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Abstract:
Universal norms, such as the requirement to work for self-support, are applied equally to rich and poor. Selective norms, such as the stigma attached to lone parenthood, seem to be imposed more heavily on those with lower incomes. Society sets a level of income at which a person is "too poor" to be accepted as a single parent because the baby cannot be supported adequately; the parent requires welfare assistance, which is costly to taxpayers, who respond by applying stigma. The income level below which stigma may be applied is endogenous, being effected by the generosity of welfare policy and the cohesiveness of the community. The paper shows that this endogeneity of a non-universal norm considerably muddies comparative statics found elsewhere in the literature. For example: A community that becomes more cohesive is better able to enforce a given norm, but it will also soften the norm so as to reduce enforcement costs. The net effect on behavior (a softer norm more strongly enforced) is ambiguous. Another implication of the model is that communities with higher incomes tend to be more permissive. This is consistent with the observation that over time, with economic growth, social control of the poor has grown weaker in most developed societies.

I. Fixed norms vs. endogenous norms

Recently decision makers in the area of welfare policy have become interested in ways to enlist the community in efforts to change behavior that can lead to poverty. Attention has focused on social norms in favor of work, family, and education, and against crime and substance abuse.[1] Some of these norms are universal: virtually everyone in society is expected to work or be involved in some other activity like schooling. A life of crime or welfare receipt is considered acceptable for no one.

Other norms are selective, however, and there are open debates about which groups should be subjected to the norm and which should not. Some think no one should be a single parent; others think single parenthood is acceptable for those who have the economic means to raise the child. By reverse implication, this means that virtually everyone thinks there are some people who are too poor to raise a child on their own. Thus if stigma is attached to lone parenthood at all, it probably falls more heavily on the poor than the rich, although just how poor a lone parent has to be before being stigmatized will depend on the community in which she lives. Her community may set a soft norm, saying that only those with a very low income are 'too poor' to be lone parents. Or it may set a harsh norm, requiring a fairly high income before lone parenthood is acceptable. In any case the position of the norm in the income distribution is endogenous, affected by the community's power to enforce its norms (however defined) and by the welfare system's policy with respect to poor single parents.

This paper develops a model in which the norm is endogenously selective as described above. This is a new approach to norms and their relationship to public policy. Previous work has only dealt with norms that are universal (Akerlof, 1980; Lindbeck, 1995; Lindbeck, Nyberg,

and Weibull, 1997) or that are selectively applied to the poor but not endogenously.[2] Such models identify a fixed group of people called 'the poor' and applies the norm to all of them equally (Besley and Coate, 1992; Montgomery, 1994; Nechyba, 1996).[3] In models with this structure there are fairly intuitive comparative statics between norms and policy. When policy rewards 'bad' behavior, more people violate the norms against it. More cohesive communities impose more stigma and are better able to control 'bad' behavior. Similar results are found in this paper's model when norms are fixed.

However, the paper goes on to show that if the norm is allowed to move in response to the interests of the citizens, it will tend to move in a way that confounds the usual comparative statics. If a community becomes more cohesive, for example, the usual comparative static would indicate that the norm is more powerfully enforced and the stigmatized behavior is reduced. If the definition of the norm is endogenous, however, the enhanced community cohesion will cause that definition to soften. The reason is that interdependence cuts both ways. In a more cohesive community, everyone is more interdependent and the act of ostracizing an individual is more painful for the group. Thus, although it is true that the community now has more power over the individual, it is also true that loss of an individual is now more costly for the group. With increased power, the community can better enforce its norms. With enforcement being more costly, the community will want to reduce the amount of enforcing it has to do. Thus the more cohesive community will generally choose to enforce softer norms with greater diligence. Unfortunately, the net effect on behavior is unclear: a softer norm encourages bad behavior, but the greater diligence discourages it. Thus the main result of the paper is a caveat to the preceding literature: if social notions of right and wrong can be changed by policy, there will no longer be a

clear theoretical connection between policy and behavioral outcomes. Or, if a real-world policy has the intuitive effect, it will be weaker than expected because of the norm shift.

While this is a negative result, the endogenous selectivity of norms also produces more positive results. By explicitly modeling the position of the norm, we can relate the permissiveness of society to underlying conditions. So, for example, the model shows that richer societies are more permissive; greater wealth lessens the marginal utility consequences of tax effects, making the benefits of enforcing norms comparatively weaker compared to the costs.

The results are obtained using evolutionary dynamics to determine the likelihood that norms will be enforced. It then examines the response of behavior in equilibria where norms are enforced and where they are not, as well as the impact of public policy on the likelihood of the various equilibria.[4] The paper also explores the distributional consequences of norm enforcement, showing that the poor and the non-poor may jointly prefer a norm-free society.

The paper is organized in six sections. Section II sets up the basic model and derives conditions for permissive and punitive equilibria. Section III presents simple comparative statics with respect to the frequency of lone parenthood. Section IV considers the consequences of more complex policy changes. Section V explores some extensions of the basic model. Section VI examines distribution issues and economic growth. Section VII concludes.

II. A model of endogenous selective norms

The model will be presented in three sections. The first section defines the choice environment and the policy environment. The second section holds the social norm fixed and derives conditions for punitive and permissive equilibria (respectively, equilibria in which the norm is enforced or ignored). The third section lets the norm be endogenous.

A. Structure of choices and policy tools

Society consists of M people, indexed i = 1, ..., M, M large and odd. Each agent is endowed with an exogenous income y_i, distributed uniformly on $[0, \bar{y}]$. Income provides utility according to the function u(y), with u' > 0, u'' < 0. The government sets a poverty line, Π; agents with incomes below Π are the poor and all others are the non-poor. The poverty rate is $\pi = \Pi/\bar{y}$ and the number of poor people is πM. The number of non-poor people is $(1-\pi)M$.

