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Author(s): Robin Naylor

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STRIKES, FREE RIDERS, AND SOCIAL CUSTOMS*

ROBIN NAYLOR

This paper applies the social custom model developed by Akerlof [1980] to the problem of explaining the logic of collective strike action. The paper demonstrates the possibility of stable long-run equilibrium levels of support for a strike. We also show that the model can be applied to the issue of explaining the existence of a trade union, and builds on the results of Booth [1985] in explaining stable intermediate equilibrium membership. The paper does not claim to provide a general theory of strikes, but demonstrates the value of the social custom approach in enhancing the understanding of this class of labor market behavior.

I. INTRODUCTION

In recent years there has been a growing literature on the role of social customs in the labor market. Marsden [1986], for example, has emphasized the importance of group norms and social custom in various labor market contexts. Jones [1984] develops an economic model of conformist behavior in which an individual's work effort is determined partly by tradition and by the behavior of other workers. A central theme of the literature is that a rational economic agent does not inhabit a social vacuum and hence that individual behavior is influenced, to some extent, by the actions of others. The approach promises the possibility of an escape from the free rider problem, which, as we shall investigate, might have a number of labor market applications. Such a potential has been suggested by a number of writers in different fields. Eiser [1978], writing from a sociopsychological perspective, has stressed the role of social norms in producing cooperative outcomes in the theoretical context of the prisoner's dilemma. Such an emphasis is consistent with Sen's [1977] argument that the concept of commitment might offer a solution to the free rider problem.

The more formal models of social custom are derivative of that of Akerlof [1980], in which the social custom was captured in the principle that labor should trade at a "fair wage." Akerlof was able to show that, "Social customs which are disadvantageous to the individual may nevertheless persist without erosion, if individuals are sanctioned by loss of reputation for disobedience of the custom." Booth [1985] develops a related model in which workers acquire utility from the reputation they derive from joining a union.

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If this utility should offset the positive costs of union membership, then the free rider problem is averted, and the model is capable of explaining the existence of trade union membership without compulsion. Hence, it can be seen as an improvement on Olson's [1965] discussion.

The social custom model would seem to offer a particularly useful framework for developing an explanation of strike behavior by trade unionists. A union strike call is highly vulnerable to the free rider problem: a strike is expensive to individual workers in terms of forgone earnings, yet the benefits derived from any wage increase are passed on to strikers and nonstrikers alike. This begs the question, "Why do workers strike?" One possible answer would focus on compulsion or intimidation; but this would not seem plausible for the majority of peaceful strikes. An alternative is to hypothesize the existence of a social custom in the workplace discouraging workers from free riding when a strike is called. This is consistent with the casual observation and sociological evidence of workplace mores inciting workers not to cross picket lines and of the cultivated disapprobation of the values of the free rider.

In explaining the logic of collective strike action, it is important to identify precisely the nature of the public good provoking the free rider problem. It is not the strike itself, but rather the potential outcome of the strike which possesses the public good characteristics. The outcome is likely to depend upon the proportion of workers joining the strike and upon the sensitivity of union success to this proportion. If union success, with respect to its objectives, is a strictly positive monotonic function of the proportion striking, then the public good is provided in full, if and only if, everyone strikes. The individual worker may have an incentive to free ride to avoid paying the costs of provision of this public good if the rewards from a strike cannot be allocated preferentially to those who join the strike. The paper is concerned with examining how a social custom approach might overcome this free rider problem.

The issue of what determines an individual's behavior with respect to a strike call is not simply of academic interest per se. The expectations held by both unions and employers regarding individual workers' responses to a strike call are likely to be a key factor in the bargaining process. Economic models of union decay functions (see, for example, Ashenfelter and Johnson [1969]) attempt to incorporate such information. Furthermore, adherence by individual workers to social customs has implications for collective goals, and hence for models of wage and employment effects of trade

unions (see, for example, McDonald and Solow [1981] and Oswald [1982]). If the specification of a union's objectives include scope for social custom considerations, it might begin to be possible to explain such phenomena as sympathetic strike action in the framework of economic theory.

