more general setting, in which F_B does not place all of its mass on a single outcome, collapse all of the mass onto the highest outcome. The example shows that the relationship is still not worthwhile for B.

3. Favors versus market transactions

Many favors tend to be services that are not available in an organized market. There are, however, numerous examples of situations in which people perform favors that the recipient could have purchased for himself in an organized market. For instance, people help their friends move even though one can hire a moving company, employees on flexible schedules fill in for their absent colleagues even in the presence of temporary labor agencies, and neighbors care for each others's lawns during vacations. The presence of organized markets for the same services as those being provided through favors necessitates changes in the analysis of favor-exchange relationships.

Let us begin by adapting the scenario introduced in Section 2 to a setting in which individuals can purchase the services that would be provided as favors. Assume that purchasing a on the market reduces individual A's utility by $p_A(a)$, so that the net benefit of the purchase and consumption of a is $a - p_{\mathrm{A}}(a)$. Similarly, let $p_B(b)$ denote the utility price for purchasing b on the market. These prices might include transactions costs. Also, note that when individual A is called upon to perform the favor b, the individual can either provide the service himself or purchase it on the market. This implies that $c_A(b) \leq p_A(b)$ and $c_B(a) \leq p_B(a)$. Let $T_i(S_i,S_j)$ denote the set of services individual i purchases on the market when i performs services in the set S_i and receives favors in the set S_j. Then $T_{\mathrm{i}}(\varnothing,\varnothing)$ is the set of services individual i purchases on the market when there is no favor-exchange relationship. In this setting, the future value to player A of the relationship (S_A,S_B) is given by

$$V_A\left(S_A, S_B\right)=\frac{\delta}{1-\delta}\left[\int_{S_A} \int_{S_B}\left(a-c_A\right)(b) \,\mathrm{d} F(a, b)\right] + \frac{\delta}{1-\delta}\left[\int_{T_A\left(S_A, S_B\right)}\left(a-p_A(a)\right) \mathrm{d} F_a(a)\right], \tag{5}$$

where $F_a(a)$ is the marginal distribution of a. The first term is the value of the relationship that comes from the exchange of favors directly, and the second term is the value that comes from the purchase of services that are not received through favors. The future value of ending the relationship is $V_{\mathrm{A}}(\varnothing,\varnothing)$.

Let $b^*(S_A)$ be the favor in S_A that costs the most for player A to perform, as before. Then A's individual rationality constraint is

$$V_A\left(S_A, S_B\right)-c_A\left(b^*\left(S_A\right)\right) \geq V_A(\varnothing, \varnothing) \tag{6}$$

The presence of a market for services changes the individual rationality constraint in two ways. First, it raises the barrier that the value of the relationship must exceed because if the relationship breaks down the individual can still purchase many of the services. Second, when the relationship breaks down the individual changes the set of purchased services to include some that were previously provided through favors and exclude some that were previously purchased.

Observation 6. There exist equilibria in which individuals provide services (through favors) that are available on an organized market. In the example just constructed, all services are available through the open market, and so the existence of any favor-exchange relationship establishes the result. A favor-exchange relationship is most likely to arise if the costs of performing favors are smaller than the prices of the services that would need to be replaced if the relationship breaks down. Put another way, in the absence of a favor-exchange relationship, individual A purchases services in the set $T_A(\varnothing,\varnothing)$, and pays $p_A(a)$ for each $a \in T_A(\varnothing, \varnothing)$. When A enters into a favor-exchange relationship with B, A receives services in the set $S_B \cup T_A(S_A, S_B)$, paying $p_A(a)$ for services in the set $T_A(S_A,S_B)$, and 'purchasing' services in the set S_B by paying $c_A(b)$ for services in the set S_A. Thus, A finds the favor-exchange relationship desirable when the set of services received expands and when the 'costs' of 'purchasing' the services decline. Because of the latter, in the presence of a market favor-exchange relationships tend to exploit comparative advantages.

4. Favors in groups

In Section 2 it was shown that people perform favors even when they get no immediate benefit. Instead, they perform favors with the expectation of receiving favors in later periods. In this section a setting is established in which a person can perform favors for people who will never return them. Instead, the person receives favors from other members of a group. For example, in a three-person group, the first person could perform favors for the second, the second could perform favors for the third, and the third could perform favors for the first. As long as all members of the group profit from the relationship, these multilateral favors can be supported in equilibrium.