Poor agents may choose to be a lone parent (choose $\sigma_i = 1$) or not ($\sigma_i = 0$) at a cost c.[5] Lone parenthood increases utility for some more than others; let the utility increment of lone parenthood for poor agent i be s_i, distributed uniformly and independently of income on $[0, \bar{s}]$.[6]

Only those poor agents who become lone parents are supported by the welfare system; they receive a grant g. This policy structure is common in the U.S., which has traditionally offered much more assistance to poor single parents than to other poor families. The now-defunct Aid to Families with Dependent Children (AFDC) program, most of whose principles are being maintained by the states, offered assistance only to single parents until relatively recently. Studies of AFDC recipients show that grants are not so generous that it is possible to make money by having children (Edin and Jencks, 1992), so c > g.[7]

There is a selective norm $\phi \in [0, \Pi]$ such that agents with incomes below ϕ who choose $\sigma = 1$ open themselves to being sanctioned by other agents. The idea is that those with very low incomes are doing something "wrong" to have children whom they will have difficulty supporting. For the moment, consider ϕ exogenous. The norm is enforced when agents interact with one another; specifically, each agent interacts with N other agents chosen at random from the population. Thus the probability that an interaction will be with a poor agent is π, with a non-poor agent $(1-\pi)$. (For now assume that poor and non-poor agents face the same probabilities; this will be relaxed in Section V.)

All non-poor agents adopt one of two strategies when encountering others: to punish violations (choose $p_i = 1$) or not to do so ($p_i = 0$). An agent who chooses the punishment strategy will impose a punishment on poor agents who have violated the social norm (i.e. lone parenthood yet income below ϕ). A punishing agent will also punish other non-poor agents who have not adopted the punishment strategy themselves. (The norm cannot be enforced unless enforcement is also enforced; see Sethi and Somanathan, 1996, p. 774). A punishment imposes a cost δ on the victim and another cost θ on the punisher. These costs may be material (not offering a job or a loan), social (staring, scolding, or ignoring), or emotional (cognitive dissonance, shame, guilt). Presumably $\theta < \delta$ though it is not necessary for any of the results. Let the rate of punishment be b, defined as the number of non-poor agents who adopt the punishment strategy as a fraction of the non-poor population $(1-\pi)M$.

Define the *severely poor* as those with incomes below ϕ; define the *mildly poor* as those with incomes between ϕ and Π. The severe poverty rate is $z = \phi/\bar{y}$, the mild poverty rate is $x = (\Pi-\phi)/\bar{y}$; $\pi = z + x$. The *violation rate* v is the rate of lone parenthood among the severely poor;

the *toleration rate* q is the rate of lone parenthood among the mildly poor. The overall rate of lone parenthood is $l = vz + qx$; this is the variable whose movements are of greatest interest.

Lone parenthood among the poor affects the well-being of the non-poor in two ways. First, the non-poor pay a lump-sum tax, t, to cover the costs of welfare. Using the above definitions, the total number of poor lone parents is lM; the total tax burden is therefore lMg and the tax burden per non-poor agent is $t = lg/(1-\pi)$. Second, non-poor agents are altruistic and bear a disutility α for each poor lone parent. The public "bad" of poverty lone parenthood thus reduces each non-poor agent's utility by αlM. (The assumption that altruism is the same for both the severely and mildly poor will be relaxed in Section V.)

For tractability, let the utility of the poor be linear: $u(y) = \gamma y$. Then the objective functions of the various agents are:

Severely poor ($y < \phi$): $V_s(\sigma_i; b) = \gamma(y_i-\sigma_i(c-g)) + \sigma_i s_i - \sigma_i b(1-\pi)N\delta$

Mildly poor ($\phi < y < \Pi$): $V_m(\sigma_i; b) = \gamma(y_i-\sigma_i(c-g)) + \sigma_i s_i$

Non-poor ($\Pi < y$): $V_n(p_i; b) = u(y_i-lg/(1-\pi)) - p_i(vz+(1-b)(1-\pi))N\theta$

$$- (1-p_i)b(1-\pi)N\delta - \alpha lM$$

For the severely poor, choosing lone parenthood causes punishment costs equal to the rate of punishment (b) times the expected number of encounters with the non-poor ($(1-\pi)N$), times the cost of each punishment, δ. The mildly poor are neither punished nor punishers. The non-poor who punish bear imposition costs θ for the number of violators they encounter (vzN) as well as the number of non-punishers ($(1-b)(1-\pi)N$). Those who do not punish are punished themselves by $b(1-\pi)N$ others.

In this environment the generosity of the welfare system is given by the size of the welfare

grant, g, and the importance of community in daily life is given by the number of encounters, N. Both are considered to be policy parameters. Other policy parameters that might bear interest include δ and θ, which determine the technology of imposing stigma, and Π, which changes the relative numbers of poor and non-poor citizens.

B. Equilibria under a fixed social norm

An equilibrium has each poor agent choosing lone parenthood and each non-poor agent choosing to punish if and only if that alternative offers the highest utility. In addition the aggregate decisions must produce an actual rate of punishment that is consistent with the rate that makes those decisions optimal. Evolutionary dynamics will be used to identify these equilibria. The particular mechanism to be employed is the replicator dynamics, in which each agent is endowed with a strategy and then is more likely to produce an offspring (who also is endowed with the strategy) as the utility provided by the strategy increases. This biological description may seem inappropriate for social science, but the replicator dynamics can also be produced by more sociologically-motivated dynamics. For example, they can be equivalent to a process in which agents hold on to strategies until they seem to perform quite poorly, and then switch to some randomly-chosen other agent's strategy. Or they can emerge if agents observe (even with noise) the success of other agents' strategies and then switch to those that seem to be doing best (Weibull, 1995, pp. 152 - 161). The specific form of the replicator dynamics states that if the population share of some strategy s is x, and the payoff to the strategy is u(s,x), then the period change in the population share is $\dot{x} = (u(s,x) - u(x,x))x$. Strategies proliferate (or not) to the extent that they perform better than the "average" strategy. The input to the replicator

dynamics here is the objective function of non-poor agents, which is in turn a function of the choices of the poor agents. A severely poor agent will choose lone parenthood if and only if $s_i > \gamma(c-g) + b(1-\pi)N\delta$. Therefore the violation rate is

$$v = \frac{1}{zM}\int_0^{\phi} \bar{s} - \gamma(c-g) - b(1-\pi)N\delta \; dy \qquad \textbf{(1)}$$

