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A note on endogenous norms in a theory of conformity

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HIGHLIGHTS

- The note introduces trendsetters to Bernheim (1994)'s *A Theory of Conformity*.
- Trendsetter social utility comes from being perceived as defining social norms.
- Key properties of Bernheim (1994)'s equilibria persist in the extended model.
- Multiple conformist pooling equilibria are differentiated by unique norms.

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ABSTRACT

Trendsetters wish to be perceived as the type that defines normative behavior. Incorporating norm formation in Bernheim (1994)'s model yields equilibria with social considerations concentrating behavior, allowing multiple conformist pools. Refinements link each pooling equilibrium to a unique social norm.

1. Introduction

Convergent and conformist behavior arises in a wide variety of economic contexts. An extensive literature analyzing herd behavior has developed in the context of coordination games. The outcome of convergent behavior in these models is not surprising, given mutually reinforcing preferences implemented by construction. This coordination does not capture the essence of conformity, which corresponds to a spontaneous coordination across individuals despite heterogeneous preferences. As such, a model of conformity requires a formulation of social preferences that induce coordination despite varied private preferences.

This note extends the completely continuous, preference-based approach to conformity initially developed in Bernheim (1994)'s "A Theory of Conformity", embedding an endogenous model for norm formation. Bernheim (1994) analyzes a signaling game where individuals balance private intrinsic preferences with a desire to be perceived as the socially ideal type.[2] This extension defines the ideal type to be the expected action taken by players, though the analysis extends to other definitions. A player's social utility is derived from being perceived as the type that truly desires to take the average action selected by the population rather than someone that is simply shading their behavior in accordance with social

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[2] Andreoni and Bernheim (2009) test the model with experimental subjects in dictator games. This formulation allows conformity due to peer effects, as in Akerlof (1980), or post-game according of social status. Benabou and Tirole (2006) embed monotonic prosocial preferences in a signaling model with social recognition. Cole et al. (1992) alternatively characterize social preferences from peer-group rankings. The information cascades of Banerjee (1992) and Bikhchandani et al. (1992) generate conformist outcomes when public information dwarfs the value of private information.

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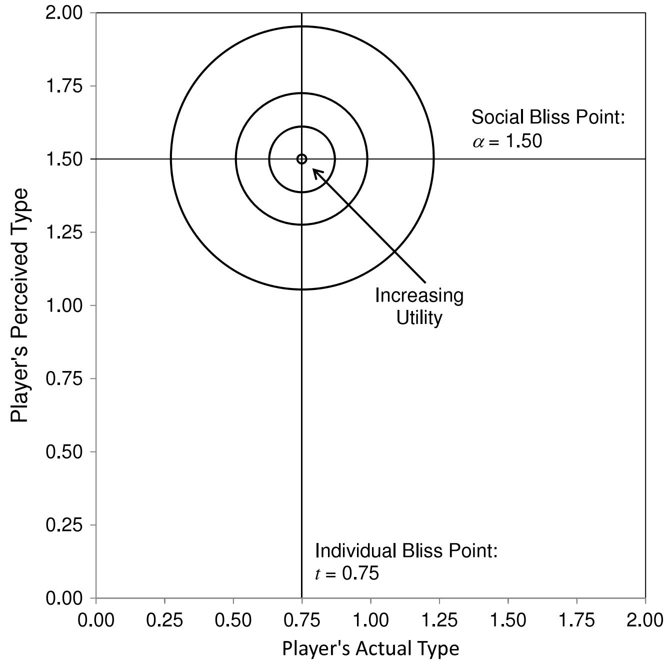

The Bernheim (1994) "spherical case" sets $g(z) = -z^2$ and $h(b;\alpha) = -(b-\alpha)^2$. An agent's indifference curves in the (a, b) plane appear as concentric circles centered on the point (t, α).

Fig. 1. Agent preferences in the "spherical case".

norms. Intuitively, these incentives reflect an individual's desire to be perceived as a trendsetter (a "true" fan of the fad) rather than a "faker" following others' lead.

2. The model for preferences and actions

A large number, I, of individuals, indexed by i, are each privately assigned a type $t_i \in [0, 2] \equiv T$. Players' types are privately observed before choosing a publicly observable action, $a_i \in [0, 2] \equiv A$, that may depend on their true type. The types are drawn independently under the distribution $F(\cdot)$, with continuous density $f(\cdot)$ bounded away from zero so $F(2) = 1$.

Preferences reflect an individual's *intrinsic* and *social* utility. The individual's type (t) represents their "Intrinsic Bliss Point" (IBP). Intrinsic utility rewards actions close to an individual's IBP according to the function $g(a - t)$. An individual's social utility is maximized when their perceived type, based on their action, is near the "Social Bliss Point" (SBP) denoted by α. Letting b_i represent the agent's perceived type, these preferences are captured by $h(b_i - \alpha)$. Both g and h are maximized at zero, twice continuously differentiable, strictly concave, and symmetric, mainly to ensure conformity is not due to arbitrary discontinuities.

With social bliss point α, a player's total utility given their type t, action a, and perceived type b, combines intrinsic and social utility:

$$u(a, t; b, \alpha, \lambda) = g(a - t) + \lambda h(b - \alpha). \tag{1}$$

The weight on an agent's social utility, λ, is referred to as the *social preference intensity*.

Suppose the SBP matches the expected action, i.e., $\alpha = E_f[a(t)]$.[3] An inference function $\phi(b, a; \alpha, \lambda)$ represents the probability a player assigns to being perceived as type b when taking the action a. The distribution $\pi(\alpha; \lambda)$ reflects players' beliefs about α, giving the individual's utility maximization problem:

$$\max_{a\in A} E[u(a, t; \alpha, \lambda)] = g(a - t) + \lambda \int_{\hat{\alpha}\in T} \left(\int_{b\in T} h\left(b - \hat{\alpha}\right) \phi\left(b, a; \hat{\alpha}, \lambda\right) db \right) d\pi\left(\hat{\alpha}; \lambda\right). \tag{2}$$

When the social bliss point equals the expected action, $\pi(\alpha; \lambda)$ degenerates to a point distribution. Substituting $\hat{\alpha} = E_\pi[\alpha]$ and reducing the integral, the problem becomes:

$$\max_{a\in A} E\left[u\left(a, t; \hat{\alpha}, \lambda\right)\right] = g(a - t) + \lambda \int_{b\in T} h\left(b - \hat{\alpha}\right) \phi\left(b, a; \hat{\alpha}, \lambda\right) db. \tag{3}$$

Fig. 1 illustrates these preferences with indifference curves generally horizontal and symmetric over the line $b = t$, while vertical and symmetric over the line $t = \hat{\alpha}$. Notably, indifference curves for players with different types fail single-crossing.

3. Characterizing equilibrium

The following conditions define an interim Bayes Perfect Nash Equilibrium for the game:

(1) An action function, $a^*(t; \alpha, \lambda, \phi) : T \to A$, such that for all $a' \in A$ and $t \in T$,

$$U\left(a^*(t; \alpha, \lambda, \phi), t; \alpha, \lambda, \phi\right) \geq U\left(a', t; \alpha, \lambda, \phi\right).$$

(2) A conditional inference function, $\phi(b, a; \alpha, \lambda)$, representing a probability distribution over the agent's inferred type, b, given their action a. The inference function must be consistent with Bayes' Rule along the equilibrium path.

[3] The SBP could be a measurable function of players' observed actions, such as the average action actually chosen by players in the game. With many players, the law of large numbers preserves equilibrium results.