This paper attempts to develop a social custom theory of strikes which, by incorporating sociopsychological factors into the conventional utility-maximizing model, offers the following: (i) to provide an explanation of the economic incentive to strike, (ii) to show short- and long-run equilibria in which workers choose to strike, and (iii) to demonstrate that the model applies equally well to the trade union membership decision and, hence, to build on Booth's [1985] results. The outcome is consistent with Akerlof's result that social customs that are costly for the individual to follow persist nonetheless. The present paper distinguishes between those who do and those who do not believe in the specified social custom, and assumes that individuals are heterogeneous in their preferences. Hence, this paper represents a closer application of the assumptions of Akerlof's model to the union/strike public goods problem than was implicit in Booth [1985], and it is claimed that the approach here offers novel and significant insights into the social and economic behavior of rational individuals in this context.

II. THE MODEL

The model is concerned with investigating the impact on individual behavior of a social custom invoking workers to support a strike when one is called. The solution method has no precedent in this context. It is assumed that social custom affects utility in a manner equivalent to that postulated in Akerlof's model. As there, a social custom is the invocation to "an act whose utility to the agent performing it in some way depends on the beliefs or actions of other members of the community." Our assumptions derive directly from those of Akerlof [1980].

A. Assumptions

ASSUMPTION 1. In our context an individual's utility is assumed to depend upon five arguments:

$$(1) \quad u = u(M, R, s, b, \epsilon),$$

where

M is money income; $M = \begin{cases} d & \text{if the individual strikes} \\ w & \text{otherwise.} \end{cases}$

R represents reputation enjoyed by the individual.

s is a dummy variable representing obedience or disobedience of the social custom. Hence,

$$s = \begin{cases} 1 & \text{if the individual strikes} \\ 0 & \text{otherwise.} \end{cases}$$

b is a dummy variable representing the individual's belief or disbelief in the custom.

$$b = \begin{cases} 1 & \text{if the person is a believer;} \\ 0 & \text{otherwise.} \end{cases}$$

ϵ represents an individual's personal tastes.

ASSUMPTION 2. The population consists of some fraction μ of believers and of $(1 - \mu)$ nonbelievers, where $0 \leq \mu \leq 1$ and μ is given in the short run.

ASSUMPTION 3. Individuals choose to strike if the utility from so doing is at least as great as the utility derived from not striking. λ represents the proportion of individuals who strike, where $0 \leq \lambda \leq 1$. In the short run, equilibrium is consistent with $\lambda \neq \mu$ as μ is held fixed in the short run. If $\lambda < \mu$, i.e., if some believers do not strike this period, then the proportion of believers falls next period.¹ Hence,

$$(2) \quad \dot{\mu} = f(\mu, \lambda).$$

If $\lambda < \mu$, f is negative; if $\lambda > \mu$, f is positive. The condition for long-run equilibrium is that $\lambda = \mu$ and, hence, that there is no further tendency for μ to change.

ASSUMPTION 4. An individual who strikes acquires utility from the reputation derived from obeying the social custom. This utility depends positively upon the proportion of believers (μ) and upon the individual's personal tastes. Utility is also conditional

1. It is assumed that if $\lambda < \mu$ only believers strike. Conversely, if $\lambda > \mu$, all believers strike. This is consistent with assumption (vi) about the distribution of personal tastes.

on joining the strike—hence,

$$(3) \quad R = R(s, \mu, \epsilon).$$

Utility derived out of reputation accrues to believers and nonbelievers alike.