Normalizing the population (M = 1), $v = \bar{y}(\bar{s}-\gamma(c-g)-b(1-\pi)N\delta)$. Similarly, mildly poor agents will choose lone parenthood if and only if $s_i > \gamma(c-g)$, and the toleration rate is $q = \bar{y}(\bar{s}-\gamma(c-g))$. The overall lone parenthood rate is $l = vz+qx = \Pi(\bar{s}-\gamma(c-g)) - \phi b(1-\pi)N\delta$. With these formulas the objective function of non-poor agents is:

$$\begin{aligned} V_n(p_i;b) = u(y_i - \frac{g}{1-\pi}[\Pi(\bar{s} - \gamma(c-g)) - \phi b(1-\pi)N\delta]) \\ - p_i[\bar{y}(\bar{s} - \gamma(c-g) - b(1-\pi)N\delta)z + (1-b)(1-\pi)]N\theta \\ - (1-p_i)b(1-\pi)N\delta \\ - \alpha[\Pi(\bar{s} - \gamma(c-g)) - \phi b(1-\pi)N\delta] \end{aligned} \qquad \textbf{(2)}$$

The replicator dynamics indicate that the change in the punishment strategy is $\dot{b} = (V_n(1; b) - V_n(b; b))b$. This reduces to (recall $z = \phi/\bar{y}$):

$$\begin{aligned} \dot{b} = \{-(1-b)[\phi(\bar{s} - \gamma(c-g) - b(1-\pi)N\delta) + (1-b)(1-\pi)]N\theta \\ + (1-b)b(1-\pi)N\delta\}b \end{aligned} \qquad \textbf{(3)}$$

The parameters measuring tax burdens and altruism effects drop out; as pure public goods, they have no influence on the optimality of punishment strategies. The stationary states of the system

($\dot{b}$=0) include b=1 and b=0; these will be called the *punitive* and *permissive* equilibria, respectively. A third stationary state is

$$b^* = \frac{\phi(\bar{s} - \gamma(c-g)) + (1-\pi)}{(1-\pi)(1 + (\theta^{-1} + \phi N)\delta)} \qquad \textbf{(4)}$$

At values of b greater than b^*, $\dot{b} > 0$; at values less than b^*, $\dot{b} < 0$. Hence the extreme states b=0 and b=1 are stable while $b=b^*$ is not. Exogenous changes that raise b^* make the "basin of attraction" of the permissive equilibrium larger; they can be interpreted as changes which increase the likelihood of the permissive equilibrium.[8] Examination of b^* shows that the probability of the permissive state increases with increases in welfare grants (g) and punishment costs (θ). The probability of the punitive state rises with increases in community size (N), the norm (ϕ), the cost of violation (δ), and the costs of having children (c). The effect of the poverty line (Π, which determines π) cannot be signed.

In the permissive equilibrium there is no sanction against lone parenthood, which reaches its maximum at $l^{max} = \Pi(\bar{s}-\gamma(c-g))$. Lone parenthood reaches its minimum in the punitive state, when it is sanctioned by all non-poor agents: $l^{min} = \Pi(\bar{s}-\gamma(c-g)) - \phi(1-\pi)N\delta$. In words, all Π poor agents with parenthood utilities s_i between $\gamma(c-g)$ and the upper bound $\bar{s}$ would be lone parents in the absence of sanctions. With sanctions, the ϕ severely poor agents will be lone parents only if their parenthood utilities lie between $\gamma(c-g) + (1-\pi)N\delta$ and the upper bound $\bar{s}$. The utility hurdle is raised by the amount $(1-\pi)N\delta$: the punishment δ multiplied by the expected number of non-poor agents encountered in the community $(1-\pi)N$.

In principle the sanctioning system could reduce all violations to zero, if $\bar{s}-\gamma(c-g) < \phi(1-$

$\pi)N\delta$. This seems unrealistic, however, since there are few norms that enjoy universal adherence, even in punitive societies. Therefore assume that violations are positive even in the punitive equilibrium: $\bar{s}-\gamma(c-g) > \phi(1-\pi)N\delta$.

C. An endogenous norm

As discussed in the introduction, selective norms are often heavily debated and their precise definition is more likely to be endogenous than fixed. The modeling issue is how to endogenize the norm: if the norm moves, why does it do so? As a starting point it is best to recognize that the position of the norm has consequences for individual well-being. Each agent has a utility-maximizing norm that she would impose if given the power. An agent's ideal norm moves in accord with changes in her economic situation. A policy which raises her tax burden would perhaps lower her ideal norm, making her someone who wants to subject more people to stigma against lone parenthood.

Changes in individual ideal norms should then affect the position of the actual, effective social norm. The mechanism by which individual ideal norms would aggregate to a defined social norm is not obvious, however. The social norm is effectively a coordination problem: given that everyone else is enforcing the social norm at definition X, each individual non-poor agent should do so as well. The reason is simple. Enforcing only his own ideal norm makes no sense: his actions will not induce anyone else to enforce his ideal norm, and therefore his punishments will not have the aggregate effect on the behavior of the poor that his ideal norm would have imposed. The agent's choice is only to enforce the norm X or not. If he does not, he is punished by all the other agents without any corresponding benefit. Therefore, in the punitive equilibrium any X can

be supported as the equilibrium norm. How then does society choose X from among the infinite number of norm definitions that are possible?

Solutions to coordination problems such as this tend to use the idea of the focal point. History, or a leader, can induce coordination on a particular outcome. In the context of these social norms, coordination is the outcome of the ongoing social debate about right and wrong. The existence of this debate, and the position of its participants, offer a hint as to how the norm coordination modeling problem should be solved. Those who debate social rights and wrongs are in competition with one another, to sell newspapers, to gain votes, and to fill pews. Simplifying, one could imagine an outcome in which one of these debaters wins the competition. Then all the agents in society conclude that debater's norm will be the effective social norm. In effect, the debate produces a winner, and the winner's norm becomes the focal point of the norm coordination problem. To predict the position of society's norm, it is only necessary to predict who will win society's moral debates. Usually, victory goes to debaters with more middle-of-the-road positions; fringe groups make more noise but are typically smaller, with lower circulation and attendance, and fewer votes. It follows that the social norm will settle somewhere in the middle of the distribution of ideal norms.