To make this concrete, assume that markets for services do not exist and suppose that there are $n \geq 2$ players, and $n(n-1)$ jointly-distributed random variables, denoted a_{ij}, with $i \neq j$. Here a_{ij} represents the magnitude of a favor performed by player i for player j. Performing such a favor costs player i the amount $c_{ij}(a_{ij})$, so that the function c_{ij} denotes the cost function which pertains when player i performs a favor for player j. It is assumed that c_{ij} is continuous and strictly increasing and that $c_{ij}(0)=0$ for all i and j. The random variables a_{ij} are jointly-distributed according to the distribution function $F(a)$, where a is an $n(n-1)$ vector with components a_{ij}. Let S_{ij} denote the set of favors to be performed by player i for player j, so that S_{ij} contains values of the variable a_{ij}. Let S denote a combination of the $n(n-1)$ sets S_{ij}, where $i \neq j$. The value to player i of a relationship in which favors in the set S are performed is given by

$$V_i(S) = \frac{\delta}{1-\delta}\int_s \left[\sum_{j\neq i}\left[a_{ji} - c_{ij}\left(a_{ij}\right)\right]\right] \mathrm{d}F(a). \tag{7}$$

As in the previous sections, player i's strategy takes the form of a grim strategy, but now it is more complicated. The idea is that if player j deviates by not performing a designated favor, the other $n-1$ players punish player j by moving to another subgame-perfect equilibrium in which no favors are performed either for or by player j. Essentially, player j is ostracized, as in Hirshleifer and Rasmusen (1989). Formally, let S^{-J} denote the combinations of sets of favors to be performed if the players in the set $J \subseteq \{1, \cdots, n\}$ have deviated in the past. Each player's grim strategy, then, specifies what favors to perform on the equilibrium path, and what favors to perform in response to any possible combination of deviations by other players.

From here it is straightforward to construct individual rationality constraints, and they are essentially the same as the individual rationality constraint (3) for the two-player game. The relationship is worthwhile for the individual if the future value of the relationship exceeds the highest possible single-period cost of continuing the relationship. A subgame perfect equilibrium of the game is constituted by a set S which satisfies all of the individual rationality constraints.

Even without presenting the individual rationality constraints formally, several factors are worth discussing. First, the combination S assigns which members of the group perform which favors. The group can exploit comparative advantages by assigning the least-cost provider to perform each favor, as long as the individual rationality constraints continue to hold. These potential scale economies can explain why large informal favor networks arise. However, large networks also entail high monitoring costs so that deviations from the equilibrium path can be punished. In some cases two individuals in the group will never interact, and yet when one deviates the other must participate in the punishment. The strategy supporting the equilibrium requires that if one player ever fails to perform a designated favor for another player, all players immediately stop performing favors for the shirker. In addition, the players must also change the sets of favors they perform for the remaining group members.

Due to the multiplicity of equilibria, reaching an equilibrium also requires the group to solve a coordination problem. When the composition of a group changes, the coordination problem must be addressed again. The existence of the coordination problem when groups change composition provides both a rationale for and an argument against internal reorganizations within firms. If workers within a firm perform favors for each other, the firm benefits in terms of increased profit. If the workers have settled upon a ‘bad’ equilibrium, that is, one which does not realize all potential profits, the firm can benefit from a reorganization. By changing the composition of the group, the firm can force workers to change the sets of favors they perform. This process is not entirely without risk, though. Because of the multiplicity of equilibria, the reorganization might leave the firm with a worse equilibrium than the one before. This may explain why reorganizations occur in waves: firms continue to reorganize until some of the potential profits from favorable relationships are realized.

The analysis also has implications for behavior in hierarchies. Suppose that there is a group, as above, and that there is another player outside the group (henceforth, the dean). Members of the group can perform favors for each other, or for the dean, or both. The dean also performs favors, but her favors are public goods for the group. Thus, all members of the group benefit from any favors from the dean, whether or not they are participants in any long-term relationships. Note that favors benefitting the dean require effort by individuals, not effort by the group as a whole. Using the above analysis, it is possible to characterize behavior in an equilibrium. Each member of the group has a set of designated favors, some of which directly benefit other individuals in the group, and some of which benefit the dean. The dean also has a set of designated favors which she performs. If she deviates, though, it not only ends the flow of benefits from the group to the dean, but it also alters the exchange of favors within the group. Thus, the player outside the group can have an effect on the well-being of the group exceeding the direct benefit which she provides to the group.

5. Conclusions

Modeling the exchange of favors in the context of a repeated two-player game with a random component generated several results. Some favors may be too expensive to perform in equilibrium, so we should not expect to observe the performance of really large favors. Some favors which would be socially efficient to perform may not be performed, because the cost of performing them cannot be expected to be offset by the benefits from future favors, and some favors which are not socially efficient to perform may be performed in order to preserve the relationship. Both the players get positive expected surplus from the relationship, and therefore it is impossible for one player to extract all of the value. Each of these results holds up in settings with more than two players, and in settings in which market alternatives exist. In addition, either the existence of a larger group or the existence of a market allows for the exploitation of comparative advantages, thereby increasing the value of favor-exchange relationships.

Finally, the model demonstrates that the idea of owing a favor, or even of returning a favor, is inaccurate. Players do not perform favors because of what has happened in the past, they perform favors because of what they expect to happen in the future. Players may withhold favors because of past actions, but they do not perform favors simply because of past actions. In fact, it is entirely possible for an individual to perform a favor without having received any favors in the past, as long as the individual was not supposed to have received any favors in the past. This contrasts with the anthropology literature (e.g. Mauss, 1990) and the sociology literature (e.g Coleman, 1990) in which gifts or favors are seen as creating obligations for the recipient to take some reciprocating action that will benefit the donor.

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