ASSUMPTION 5. A person who disobeys the social custom forgoes reputation-derived utility. In addition to this, it is assumed that a believer who disobeys suffers disutility \bar{c} consequent upon the act of disobedience.² This sets up an asymmetry between the actions of believers and nonbelievers. More generally, we assume that nonbelievers who disobey suffer a utility loss \bar{g} as a repercussion of disobedience, where $\bar{g} < \bar{c}$.

ASSUMPTION 6. ϵ is assumed to be distributed uniformly between ϵ_0 and ϵ_1 , where $\epsilon_1 > \epsilon_0 > 0$. It is assumed further that if there are both believers and nonbelievers in the population (i.e., $0 < \mu < 1$), then the latter group consists of the individuals with the lower values of ϵ . For example, if there is just one believer, he or she is the individual, i , with $\epsilon_i = \epsilon_0$. An assumption of this sort is necessary for the construction of our model, but it has some intuitive plausibility anyway. It implies that the individuals who derive most utility from the reputation effects (Assumption 4) are most likely to be believers in the social custom, in any short-run equilibrium.

The distribution of ϵ is assumed exogenous in the model. We can think of heterogeneity of workers in this respect as deriving from different work experiences. Within a workplace the ranking of the ϵ_i 's might reflect a seniority or job-tenure ranking. The more this ranking is bunched, the greater the degree of homogeneity of worker's tastes. A model with a fuller explanation of the dynamics of change would endogenize the determination of ϵ in a reputation learning model; see Jones [1984].

In an empirical context we can more easily see what factors might produce heterogeneity of tastes. Let us compare two occupations: the first characterized by workplaces involving close interactions between workers, for example, in continuous production processes; and the second involving little contact between workers, for example, traveling salespersons. Then it might be reasonable to

2. This assumption, together with that of the heterogeneity of individual tastes, marks the major difference between this paper and that of Booth [1985]. The assumption follows Akerlof [1980].

predict from sociological analysis (see, for example, Kerr and Siegel [1954]) that the former group would be characterized by a greater expected value of ϵ . By the same analysis, heterogeneity of tastes within a workplace will be predicted to depend upon the extent to which the group of workers forms an "isolated mass." The more similar the experiences of the workers, the higher the mean and the lower the variance of ϵ .

B. Specification of the Choice Criteria

Let the utility function be specified as

$$(4) \quad u = w(1 - s) + ds + \alpha\epsilon\bar{\mu}\bar{s} - b(1 - s)\bar{c} - (1 - b)(1 - s)\bar{g},$$

where α is the coefficient on the reputation term, \bar{r} is the coefficient on μ , and the other terms are as specified above. There is no term picking up the impact of the worker's strike decision on the expected success of the strike in terms of the expected value of the marginal increase in the wage gain conditional on the worker striking. It is assumed that, at least in a large numbers context, this term approximates to zero.

Consider the behavior of a believer i . If he or she strikes, then $b = 1$, and $s = 1$. Hence,

$$U_i^s = d + \alpha\epsilon_i\bar{\mu}\bar{r}.$$

If he or she does not strike, then $b = 1$, and $s = 0$. Hence,

$$U_i^{ns} = w - \bar{c}.$$

Thus, the believer i will strike iff,

$$d + \alpha\epsilon_i\bar{\mu}\bar{r} \geq w - \bar{c};$$

i.e.,

$$(5) \quad \epsilon_i \geq (w - \bar{c} - d)/\alpha\bar{\mu}\bar{r}.$$

Similarly, a nonbeliever j will strike iff,

$$(6) \quad \epsilon_j \geq (w - \bar{g} - d)/\alpha\bar{\mu}\bar{r}.$$

The relationships,

$$(7) \quad \epsilon = (w - \bar{c} - d)/\alpha\bar{\mu}\bar{r}$$

and

$$(8) \quad \epsilon = (w - \bar{g} - d)/\alpha\bar{\mu}\bar{r},$$

can be represented graphically by the decision schedules in Figure I.