Putting this idea into practice, let the social norm be defined as the median of the ideal norm distribution.[9] In permissive equilibria all agents like all norms equally well, since they are only empty words. In punitive equilibria norms have real consequences, however. For the poor, these consequences are always negative, since the only effect of the norm on the poor is potential or actual social punishment; for them the ideal norm is zero: no one is "too poor" to be a lone parent.[10] For the non-poor there is some interest in having non-zero norms, hence if the poverty

rate is small the median norm will be that of a non-poor agent. (Alternatively one could simply assume that the poor do not vote and have no power over the setting of the norm.) In either case the median ideal norm is found by optimizing non-poor utility with respect to ϕ. In the punitive equilibrium non-poor agent utility is given by Equation (2) setting b and p_i to 1. Maximizing with respect to ϕ yields the first-order condition:

$$F \equiv \frac{\partial V}{\partial \phi} = \frac{\partial u(y_i,\phi)}{\partial y_i} gN\delta - (\bar{s} - \gamma(c-g) - (1-\pi)N\delta)N\theta + \alpha(1-\pi)N\delta = 0 \qquad \textbf{(5)}$$

The first term is a tax effect: raising the norm puts more of the poor under sanction and reduces lone parenthood, thereby reducing the tax burden of welfare. The second term is an enforcement effect: raising the norm raises the number of punishments which must be meted out, at a cost θ for each. The third term is an altruism effect: raising the norm reduces the number of under-nourished poor children, thus reducing a public bad. The ideal norm balances the benefits of reducing taxes and the number of poor kids against the costs of enforcing norms.[11] It is bounded at 0 and Π: lowering the norm below zero and raising it above Π has no effect on the number of poor drawn under the threat of sanctions (already none or all respectively), therefore it can have no effect on non-poor utility.[12]

The norm appears linearly in $u(y_i,\phi)$, hence the second-order condition is negative and (5) produces a unique maximum for each agent, denoted ϕ_i^*. For any parameter x, $\text{sign}(F_x) = \text{sign}(\partial\phi_i^*/\partial x)$. Because of the conflicting interests of the non-poor, however, the derivative of (5) with respect of most of the parameters of interest cannot be signed. For example, F_g gives the response of norms to increases in welfare grants:

$$F_g = (gu'' \frac{\partial u}{\partial g} + u')N\delta - N\theta\gamma \quad \textbf{(6)}$$

where primes indicate income derivatives.[13] With $\partial u/\partial g < 0$, the first term is positive: raising grants raises welfare costs and hence tax burdens, which generates a demand in the populace for a harsher, higher norm. The second term is negative: raising grants encourages more lone parenthood, which raises the number of norm violations, which makes enforcing a given norm more expensive, which generates a demand in the populace for a softer, lower norm. Perhaps intuition sides with the second term; perhaps the usual effect of making welfare more generous is to make norms harder to enforce, causing the non-welfare population to "burn out" and move in the direction of tolerance. The story will be true if the costs of punishing (θ) are sufficiently higher than the costs of being punished (δ), or if the tax burden of welfare or the income derivatives are small. On the other hand, perhaps one might think that the costs of punishing are trivial, in which case only the first term matters. A priori it is not clear which effect will be more important.

One can tell similar stories for several other parameters of interest. Specifically, the response of ideal norms cannot be signed with respect to community size (N), the poverty line (Π), the cost of violations (δ), or the cost of having children (c). On the other hand, the ideal norm rises with increases in the degree of altruism in the non-poor population (α); it falls with increases in the cost of imposing punishment (θ), and with income (y). Perhaps the altruism result is counter-intuitive, in that altruists desire tougher norms; yet if altruists are concerned about the number of children without adequate material support, it is understandable that they would prefer norms that reduce this number. Lastly it is worth noting that richer agents prefer softer norms, a

result generated by the model's assumption that the utility impact of tax burdens falls with income while the utility impact of punishment remains constant. It follows that richer societies (with their richer median agents) choose softer norms. As this outcome seems consistent both with the past experience of wealthy countries and with comparisons across countries with different levels of wealth, the assumption behind it seems to be sensible.

III. Comparative statics with respect to behavior

The model can be used to find the impact of policy on the rate of lone parenthood, taking into account the fact that society's enforcement efforts may help or hinder the intended policy effects. The norm enforcement system only exists in the punitive equilibrium, so attention will be focused there. Enforcement actions become important in two ways: in the response of norm enforcement under a fixed norm, and in the response of the norm itself.

A. Fixed norms

The lone parenthood rate is $l = vz+qx = \Pi(\bar{s}-\gamma(c-g)) - \phi(1-\pi)N\delta$. With ϕ exogenous, the comparative statics are simple: lone parenthood rises with increases in welfare grants and the poverty line, and falls with increases in community size, the costs of violation, and the costs of having children. Each result matches intuition. Especially, the idea that enhancing the cohesiveness of the community (by raising N or δ) can reduce lone parenthood; cutting welfare is not the only means available.

B. Endogenous norms

When norms respond to policy changes, however, these straightforward predictions are no longer valid. Raising welfare grants, for example, may or may not increase lone parenthood: $\partial l/\partial g = \Pi\gamma - (1-\pi)N\delta(\partial\phi/\partial g)$; the second term cannot be signed. If one suspects that norms soften when grants are increased, then $\partial\phi/\partial g < 0$ and the total effect is positive. If norms get tougher when grants increase (as when enforcement costs θ are trivial), then $\partial\phi/\partial g > 0$ and the expression still cannot be signed. Thus one cannot in general predict that raising grant amounts will lead to lone parenthood, or vice versa. The norm system may resist the immediate financial incentive produced by the policy.

