



# Social Norms and Social Assets

Andrew Postlewaite

Department of Economics, University of Pennsylvania, Philadelphia, Pennsylvania 19104; email: apostlew@econ.ssc.upenn.edu

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## Abstract

Social norms are often posited as an explanation of differences in the economic behavior and performance of societies that are difficult to explain by differences in endowments and technology. The successful integration of social norms into economic models requires an understanding of the basis of the differences in preferences that lead to different behaviors. I explore the difference between deep and reduced-form preferences and how both can differ across societies.

## 1. INTRODUCTION

Googling the term social norms generates just under five million results, and a brief sampling of the results reveals a huge variation in the use of the term.<sup>1</sup> Broadly speaking, much of the usage aims at describing or explaining differences in behavior across groups that does not have an obvious basis. We would not invoke social norms to explain why rich people spend more on clothes than do poor people, or why Swedes ski more often than Egyptians. Rather, we typically invoke social norms when we observe that, after controlling for income, prices, and environment, one ethnic group in the United States gives wedding gifts that are an order of magnitude larger than those given by another ethnic group or that one ethnic group systematically invests more in education than another.

Clearly there are numerous differences across groups in savings behavior, investment in education, consumption, and child raising that cannot easily be explained by differences in the groups' environments. We can easily say that it is varying social norms in the groups that account for these differences, but simply assigning a label in this way is no different than saying that the groups are different or that it is expected that people in one group give large wedding presents while there is no such expectation in another group. To move beyond trivial statements saying nothing more than groups behave differently, we must understand why the people in a group behave the way they do.

We make no progress if we say that people obey the dictates of a social norm because they are supposed to. If we are to remain within the standard economic modeling methodology, we have to take the point of view that, to the extent that people follow the prescriptions of a social norm, it is because it is optimal for them to do so. Optimality, of course, must be from the standpoint of the agent whose actions are in question, not those of an outside observer. Outside observers may find incomprehensible a young woman's choice to have a pierced ring in her nose, a choice with which she is happy.

The requirement that agents find it optimal when they follow a social norm is meaningless unless we put constraints on what might be the agents' preferences or utility function because otherwise we can say that agents' preferences are to follow the relevant social norms and we can be finished. We will be finished, but we will have accomplished little; we have said only that groups behave differently because they want to, raising the question of why agents in different groups want to behave differently. What accounts for the differences in the preferences of different groups?

A nontrivial understanding of social norms in economics requires that we account for how and why agents' preferences are shaped by the group or groups in which they are members. I focus in this review on two qualitatively different explanations. The first explanation hinges on the distinction between reduced-form preferences and deep preferences. By reduced-form preferences, I mean preferences between two alternatives that have consequences that are not explicitly spelled out. If I am invited to a summer cocktail party, I have to choose whether to wear flip-flops or regular shoes. Flip-flops may be the more comfortable choice, but my reduced-form preferences would lead me to choose regular shoes because of the effect that flip-flops would have on my interactions with others.

Neither deep nor reduced-form preferences are fixed and immutable. Deep preferences can be a function of history: A person forced to eat hamburgers five times a day for months may for the rest of his life feel sick if faced with the prospect of eating another one.

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<sup>1</sup>This article draws heavily on Mailath & Postlewaite (2003, 2006) and Postlewaite (1998, 2001, 2010), and there is substantial overlap in those papers and in this article.

Analogously, reduced-form preferences will change when the link between an item being chosen and the unspecified consequences changes. For example, my preference of a salad over a hamburger for lunch because of cholesterol concerns might be reversed after the invention of the drug Lipitor that controls cholesterol.

These examples illustrate the endogeneity of both reduced-form preferences and of deep preferences, but neither has much to do with social norms. Both kinds of preferences, however, can be shaped by social influences, and I next examine in turn reduced-form preferences and deep preferences.