In the diagram, ϵ_0 is depicted as that value of ϵ satisfying equation (7) for $\mu = 1$. When $\mu = 1$, everyone is a believer. Hence, we are assuming implicitly that when $\mu = 1$ the believer with lowest ϵ is just indifferent between striking and not striking. This assumption is convenient for expositional purposes but will be relaxed later. By Assumption 6 the proportion of believers (μ) can be mapped onto the (ϵ_0, ϵ_1) interval by the downward-sloping linear schedule connecting $(\epsilon_0, 1)$ and $(\epsilon_1, 0)$ in $\epsilon - \mu$ space. This forms the distribution schedule in Figure I. Recall that ϵ is uniformly distributed. When $\mu = 0.25$, for example, one quarter of the population consists of believers. This group will be represented on the ϵ -axis by the highest quartile in the (ϵ_0, ϵ_1) interval, by Assumption 6. The lower three quartiles represent the ϵ values of the nonbelievers.

C. Equilibrium

Consider points h, k, m, n, p , and q in Figure II. At $k, \mu = 1$, and the individual with $\epsilon = \epsilon_0$ will strike as inequality (5) is satisfied by definition of ϵ_0 . Hence, all individuals strike, and $\lambda = \mu = 1$. This satisfies the long-run equilibrium condition. There are no free

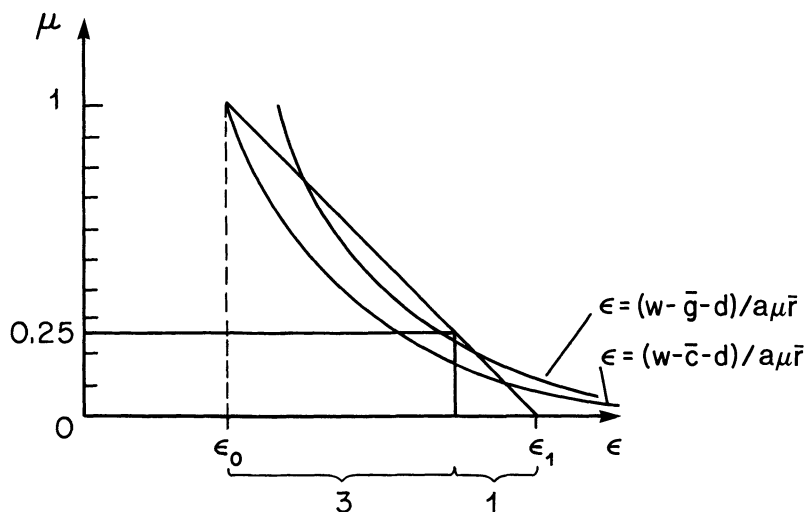


FIGURE I
Distribution and Decision Schedules

Assumption 3, μ will rise in the next period—represented by the upward-pointing arrow in Figure II. Points such as n , then, do not represent long-run equilibria: if n is a short-run outcome, there will be a tendency for μ to rise toward the equilibrium range bounded by points k and m .

At p it is simple to show that $\mu = \lambda$ and hence that we are back in long-run equilibrium. No nonbeliever has a net incentive to strike, as for such low values of μ there is little reputation-derived utility to be won by obeying the social custom. Nevertheless, believers, with stronger disutility repercussions from disobedience, are induced to strike. The same holds true for all points in the interval bounded by points p and q . However, as μ falls below the level implied at point q , the erosion of the reputation effect induces some believers to disobey. We could imagine some point t between q and ϵ_1 , such that $\mu_q > \mu_t > 0$. At such a point there will be at least some believers for whom $\epsilon_i < (w - \bar{c} - d)/\alpha\mu_t\bar{r}$. Hence, $\mu > \lambda$. In the next period μ falls, the process continuing until $\mu = \lambda = 0$ at which point long-run equilibrium is restored. The downward-pointing arrow in Figure II depicts this dynamic.