The same result holds for communitarian policies: $\partial l/\partial N = -(1-\pi)\delta(\phi+N(\partial\phi/\partial N))$. Raising the number of community interactions has the direct effect of enforcing the norm more powerfully, lowering the lone parenthood rate ($-(1-\pi)\delta\phi$). Yet enforcing the norm is expensive; the populace may desire a softer, less expensive norm and $\partial\phi/\partial N$ may be negative. In that case the stronger community may become a more tolerant community, and it may become so much more tolerant that lone parenthood rises. Ambiguous predictions also hold for the poverty line, the cost of violation, and the costs of having children. Indeed only one effect can be signed. The cost of punishing (θ) has no direct effect on lone parenthood, but it has an unambiguously negative effect on the norm. Thus increases in punishing costs lower the norm, which unambiguously raises lone parenthood.

C. The permissive equilibrium

Finally, note that in the permissive equilibrium the lone parenthood rate is $\Pi(\bar{s}-\gamma(c-g))$. With no community effects, the only way to reduce lone parenthood is to cut welfare or the poverty line, or to raise the costs of having children.

D. Summary of results

Overall, the comparative statics show that one can predict with some accuracy how policy changes affect the probability of transitions from punitive to permissive equilibria, and within the punitive equilibrium how they affect lone parenthood if norms remain constant. If norms are endogenous, however, there are virtually no clear predictions. The ambiguity arises from the conflicting interests of non-poor voters in the harshness of the norm: harsh norms work well but are expensive to enforce. Table 1 summarizes the predictions.

IV. Practical policy reforms

A. Workfare

Workfare programs leave welfare grants at about the same level but require their recipients to work. This effectively reduces the utility value of the welfare grant to the recipient, so it acts like a cut in the grant amount. At the same time, however, workfare may be perceived by recipients as a form of norm enforcement, a punishment for failing to be self-supporting. Indeed workfare is generally not imposed on those who are also often deemed to be the "deserving" poor: the elderly, and mothers of infant children. Moreover, workfare may produce something of value to the community. For both reasons workfare relieves the non-poor of some

of the burden of enforcing norms, both because the government does some of the norm-enforcing itself, and also because the way the government enforces norms produces public goods instead of public bads. Putting this in the context of the model, workfare acts as a cut in welfare (g) accompanied by a reduction in the non-poor's cost of norm enforcement (θ).

From Table 1 one can infer that such a policy is more likely than welfare cuts alone to reduce lone parenthood. Both aspects of the policy encourage the punitive equilibrium. Within the punitive equilibrium, the grant cuts reduce lone parenthood if norms are fixed. When norms are endogenous, the effect of grants cuts is unsigned but the effect of cheaper enforcement is not: if government takes over some of the burden of norm enforcement, ϕ rises, and norms become tougher as more of the poor are taken into the sanctioning system. The workfare approach helps assure that norms do not erode in response to a policy change. The more general lesson is that when norms are endogenous, and there is some concern that a policy may soften them, it makes sense to add a policy feature that can reduce the public's enforcement costs.

B. Public child care

Table 1 indicates that public subsidies to child care (reductions in c) would increase the probability of the permissive equilibrium and increase lone parenthood in the punitive equilibrium if norm-shifting effects are small. Some reform proposals involve a more extensive intervention, however, that would place the children of severely poor parents in foster care or orphanages. While this lowers the cost of having children out of wedlock, it also changes the utility parents receive from the children and removes the justification for welfare support. In the model, this can be interpreted as a reduction in c, a reduction in $\bar{s}$, and a reduction in g. The reduction in $\bar{s}$ is

motivated by the idea that removing children to foster care greatly reduces well-being for those with great desire to have children, and has less effect on those whose desires are not as strong; the distribution of s collapses. The reduction in welfare grants occurs only for the parents; taxpayers are still assumed to bear a burden in the amount g for raising the children in foster care.

In the model, the effect of this combination on lone parenthood would be complex. Since $c > g$, the net effect of removing both would be to encourage lone parenthood. Yet the reduction in $\bar{s}$ discourages it; whether lone parenthood rises or falls depends on the parameters, specifically on the change in the term $\bar{s}-\gamma(c-g)$. Secondly, this term appears throughout the equations regulating norm enforcement but its total impact is not clear. Supposing for the moment that the utility effect of having children removed is greater than the cash effect, assume that $\bar{s}-\gamma(c-g)$ falls as a result of the orphanage policy. Then from (4) it can be seen that the probability of the punitive equilibrium rises. Unfortunately the impact on other aspects of the comparative statics (for example, the effect of norm changes on non-poor agent utility) cannot be signed. As with simpler policies, the effect of an orphanage policy is theoretically ambiguous.

V. Extensions

A. Segregation

In the model, each agent encounters N other agents drawn at random from the population at large, so that all agents, rich or poor, expect to meet $(1-\pi)N$ non-poor agents and πN poor agents. Of course it is more likely that poor agents meet poor agents and less likely that they meet rich agents. To build this into the model, let the probability that a poor agent meets a non-poor agent be $1-\pi' < 1-\pi$. Also, let the probability that a non-poor agent meets another non-poor agent be $1-\tilde{\pi} > 1-\pi$. This implies that although the lone parenthood rate among the severely poor remains at z, the probability that non-poor agents will encounter severely poor lone parents is some number $z' < z$. With these modifications the cut point between the punitive and permissive basins of attraction becomes

$$\tilde{b} = \frac{\bar{y}(\bar{s} - \gamma(c-g))z' + (1-\tilde{\pi})}{(1-\tilde{\pi})(1+\delta/\theta) + \bar{y}(1-\pi')N\delta z'} \qquad \textbf{(7)}$$

Increases in social segregation of the poor from the non-poor imply decreases in $1-\pi'$ and z' coupled with an increase in $1-\tilde{\pi}$. The overall effect cannot be signed; barriers between the poor and the non-poor reduce the impact of punishment strategies (which decreases their attractiveness to the non-poor) but it also makes them less expensive to adopt (which increases their attractiveness). If one downplays the second aspect by letting the cost of enforcement go to zero, then segregation leads to a higher probability of the permissive equilibrium as the effect of raising $1-\tilde{\pi}$ in the denominator grows.