## 2. REDUCED-FORM PREFERENCES

In this section, I expand on the notion of reduced-form preferences by beginning with deep preferences.<sup>2</sup> For any two decisions or objects, I say that an agent prefers one to the other with respect to deep preferences if the immediate satisfaction as measured by pleasant or unpleasant chemical reactions in her brain is greater. Only immediate satisfaction affects deep preferences; future consequences of the choice are irrelevant. Reduced-form preferences take into account future consequences as well. It is my reduced-form preferences that guide my choice between two mutual funds that differ in terms of risk and expected return. For all practical purposes, there is no difference in the immediate satisfaction that I get by choosing one of them. My choice is based on my evaluation of the consequences of each of the two investment vehicles, that is, the consequences in terms of the food I eat, the clothes I wear, and the trips I take next year should I choose one or the other of the two mutual funds. The food, clothes, and trips will affect my deep preferences in the future. My reduced-form preferences guide my choice as to which fund to invest in based on my prediction of whether the consequences of fund 1 or the consequences of fund 2 are more attractive as measured by my deep preferences.

This approach is similar to that of Lancaster (1966), who posits that people care ultimately about basic characteristics and that commodities are valued to the extent that they embody these characteristics. In our economic models, we typically consider a more detailed description of preferences, describing them with utility functions with arguments that are the commodities themselves—particular items of clothing, food, jewelry, vacations, and so on. Lancaster’s point of view is that these arguments of the utility functions as we typically model them are essentially inputs into a production process that transforms these items into the basic characteristics mentioned above. For example, groceries and restaurant meals are converted into satisfaction from hunger, and clothing is converted into protection from the elements.

The point of view in this article is analogous: The objects we buy and the behaviors we choose are essentially inputs into a production process that transforms them into the consequences that generate pleasure or pain. A coat that I buy generates a pleasurable warm feeling, and a good meal eliminates unpleasant hunger pangs.

Why does it make a difference whether we take as our starting point the reduced-form utility function that takes as arguments the actual food and clothing items I choose, or the more primitive deep preferences and the accompanying production process linking the items to the deep preferences? Most economics is done as though we are dealing with deep preferences, and it is certainly a simpler construct with which to work. If the production

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<sup>2</sup>Much of this section draws heavily from Mailath & Postlewaite (2003, 2006) and Postlewaite (2001).

process that links the standard consumption goods to the deep preferences is fixed, there is a one-to-one mapping between the two, and it makes little difference which we use, except possibly regarding the ease of analysis.

But a central point of this article is that the link between standard goods and deep preferences is not a primitive of the environment, exogenous and fixed, but is to a large extent a social construction. Some part of the mapping is fixed: The thermal and water-resistant properties of a coat determine completely the degree to which it provides protection from the elements. But expenditure on clothing is not driven solely by the extent to which it satisfies the desire for protection from the elements. In 2000, single men in the United States who earned over \$40,000 per year spent twice as much on clothing as men with average earnings. It is doubtful that richer men are that much warmer or drier than average men, despite this additional expenditure.

What seems clear is that the purpose of the bulk of the expenditure on clothing above some minimal level is to influence others' opinions of us. Whether an individual is trying to impress someone of the opposite sex or to reassure the members of the community that he properly belongs, the deep preferences that dictate the bulk of clothing choices do not involve protection from the elements. The same can be said for a great deal of consumption: People do not buy Rolex watches to tell time nor do they buy Ferraris to get to the grocery store. And there would be far less money spent on vacations if there were a law against telling people where you went when you got back home.

### 2.1. The Importance of Reduced-Form Preferences

When I say that the mapping from consumption goods to the satisfaction of basic needs is to a large extent a social construction, I do not mean that the point of some particular consumption is to satisfy basic needs that are social in nature, such as the desire for mates or friends. I take these to be substantively no different from the need for food and protection from the elements. What I mean by the mapping being a social construction is that the link between the inputs—the clothing purchased—and the deep preferences they are meant to satisfy—influencing potential mates and friends—is not fixed and exogenously given in the way that the protection from the elements one obtains from clothing is. There is a fundamental difference between the link between clothing and deep preferences over protection from the elements and the link between clothing and basic social needs. The shoes an individual buys will keep her feet equally warm and dry whether the people around her know the designer's name, but the degree to which she impresses these people is not independent of their awareness of the designer.