This particular configuration of the parameters, then, suggests multiple equilibria with equilibrium outcomes at $\mu = 0$ and in the ranges depicted by $k - m$ and by $p - q$. This result is termed a “trimodal outcome.”

D. Effects of Changing Parameter Values

1. As \bar{g} falls, the schedule $\epsilon = (w - \bar{g} - d)/\alpha\mu\bar{r}$ shifts to the right, and the interval $m - p$ diminishes, expanding the set of long-run equilibrium outcomes. Conversely, as \bar{g} tends to \bar{c} , the model collapses to yield only three long-run equilibrium outcomes: at $\mu = 1$, $\mu = 0$, and at point q in Figure II. In the context of the application of this model to the trade union membership decision, this outcome corresponds to Booth's result because, in setting $\bar{c} = \bar{g}$, we have replicated her assumption that there is no distinction between believers and nonbelievers. The point q , then, represents an unstable equilibrium.

2. As ϵ_0 falls, we find that $\mu = 1$ is no longer a long-run equilibrium. When everyone is a believer, there are now some individuals with values of ϵ sufficiently low to ensure the dominance of the pecuniary advantage derived from free riding. For those individuals, attention to reputation is weakened. The trimodality outcome is preserved if either \bar{g} or ϵ_i (or both) is sufficiently large.

3. The linear relationship between μ and ϵ , discussed in Assumption 6, is a consequence of the assumption of a uniform distribution of ϵ . If, on the other hand, the distribution was assumed normal, for example, then the distribution schedule would become concave. This would not affect the result qualitatively but would increase the probability of the trimodality outcome. A more homogeneous population of workers can be characterized by depicting a steeper distribution schedule with ϵ_0 and ϵ_1 brought closer together about a given mean. The main effect of this is to polarize the outcome toward $\mu = 0$, by increasing the range $q - \epsilon_1$, and toward a narrower band of high- μ equilibria by reducing the range $k - m$.

4. As d falls, the hyperbolae shift to the right, reducing the width of the intervals $m - p$ and $p - q$ in Figure II. Furthermore, as with the case of a fall in ϵ_0 , very high levels of μ are now incompatible with long-run equilibrium. Hence, higher levels of strike pay are more conducive to support for a strike.

5. As \bar{c} falls, the hyperbola representing the believers' decision function shifts to the right, reducing the widths of the intervals $k - m$ and $p - q$. Again, as above, very high levels of μ are no longer compatible with long-run equilibrium. Similarly, as the lower range of the $p - q$ interval is eroded, there is the tendency to undermine the solidarity rate in this region of μ .

The model developed in this section assumes that a strike is called over some issue and considers the determinants of a stable equilibrium level of support for the strike. We have assumed the potential outcome of the strike to possess public good characteristics in that any benefits arising from successful strike action cannot be allocated preferentially to those taking part in the strike. It is not necessarily the case, however, that all workers value equally the outcome of a strike. For example, in a model in which the probability of employment entered an individual's utility function, and in which there was a last-in-first-out employment rule, it is possible that less senior workers would be less willing to strike. This is because, for a downward-sloping labor demand schedule, less senior workers would value potential wage gains from a strike less highly than would their more senior colleagues. In an extension of the model to accommodate this case, we must rank workers by their seniority position in the firm. This suggests an interaction between perceived value of the public good and worker heterogeneity with respect to tastes for reputation. In discussion of Assumption 6 we suggest that taste heterogeneity might be seen as a proxy for

seniority. The assumption in this paper is that the potential public good is valued equally by all workers.