This effect seems worth emphasizing. In this model, interactions are exogenous; yet in the

real world agents can have some effect (perhaps a considerable effect) on the type of interactions they have. If the poor are able to isolate themselves completely, they will of course never be subject to the norms of the non-poor. What this model shows is that the ability of the non-poor to impose behavioral rules on the poor depends not only on the frequency with which the poor and the non-poor cross the barriers between them, but also on the costs this imposes on the non-poor. A policy that tries to mix the poor and the non-poor may not change the poor's behavior if the costs of enforcing norms is high.

B. Altruism only for the severely poor.

The altruistic utility impact of lone parenthood in the model is the same whether the parents are mildly or severely poor. Alternatively one could apply altruism only to the severely poor, making the altruism term in the punitive equilibrium $\alpha\phi(\bar{s}-\gamma(c-g)+(1-\pi)N\delta)$ instead of $\alpha(\Pi(\bar{s}-\gamma(c-g)) - \phi(1-\pi)N\delta)$; the altruism effect of the $(\Pi-\phi)(\bar{s}-\gamma(c-g))$ mildly poor lone parents is removed. This has no effect on the probability of permissive or punitive equilibria, since altruism remains a public good and does not change the attractiveness of the punishment strategy. It also has no effect on comparative statics of the punitive equilibrium with norms fixed. It does, however, affect the placement of the ideal norm. Upward movements (that make the norm harsher) increase non-poor utility because they reduce the overall rate of lone parenthood; this positive utility impact is now lessened because some of the previously mildly poor agents are re-classified as severely poor.

Specifically, the altruism term in the first-order condition for the non-poor's ideal norm (Equation 5) changes from $\alpha(1-\pi)N\delta$ to $\alpha(1-\pi)N\delta - \alpha(\bar{s}-\gamma(c-g))$, a smaller number. An

examination of both the fixed-norm and the endogenous norm results shows that this will have no significant impact on the comparative statics, however. In this model non-voter utility is linear in altruism; a change in the altruism parameters effects a shift in the ideal norm but not in its reaction to changes in other parameters. Having altruism enter as a non-linear term might be an interesting avenue of future research.

VI. Distribution and growth

A. Distributional consequences

Within the punitive equilibrium the distributional consequences of most of the policy changes are clear. Cutting grants reduces the well-being of poor lone parents and increases that of the non-poor; the same is true for increases in the costs of violation (δ) and for decreases in the costs of punishing (θ). Increases in community interaction (N) hurt the poor (their only effect is to increase the amount of sanctioning), but have an ambiguous effect on the well-being of the non-poor (they reduce lone parenthood but make the punishment strategy more costly).

The welfare consequences of a shift from a punitive to a permissive equilibrium are less straightforward. The severely poor gain $\sigma(1-\pi)N\delta$, a release from the threat of sanctions. The mildly poor, not facing any sanction threat, are indifferent. The welfare effects on the non-poor can be expressed as follows:

$$\Delta V = \Delta u(g\phi N\delta) - \alpha\phi(1-\pi)N\delta + \phi(\bar{s} - \gamma(c-g) - (1-\pi)N\delta)N\theta \qquad \textbf{(8)}$$

where ΔV is the welfare change (permissive - punitive), and $\Delta u(x)$ is $u(K) - u(K + x)$ for some constant K; it is negative when x is positive. The first term indicates the loss of in money-utility

caused by the switch to the permissive equilibrium: as lone parenthood increases, the tax cost of supporting low-income parents rises by $g\phi N\delta$. The second term is an altruism loss, as the increase in lone parenthood increases the number of unsupported children. The third term is a reduction in enforcement costs, since no one adopts punishment strategies. Thus if the non-poor bear only low costs of imposing punishments, one can characterize the poor and non-poor as being at odds over which equilibrium is preferable. Yet if enforcing social norms is expensive, the poor and non-poor might share an interest in moving from a punitive to a permissive equilibrium.

B. Economic growth

One can characterize growth in the model by increasing the upper bound of the distribution of income ($\overline{y}$), keeping the poverty line moving also so that the poverty rate stays the same. This raises the income of the median voter without changing the probabilities of poor and non-poor agents interacting with one another. In (4), it can be seen that the basins of attraction of the different equilibria are not directly affected by income. In equation (5), however, we have $F_y < 0$, hence $\partial\phi^*/\partial y < 0$. Richer societies are less concerned about the tax burden of welfare; they are more inclined to tolerate behavior that can lead to welfare receipt. In a punitive equilibrium this increases lone parenthood. Moreover since the cut-point between the two equilibrium types falls as ϕ rises, increases in y lead to increases in the cut-point and therefore an increase in the basin of attraction of the permissive equilibrium. Therefore richer societies not only impose softer norms on their poor, they are more likely not to impose any norms at all. Thinking of this roughly as a historical process, a gradual increase in income should lead to gradual increases in lone parenthood as well as a gradual constriction in the basin of attraction of the punitive equilibrium.

At some point, following an exogenous shock of some kind, a ‘norm revolution’ occurs as the society shifts from the punitive to the permissive equilibrium.

VII. Conclusion

The first thing to be learned from the paper is that a selective norm tends to become softer in response to changes which make it easier to enforce. This makes it often unclear how behavior will respond to changes in exogenous parameters. The norm’s counter-acting response stems from the fact that non-poor voters must balance the effectiveness of the norm at deterring unwanted choices against the costs of its enforcement. Only through empirical studies of norms would it be possible to determine which of these two factors dominates in a given situation. Empirical projects have been frustrated, however, by the difficulty of quantifying norms. While there are some data sources that ask about values in general, data that acquire specific information about how social rights and wrongs are defined are rare.