If the link between the shoes purchased and social consequences were fixed and immutable across all groups, there would be no problem in using the reduced-form preferences over shoes: Any difference across groups in reduced-form preferences could only come from differences in deep preferences across those groups. It is patently clear that this is not the case, however. The average expenditure on clothing in Milan is a great deal more than that in Philadelphia, a fact difficult to explain either by the wealth of the inhabitants or by the weather in the cities. Rather, the link between clothing and social consequences is very different in the two cities. The equilibrium in Milan is such that vast expenditures on clothing (by Philadelphia standards at least) pay off; indeed large expenditures may be nearly essential. One could spend the same amount on clothing in Philadelphia of course, but the reality is that individuals there find that, on the margin, expenditures on DVD

players and other high-end stereo equipment are more effective in generating the desired social outcomes.

To summarize, I am arguing that the preferences over goods and services that we typically take as given and exogenous in most economic models are in fact social constructions that are endogenous in a more primitive model. In any particular group, the link between the goods and behaviors one chooses and the social consequences of those choices ultimately depends on the consumption habits of the other people in that group. As a consequence, even if people are identical with respect to their deep preferences over basic goods or needs, there can be substantial variation across different social groups in their preferences over specific goods and services—the preferences we typically deal with—because of the variation across those groups in the way that consumption of goods and services satisfies basic wants or needs.

The variation across groups in this connection between consumption of goods and services and the satisfaction of basic wants would be of little economic consequence if the variation across groups was limited to the kind of examples above, that is, whether clothing or stereo equipment is a more important status symbol in some group. That amounts to little more than detailing the difference in toys that people buy. But if groups differ in the links between such things as investment in physical or human capital and social consequences, there can be substantial differences in material consumption across these groups. I turn next to an example illustrating how the link between human capital investment and social consequences can differ across otherwise identical groups.

## 2.2. Social Value of Assets

Mailath & Postlewaite (2006) introduced the notion of the social value of an asset, by which it is meant that part of the value of an asset comes from the social structure of a society.<sup>3</sup> The notion is useful if we are to make sense of a statement such as the following: It is a norm that people in group *X* invest more in education than other people. If the endowments of the members of *X* are similar to the endowments of others, one must assume that there are differences in preferences between those in *X* and those not in *X*. To a large extent, preferences over the investment one makes in education are governed by the future returns on that investment. An obvious part of the return on the investment is the expected increase in lifetime income the investment generates. I argue below that there may be an additional social return on the investment; that is, there can be social value to one's human capital. Furthermore, the social value of the human capital can depend on the social structure of the society of which one is part.

To begin, I note that an agent may possess inalienable assets that have value in a particular society. Some assets may have productive value: An agent may have outstanding basketball skills or an incomparable opera voice. Other assets may have no direct productive value but may still be valuable in that they lead to higher utility for agents who possess them. For example, it may be that in some societies agents with lighter skin or a particular accent enjoy higher consumption than do agents without the asset. It may be, of course, that people have a particular preference for skin color; I am interested here in the case in which the people in a society have no direct preference about skin color or accent but may have an instrumental preference for workers or mates with a particular skin color or accent

<sup>3</sup>Much of the material in this section is taken from Mailath & Postlewaite (2006).

only because other agents do. We say an agent's attribute has a social value when (at least part of) the value is a consequence of the social structure of society. An asset may have both productive value and social value; I argue below that education can have both.

I begin by explaining how the social structure of a society can lead to a social value to an asset with no intrinsic (productive) value. Consider a generational world with many men and women who match, consume, and have children, whose utility they care about. Suppose income is random, either high ( $H$ ) or low ( $L$ ) with equal probability, independent of parents' income, and nonstorable. Suppose also that all consumption within a matched pair is joint. An agent's sole decision is with whom to match. As consumption is joint,<sup>4</sup> wealthy partners are preferred to poor partners, and the obvious matching will be assortative:  $H$ 's will match with  $H$ 's and  $L$ 's with  $L$ 's. All agents have the same concave utility function over their own consumption and in addition care about their children's consumption. Individuals care about their children's consumption, which depends on their children's random income. Assume that it is not possible to insure against children's income risk; outcomes will then be inefficient relative to a complete markets world.