III. EMPIRICAL APPLICATION AND INTERPRETATION³

The model is able to make sense of a number of policies adopted by employers and governments to reduce the probability of support for strikes. First, action taken to reduce the income received by strikers (i.e., to reduce d) will be likely to reduce the level of support for a strike for the reasons analyzed in the previous section. It would be surprising if an economic model failed to make this prediction. Second, but less mundanely, it is likely that attempts to challenge the legitimacy of a particular strike will reduce the support for a strike to the extent that such attempts reduce the disutilities incurred by disobedience. In terms of the model, loss of legitimacy is interpreted as a fall in \bar{c} or \bar{g} , with the consequences examined above. Where the social custom is, as here, the invocation to strike, the employer or government might attempt to challenge the right to strike.⁴ Where a strike is interpreted as functional to the cause of, for example, "defending jobs," government might be seen as counterposing this principle with that of the "right to work."⁵ Either way, directly or indirectly, our model predicts that a challenge to the legitimacy of a strike might be a means of reducing the support for it, and hence makes economic sense of attempts to promote actions with the sanction of moral force. Third, the model predicts that a policy of exaggerating the numbers of workers ignoring the strike call will reduce support by reducing the perceived reputation effects.

Conversely, it follows that the model is capable of explaining union policies to

- (a) maximize strike pay,

3. Work by Becker [1957] and Arrow [1972] in the context of discrimination represents early attempts to incorporate the phenomenon of social custom into economic analysis. Arrow developed the signaling explanation of wage differentials. Our model is amenable to a signaling interpretation. We can think of a worker striking in order to signal himself or herself as a believer in the social custom and hence to derive the concomitant reputation effects. A longer version of the current paper, available from the author on request, demonstrates the relationship between the properties of signaling equilibria and those of the equilibria derived within a social custom model.

4. For example, calling on the "vocational" and "humanitarian" sympathies of groups such as the nurses.

5. For example, the competing "moral" crusades in Nottinghamshire on the one hand and Yorkshire on the other during the 1984–1985 coal dispute in Britain.

- (b) stress the legitimacy of the strike, and generally reinforce the sense of duty incumbent on members in rejecting the course of the free rider, and
- (c) exaggerate the numbers of workers supporting the strike.

Furthermore, we can also observe a possible impact of legally enforced pre-strike ballots, as recently imposed in the United Kingdom. If the situation is depicted as in Figure II, then we might have let μ_n represent an initial level of strike support of 45 percent. If a strike is permitted only if there is an initial level of support greater than 50 percent, expressed in a pre-strike ballot, the strike in this case would not go ahead. Yet if it were to do so, our model is predicting that the level of support would rise substantially above 50 percent. The timing of any ballot is clearly an important policy variable.

Finally, it follows also that the values of such parameters as ϵ , \bar{c} , and \bar{g} , inter alia, will vary not only over time but also across different groups of workers. In this way the model can be seen as providing a potential meeting point with sociological theory and debate. For example, Kerr and Siegel's [1954] well-known distinction between the "isolated mass" and the "integrated individual" can be translated into the terms of our model. In explaining the interindustry propensity to strike, the hypothesis of the location of the worker in society suggests, write Kerr and Siegel, that: "(a) industries will be highly strike prone when the workers (i) form a relatively homogeneous group which (ii) is unusually isolated from the general community and which (iii) is capable of cohesion; and (b) industries will be comparatively strike free when their workers (i) are individually integrated into the larger society, (ii) are members of trade groups which are coerced by government or the market to avoid strikes, or (iii) are so individually isolated that strike action is impossible." The isolated mass is said to possess its "own codes, myths, heroes and social standards." We might interpret the isolated mass as consisting of workers with high ϵ values in groups characterized by large values for \bar{c} and \bar{g} , generating typically high equilibrium values of μ and λ .

These predictions are useful from the point of view of testing the model empirically. Given appropriate data from a lengthy strike conducted at a number of establishments between a union and a firm, our model could be tested against a number of predictions. The theory suggests that both high and quite low initial solidarity rates are sustainable over time, while intermediate initial rates will induce increasing support to some limit, and, conversely, very low

rates will tend to atrophy. Furthermore, suitable information about the individual establishments would enable predictions about which establishments will be characterized by which type of equilibrium. For example, μ will be predicted to be higher in establishments characterized by close worker interactions (both at work and in terms of residence or social intercourse), by high strike pay and by a less paternalistic management, less able to establish social customs that compete with codes of union loyalty.