The second thing to be learned is that the amount of social control imposed on the poor is a fairly direct function of some of the exogenous parameters. The model predicts, for example, that norms should become softer (and are less likely to be enforced) as median income rises. If national-level values data can be interpreted as evidence of norms, one could conduct an empirical cross-national study in which values data would be regressed on indicators such as national income. The model suggests the correlation should be negative in the sense that wealthier countries hold more liberal values. The model also predicts that, barring major changes in values, countries where attitudes are harsher should see relatively greater responses of welfare caseloads to changes in welfare generosity and standards of eligibility. This prediction could be tested by

regressing caseloads on interacted variables that combine values variables and policy variables.

Overall, the paper can be viewed as a caution against the view that the way to solve social ills is to enhance communities and put people in situations where they depend heavily on one another. The paper has shown that communities may respond in unexpected ways to community-building efforts. In particular, they may change their notions of right and wrong, and become more forgiving of the behavior of their neighbors on whom they now rely more heavily for support.

Table 1. Comparative statics

Variable	Description	Effect on probability of permissive equilibrium	In the punitive equilibrium: Effect of an increase in the variable on the lone parenthood rate, with	
			Fixed norms	Endogenous norms
ϕ	Norm - defines level of poverty below which it is "wrong" to be a lone parent	**negative**	**negative**	**NA**
g	Welfare grants	**positive**	**positive**	**unknown**
N	Community interaction	**negative**	**negative**	**unknown**
Π	Poverty line	**positive**	**positive**	**unknown**
δ	Cost of violating the norm	**negative**	**negative**	**unknown**
θ	Cost of enforcing the norm	**positive**	**none**	**positive**
c	Cost of having children	**negative**	**negative**	**unknown**

References

Aaron, Henry J., Thomas E. Mann, and Timothy Taylor, eds. (1993), *Values and Public Policy*, Washington: The Brookings Institution.

Akerlof, George A. (1980), "A Theory of Social Custom, of Which Unemployment May Be One Consequence," *Quarterly Journal of Economics* **94**, 749-95.

_____, Janet L. Yellen, and Michael L. Katz (1996), "An Analysis of Out-of-Wedlock Childbearing in the United States," Quarterly Journal of Economics, v111 n2 May, pp. 277-317.

An, Chong-Bum, Robert Haveman, and Barbara Wolfe (1993), "Teen Out-of-Wedlock Births and Welfare Receipt: The Role of Childhood Events and Economic Circumstances," *Review of Economics and Statistics*, v75 n2 May, pp. 195-208.

Bernheim, B. Douglas (1994), "A Theory of Conformity," *Journal of Political Economy* **102**(5), October, pp. 841-877.

Bikhchandani, Sushil, David Hirshleifer, and Ivo Welch (1992), "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy* **100**(5), October, pp. 992-1026.

Boyd, Robert, and Peter J. Richerson (1990), "Culture and Cooperation," in K.S. Cook and M. Levi (eds.), *The Limits of Rationality*, Chicago: University of Chicago Press.

Calvert, Randall L. (1991), "Elements of a Theory of Society Among Rational Actors," University of Rochester, mimeo.

_____ (1992), "Leadership and Its Basis in Problems of Social Coordination," *International Political Science Review*, **13**(1), pp. 7-24.

Coleman, James S. (1990), *Foundations of Social Theory*, Cambridge: Harvard University Press.

Crawford, Sue E. S. and Ostrom, Elinor (1995), "A Grammar of Institutions," *American Political Science Review*, **89**(3) September, pp. 582-600.

Edin, Kathryn and Christopher Jencks (1992), "Reforming Welfare," in Christopher Jencks, *Rethinking Social Policy*, Chapter 6, Cambridge: Harvard University Press.

Ehrenhalt, Alan (1995), *The Lost City*, New York: Basic Books.

Ghosh, Parikshit and Debraj Ray (1996), "Cooperation in Community Interaction Without Information Flows," *Review of Economic Studies* **63**, pp. 491-519.

Greif, Avner (1994), "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies," *Journal of Political Economy* **102**(5), October, pp. 912-50.

Hardin, Russell (1990), "The Social Evolution of Cooperation," in K.S. Cook and M. Levi (eds.), *The Limits of Rationality*, Chicago: University of Chicago Press.

Johnson, James (1991), *Symbol and Strategy: On the Cultural Analysis of Politics*, unpublished Ph.D. dissertation, University of Chicago.

Kandori, Michihiro (1992), "Social Norms and Community Enforcement," *Review of Economic Studies* **59**(1), January, 63-80.

Kandori, Michihiro, George J. Mailath, and Rafael Rob (1993), "Learning, Mutation, and Long-Run Equilibria in Games," *Econometrica* **61**(1), January, pp. 29-56.

Kaus, Mickey (1992), *The End of Equality*, New York: Basic Books.

Knight, Jack (1992), *Institutions and Social Conflict*, Cambridge: Cambridge University Press.

Kreps, David M. (1990), "Corporate Culture and Economic Theory," in James E. Alt and

Kenneth Shepsle (eds.), *Perspectives on Positive Political Economy*, Cambridge: Cambridge University Press, 90-143.

Lindbeck, Assar (1995), "Welfare State Disincentives With Endogenous Habits and Norms," *Scandinavian Journal of Economics*; **97**(4) December, pp. 477-94.

_____, Sten Nyberg, and Jörgen W. Weibull (1997), "Social Norms and Economic Incentives in the Welfare State," paper presented at the American Economic Association Winter Meetings, Chicago, January 1998.

Montgomery, James D. (1994), "Revisiting *Tally's Corner*: Mainstream Norms, Cognitive Dissonance, and Underclass Behavior," *Rationality and Society* **6**(4), October, pp. 462-488.

Nechyba, Thomas (1996), "Social Approval, Values and AFDC," Stanford University, mimeo.

Peirce, Neal R (1996), "A Bigger Bang For the Welfare Buck?" *National Journal*, February 17, p. 384.

Putnam, Robert D. (1995), "Bowling Alone, Revisited" in *The Responsive Community*, **5**(2), Spring, pp 18-33.

Schelling, Thomas C. (1960), *The Strategy of Conflict*, London: Oxford University Press.