I now introduce into this world an asset that has no intrinsic value, a heritable attribute such as a particular eye color (e.g., brown), which is independent of income, and show how it may have social value.<sup>5</sup> Assume that half of the agents have the brown-eye attribute and half have blue eyes. Whether an agent has the attribute depends on whether one or both parents have the attribute. If both parents have the attribute, their children will have the attribute, and if neither has the attribute, their children will not have the attribute. When exactly one parent has the attribute, the children will have the attribute with probability  $1/2$ .<sup>6</sup> I am not arguing that eye color must have social value; it will be an equilibrium for all agents to ignore eye color in all decisions, and it will not have any value then. But I show below that it can be the case that eye color does not enter any agent's deep preferences, yet all agents' reduced-form preferences may exhibit a strict preference for a particular eye color in their mates.

Suppose that all agents' reduced-form preferences exhibit a strict preference for mates with brown eyes. Specifically, designate an agent who has brown eyes  $y$  (for yes) and an agent that does not have brown eyes  $n$  (for no), and suppose that  $Hn$  females (females with high income and blue eyes) strictly prefer to match with  $Ly$  males (low income, brown eyes) than to match with  $Hn$  males. Why would a woman prefer the lower-wealth male when consumption is joint? The answer is that if all other present and future agents have a strict preference for mates with brown eyes, she will prefer that her children have brown eyes because, by assumption, they will then match with a high-income mate, even if they have low income. When, as assumed, eye color is heritable, her children with a brown-eyed mate are more likely to have brown eyes than with a blue-eyed mate. Hence, an  $Ly$  female

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<sup>4</sup>It is not essential that all consumption be joint. As long as there is some joint consumption, agents will care about the wealth of potential mates.

<sup>5</sup>Fang (2001) analyzes a model in which nonproductive attributes can have value in equilibrium because agents have imperfectly observed ability. Fang demonstrates that high-ability agents may acquire a costly nonproductive asset that (in equilibrium) serves as a signal even though the cost of acquiring the attribute is independent of ability. The social assets in the example play an entirely different role as there is no asymmetric information, hence no role for signaling.

<sup>6</sup>The transmission of the attribute from the parents to the child can be either genetic, as in the case of eye color, or social, as in the case of accents.

faces a trade-off: If she matches with an *Hn* male, she will consume more, but her offspring will have lower expected consumption, whereas if she matches with an *Ly* male, the reverse will be the case. If the consumption utility function is sufficiently concave, the children's welfare increase outweighs the *Hn* female's current consumption decrease when she matches with an *Ly* male (for details of the calculations, see Mailath & Postlewaite 2006). Because men and women are symmetric in this discussion, *Hn* males will strictly prefer matching with *Ly* females in this case as well.

This simple example shows that the brown-eye attribute can have a strictly positive value in a society that treats it as valuable, even when deep preferences are completely neutral with respect to eye color. In such a society, agents born with brown eyes have a strictly higher expected utility than blue-eyed agents. The value clearly depends on the social structure in the sense that it is also an equilibrium for no agent's reduced-form preferences to depend on eye color: When no other agent cares about eye color, it makes no difference to an agent in terms of his own consumption or his offspring's consumption what color eyes his mate has. Notice also that there is nothing special about brown eyes: It could as easily have been the case that all agents' reduced-form preferences were such that they strictly preferred blue-eyed mates. The essential point of the example is to demonstrate how the preferences over the choices at hand (mates in the example) are not fixed and exogenous as we often take them to be in economic modeling. Rather, even when deep preferences are taken as fixed and exogenous, an agent's reduced-form preferences that we typically deal with in economics are an equilibrium object that is inextricably connected to the preferences of those agents with which she interacts. Having shown how identical agents in different societies can have different preferences, we have a foundation for social norms that stem from different reduced-form preferences.