IV. APPLICATION OF THE MODEL TO THE UNION MEMBERSHIP DECISION

Booth [1985] develops a social custom model of unionization. In applying our model to the analogous issue of the union membership decision, we can see the Booth result as a special case. We approximate the Booth model by assuming no distinction between believers and nonbelievers with respect to the disutility parameter, i.e., $\bar{c} = \bar{g}$, and by assuming that workers are homogeneous. Thus, there is a single decision schedule, and the distribution schedule is vertical at some value of ϵ , say $\bar{\epsilon}$. These are represented diagrammatically in Figure III.

Suppose that $1 > \mu' > \mu_m$; then at μ' , any individual with $\epsilon_i \geq \epsilon'$ will join the union. Indeed, the individuals have $\epsilon_i > \epsilon'$, and hence, $\lambda = 1$. Next period all workers will believe, and so, all will continue

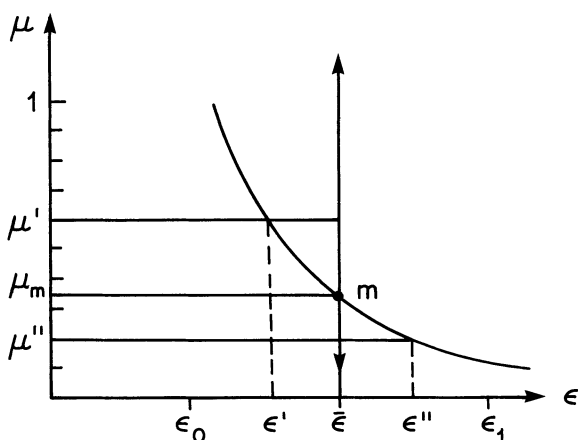


FIGURE III
Union Membership Equilibria with $\bar{c} = \bar{g}$ and Homogeneous Workers

to join: $\mu = \lambda = 1$ is a stable equilibrium. Similarly, we can show that with $0 < \mu'' < \mu_m$ there will be a tendency for μ to fall to zero. As in Booth [1985] we find that the assumptions of worker homogeneity with no differential social custom effect produce a single unstable intermediate equilibrium with stable equilibria at $\mu = \lambda = 0$ and $\mu = \lambda = 1$.

V. CONCLUSION

This paper offers a new application of a social custom model to the context of an individual's strike decision. The model is employed in an attempt to overcome the free rider problem which can bedevil attempts to explain the logic of collective action. The model has wider applications, for example, to the worker's union membership decision. Because it incorporates not only reputation effects, but also disutility effects of disobedience of the social custom, in the tradition of Akerlof [1980], it is felt that the model is capable of generating significant explanatory power over empirical events, as well as being amenable to empirical testing of its theoretical predictions. Furthermore, the theory offers a potential interface for economic and sociological debate in this area.

It has been assumed that, as far as the workers are concerned, the strike outcome is a public good. With individualistic utility maximization in the absence of reputation and disobedience disutilities, the public good will not be provided. The existence of the social custom allows the possibility that at least some individuals will behave cooperatively and hence possibly escape the prisoners' dilemma. Each individual is still motivated only by self-interest. The moral solution comes about because of the assumption that social-regarding individuals are now reluctant to become free riders. The effects are channeled through the utility function. In other models the moral solution follows from the assumption that individuals become either altruistic or Kantian (see Collard [1978] and Titmuss [1970]). Parfit [1984] discusses this set of alternatives most clearly. The model does not claim to represent a general theory of strikes. In particular, the utility function that motivates the model is specific. The aim is to contribute to a previously unexplored, but potentially important, aspect of strike theory.

WARWICK UNIVERSITY, UNITED KINGDOM

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