Sethi, Rajiv and Somanathan, E. (1996), "The Evolution of Social Norms in Common Property Use," *American Economic Review* **86**(4), September, pp. 766-788

Sugden, Robert (1996), "Normative Expectations: The Simultaneous Evolution of Institutions and Norms," University of East Anglia, mimeo.

Sunstein, Cass R. (1996), "Social Norms and Social Roles," *Columbia Law Review* **96**(4), May, pp. 903-968.

Weibull, Jörgen (1995), *Evolutionary Game Theory*, Cambridge, MA: MIT Press.

Wilson, James Q. (1991), *On Character*, Washington, D.C.: AEI Press.

Young, H. Peyton (1993), "The Evolution of Conventions," *Econometrica* **61**(1), January.

Endnotes

1. Proposals to restore the community in order to control behavior have been discussed in the popular press (Peirce, 1996; Ehrenhalt, 1995), public policy (Aaron, Mann, and Taylor, 1993; Kaus, 1992), political science (Putnam, 1995; Wilson, 1991), and law (Sunstein, 1996).

2. Lindbeck's (1995) norms are universal and endogenous. He sketches informally the processes by which the Welfare State might affect social expectations of behavior. One might look at the present paper as a formalization of some of these ideas. Lindbeck, Nyberg and Weibull (1997) also formalize the interaction of norms and welfare policy, albeit with a universal work norm within a political economy equilibrium model. The only endogenous element to the norm comes from the 'reflection' effect: the more people adhere to the norm, the harder it is to violate. The group of people to whom the norm applies does not change (because it is universal), as it does in this paper. Another difference is that the reluctance to violate the norm is built into utility rather than being supported by equilibrium strategies as it is here.

3. There are many formal theories of norm enforcement, but comparatively few with policy implications. See Bernheim, 1994; Young, 1993; Bikhchandani et al., 1992; Ghosh and Ray, 1996; Kandori, 1992; and Kandori, Mailath and Rob, 1993. Less formal treatments include Sugden, 1996; Hardin, 1990; and Boyd and Richerson, 1990.

4. Simple methods of evolutionary selection have recently been used to examine the sustainability of common pool resources (Sethi and Somanathan, 1996). An earlier version of the model used an enforcement mechanism based on repeated prisoner's dilemmas, more in the spirit of Kandori (1992) and Calvert (1991). The enforcement equilibrium in that model produces the same comparative statics as the stable enforcement state derived here with an evolutionary selection method. The earlier paper also reproduces the core result that no predictions are possible when norms are endogenous. The repeated-game model, however, has an infinite number of equilibria with varying levels of enforcement; moreover it does not allow statements about the impact of exogenous changes on the likelihood of the different enforcement equilibria.

5. It should be stated at the outset that the point here is not to build a realistic model of the decisions that lead to lone parenthood (see An, Haveman, and Wolfe, 1993; Akerlof, Yellen, and Katz, 1996). The main objective of the paper is to examine the effect of norms and policies on behavior that sometimes leads to poverty and welfare receipt when income is low. Lone parenthood is just a simple and concrete example of this kind of behavior.

6. Uniform distributions allow a clean expression of the comparative statics. It is not clear how the use of a more realistic normal or lognormal distribution would affect the results.

7. Policy parameters are taken be exogenous here rather than determined in a political-economic equilibrium. This is because the wider discussion which motivates this paper revolves around the possibility that government policies can induce communities to enforce norms. Implicit in this discussion is the idea that the government is an exogenous actor.

8. What is meant here is that a random shock to the system (the introduction of a group of mutant strategies) is less likely to result in a move from the permissive to the punitive equilibrium the greater is b^*.

9. As a social coordination problem, the selective norm is an aspect of culture as understood by an emerging line of research in political science, anthropology, and sociology. For more, see Schelling (1960), Coleman (1990), Kreps (1990), Johnson (1991), Calvert (1992), Greif (1994), and Crawford and Ostrom (1995).

10. Actually most poor agents are indifferent to movements in the norm; only the agent on the margin between near and severe poverty cares, and she prefers the norm to be lower so that she may be defined as mildly poor and removed from sanctions.

11. Here the ideal norm is derived entirely from individual interests. One could allow for non-utilitarian views about the norm by adding a random variable to the utilitarian ideal norm. If the random variable has a zero median (as it should if it is to be independent of the agent's material station in life), however, the median ideal norm will be unaffected.

12. Under constant relative risk aversion ($u(y)=(1-\varepsilon)^{-1}y^{1-\varepsilon}$), the ideal norm becomes

$$\phi^* = \frac{y_m}{(1-\pi)N\delta} - \frac{g\Pi(\bar{s}-\gamma(c-g))}{(1-\pi)^2 N\delta} - \frac{[(\bar{s}-\gamma(c-g)-(1-\pi)N\delta)\frac{\theta}{g\delta} - \frac{\alpha(1-\pi)}{g}]^{-\frac{1}{\varepsilon}}}{(1-\pi)N\delta}$$

where y_m is the income of the median agent. Using this equation, conditions on θ can be established such that the ideal norm lies between 0 and Π. First note that ϕ^* is positive in θ and

$$y_m > \frac{g\Pi(\bar{s}-\gamma(c-g))}{1-\pi}$$

the function is invertible, hence consider the inverted function $\theta(\phi)$. A condition for $\theta(0) > 0$ is that the first two terms in the above are positive. This reduces to

but the right hand term is simply the tax burden, τ. Thus if welfare grants are sufficiently small, the median voter's income exceeds her tax burden. In that case there exists a positive value of θ that puts the norm at zero, resulting in no sanctions. Because the ideal norm is positive in θ, raising theta from this level generates a positive norm, resulting in sanctions against some of the poor. Raising θ sufficiently high puts the ideal norm at the poverty line Π, resulting in sanctions against all of the poor.

13. As it stands this expression does not use the information in the first-order condition. However, taking the first-order condition into account does not change the ambiguity of the sign. It does make the expression more difficult to interpret in terms of tax effect and norm-enforcement effect, so I have left it in this simpler form. The same is true for the other comparative statics: in all cases, substituting the first-order condition does not allow the resulting expressions to be signed.