There will be economic differences between two societies, one in which eye color is ignored and the other in which one or the other eye colors is considered desirable. When eye color is ignored, wealthy women will match with wealthy men. As consumption is joint, half the matched couples consume  $2H$  and the other half consume  $2L$ . If brown (or blue) eyes are desirable, one-fourth of the population is *Hn* and one-fourth is *Ly*, and these groups will match and consume  $H + L$ . The variance of consumption is thus smaller when there is a social asset.

Lower variance of consumption is welfare enhancing: Parents care about their children, who face income risk that, by assumption, cannot be insured. Although the introduction of the social asset does not eliminate the inefficiency stemming from this missing market, it does ameliorate the problem. If offered the choice of joining a society in which the attribute had social value or joining a society that had no social assets, all agents, whether high income or low and whether they have the attribute or not, would choose the latter (see Mailath & Postlewaite 2006 for details).

The role of a social asset here is reminiscent of that of fiat money in a model of exchange. In a dynamic model with fiat money, an agent can forgo current consumption in exchange for fiat money that can be exchanged for consumption at a future date. In the model described above, a wealthy agent who does not possess the social asset can choose to match with a poorer agent who does possess the asset. This entails a decrease in current consumption for the wealthy agent in return for the chance that offspring will have the asset, which will allow greater consumption for the offspring than would otherwise be possible.

There are, however, several important differences. First, the social asset (attribute) is inalienable. A child who inherits this asset cannot dispose of it; the only use the attribute can be put to is the purchase of a higher-income mate than would otherwise be the case. Second, the child who inherits the asset cannot capture the full value of the asset, as he must bequeath the asset to his offspring. In a sense, the individual who inherits the attribute captures the present flow of value from it but is unable to capture any of the future value.

To summarize, the simple example demonstrates the general point I want to make, namely that there can be two societies in which agents have identical deep preferences but different reduced-form preferences. An analyst looking at two societies with two different social structures would observe important economic differences—different distributions of consumption and different matching behavior. The analyst will look in vain for variations in the two environments (endowments, productivities, etc.) to explain the differences, as the differences arise only from different reduced-form preferences that stem from different equilibria in the two societies. One might describe in a society a behavior that cannot be explained by the environment as a social norm.

### 2.3. Social Value of Intrinsically Productive Assets

The idea that assets that have no intrinsic value can have social value is interesting in itself, but more importantly, assets with intrinsic value may have, in addition, social value. An attribute such as height may have real productive value, but this intrinsic value can be augmented by social value that depends on the social structure of society. Although we should expect height to be valued in all societies because of its productive value, it can be more highly valued in some societies because of the social structure. It is important to emphasize that differences in agents do not lead to differences in the greater value of height: Deep preferences can be the same for all agents. The greater value is a consequence of differences in (endogenous) reduced-form preferences.

One can modify slightly the example above to illustrate how a productive asset can have social value in addition to its intrinsic value. In the example, agents had exogenous income  $H$  or  $L$  with equal probability. Suppose that the attribute is productive in the sense that the probability that a  $y$  agent has high income ( $H$ ) is  $\frac{1}{2} + k$ , and the probability an  $n$  agent has high income is  $\frac{1}{2} - k$ ,  $k > 0$ . The productivity of the attribute is captured by  $k$ . When  $k > 0$  but not too large, both the assortative and the mixed matchings described above will still be stable (agents will find it optimal to match as suggested). Agents born with the attribute will have higher expected utility than agents born without the attribute, whether matching is assortative or mixed, as they have a greater probability of having high income.<sup>7</sup> If  $k$  is small, the difference is small under assortative matching because the attribute's value is the small increase in the probability of obtaining high income. The difference is larger under mixed matching because, in addition to the small increase in the probability of an agent with the attribute obtaining high income, matching prospects for the agent and her offspring are better as before. Thus the value of the attribute can be decomposed into its intrinsic value and its social value.

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<sup>7</sup>As with the case in which attributes have no intrinsic value, there are incentive constraints on when agents will find it optimal to follow the prescription that  $Hn$ 's match with  $Ly$ 's in mixed matching (see Mailath & Postlewaite 2006 for details).



## 2.4. Social Value of Education

Above I give a prototypical example of a social norm in which group  $X$  values investment in education more than other groups do. The example discussed above, with a social asset that may or may not have any intrinsic value, had no investment: Children either had the asset or did not. We need to extend the model above if we want to understand how different groups, with identical abilities and identical deep preferences, value education differently. I describe next one simple way to do that below.

Suppose that we think of education as the attribute, a productive asset as described above. For simplicity, I treat education as binary: Agents either are educated or are not. Assume as before that children's chances of having the attribute depend on whether one or both parents have the attribute.

Suppose that parents observe whether their offspring have this attribute, but if a child does not have the attribute, parents have available a stochastic production function that, for a cost, will possibly change their child from not educated to educated. Assume that the higher the investment, the greater the chances that the child will acquire the attribute. Parents of children who do not get the attribute face a standard trade-off: Give up some current utility from consumption to increase the expected utility they get from their children's consumption.

How much will a couple be willing to pay to increase the chance that their child will be educated, if he did not get the attribute from the parents? That depends on the (expected) return to the investment. But, as in the productive asset case discussed above, education may have a social value above and beyond its productive value. Parents in a society in which education has a social value in addition to its intrinsic value (that is, when  $Hn$ 's match with  $Ly$ 's) will invest more than will parents in a society in which education is valued only for its intrinsic value (that is, when  $Hn$ 's match with  $Hn$ 's and  $Ly$ 's match with  $Ly$ 's) (Mailath & Postlewaite 2006 provide examples in which this is the case).

There will be economically important differences between two societies in which there is a social value to education in one and there is no social value to education in the other. As in the discussion above, the variance of consumption will differ between the two societies because of the social value on the asset. Agents' average consumption was not affected by the presence or absence of an asset with social value, however, as the average income was unaffected. This is not the case in the expanded example that includes investment in a productive asset. Here the social value of education increases parental investment (for those children who do not inherit the attribute), which increases the expected proportion of high-income agents in the society. Now there are aggregate benefits of the social value of the asset in addition to distributional benefits.

## 2.5. Concern for Rank

It's not enough to succeed. Others must fail.

Gore Vidal

At the heart of the example above is a market imperfection—the absence of a market in which parents could insure their children's consumption. For the initial example in which the asset was nonproductive, children's income was independent of all other variables, and if there were a fully operating insurance market, all parents would

perfectly insure their children's income. The result would be that all couples would consume  $H + L$ , and there would be no variance in consumption. Consequently, the asset could have no value if markets were complete. Equivalently, if there were a market for future mates of their descendants, parents could guarantee the consumption for the descendants. In a series of papers, Cole et al. (1992, 1995a, 1998, 2001) analyze the importance of the absence of a market for mates on agents' reduced-form preferences.

Cole et al. (1992) augment a standard dynastic growth model with a matching decision between men and women. As in the model of social assets above, it is assumed that individuals care only about their own consumption and their offspring's utility and that, after matching, consumption is joint. Again, when members of either sex have different wealth levels, the joint consumption induces preferences over potential mates: Wealthier mates are more desirable. The matching process is voluntary and not mediated by traditional markets.

As before, a natural process by which men and women might match is that the wealthiest women match with the wealthiest men; that is, the matching process could be positively assortative on wealth. This nonmarket matching decision will affect people's savings-consumptions decisions. The motivation for people to save is not simply to provide for future consumption, but also to make one's offspring more attractive as mates, and, consequently, net wealthier mates. Agents' relative wealth positions do not enter their deep preferences; only consumption by a matched couple and the consumption of their descendants matter. But in an agent's reduced-form preferences, her relative standing in the wealth distribution matters because this standing affects with whom she matches, and consequently her consumption.

The problem facing a couple is, given their wealth (determined by the bequest they received), how much to consume and how much to bequeath to their offspring. Offspring value the bequest for two distinct reasons. First, it affects the amount the agent and her descendants can consume. Second, the bequest can affect the quality of her mate. To the extent that their bequest affects their offspring's match, parents have an incentive to leave a larger bequest than they otherwise would. Cole et al. (1992) show that the optimal savings/bequests are larger than would be the case if the matching decision were ignored. A main message of this paper is that relative rank in a society can be an important component in reduced-form preferences even when it has no bearing on deep preferences.

When parents care about their offspring's matching prospects and those prospects are not mediated by a traditional market, prematching behavior will have a tournament-like aspect. In the description above, the tournament takes the form of parental bequests, but this is not the only possibility. Cole et al. (1992) analyze an alternative social arrangement with a different ranking, which they called aristocratic ranking (see also Cole et al. 1995b). Here, men in the first generation are arbitrarily assigned a rank, with no assumed connection between rank and wealth. Prescribed matching under aristocratic ranking takes the form of higher-ranked men matching with wealthier women. For couples following the prescribed matching, sons will inherit their fathers' ranks; couples who violate the prescribed behavior will have their male offspring's rank reduced to zero. If all others are following the prescribed behavior, the effect of a woman's deviating from the prescriptions of this social arrangement on her son is that he will match with a less wealthy woman. Hence, a wealthy woman for whom

the social arrangements prescribe a highly ranked but less wealthy mate who would be tempted to match instead with a richer man could be deterred by the consumption consequences to her offspring (about whom she cares).<sup>8</sup> Cole et al. (1992) show that for some parameter configurations, there is a Nash equilibrium of the game induced by these social rules.

We thus have the possibility that there are two economies with exactly the same characteristics (as far as the number of individuals, their deep preferences, and their endowments) but whose agents have very different reduced-form preferences. The difference in the reduced-form preferences gives rise to very different economic behavior. In the economy in which rank is determined by wealth, individuals will save more to improve the rank of their offspring. In the other economy, rank is inherited, and hence independent of wealth, reducing the individually optimal bequests; agents' reduced-form preferences essentially suppress one of the benefits of forgoing consumption. Simply put, despite the same deep preferences, the value of wealth is greater in one economy than another. Any attempt to understand the differences in economic performance in these two economies must necessarily fail unless the analysis includes the social arrangements and an investigation of the incentives they provide.

## 2.6. Market Imperfections

A central idea of this article is that society-specific reduced-form preferences can be the basis of social norms that prescribe society-specific behavior. The examples above demonstrate how agents in identical societies can have very different reduced-form preferences, and hence behaviors. At the heart of the examples are market imperfections.

Although the absence of markets to insure the welfare of children and grandchildren or for choosing mates is certainly among the important imperfections, there are many other significant missing markets. We understand well the reasons for the absence of a market for mates (at least in the United States), but there are many other goods and decisions about which people care that individuals cannot purchase through standard markets even though there is no obvious reason that this is so. Country-club memberships, memberships to charitable boards or universities, invitations to the White House, and assigned seats in churches or synagogues come easily to mind as examples.<sup>9</sup> To be sure, these items often do not come for free, but they are not obtained through a simple market purchase. A large donation is probably a necessary, but not sufficient, condition to be invited to the White House or to the boards of trustees of charities.

I do not attempt to explain why these decisions are not mediated by standard markets; I only observe that they are not. When the distribution is not determined by markets, it is likely that wealth, occupation, name, religion, college, or some other characteristic will affect one's chances. Depending on what characteristics matter in a given society, the return to savings, job, mate choice, church, or education will differ from the return in other societies that focus on other characteristics.

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<sup>8</sup>This point is important: The woman follows the prescriptions of the social arrangements because it is strictly in her interest to do so. I am interested only in behavior that is consistent with optimizing behavior. This approach to modeling the effects of social organization on reduced-form preferences would be distinctly less interesting if we postulated behavior that violated this basic aspect of the standard economic paradigm.

<sup>9</sup>As mentioned above, there can be other assets that have a social value in addition to these goods and decisions.

## 2.7. A Nonmatching Example

The examples above utilize matching between men and women that is not mediated by markets to demonstrate how social conventions can have an important effect on reduced-form preferences. Although the absence of a market for such matching is particularly compelling, it is not necessary for the basic phenomenon I am interested in to arise. I outline an example of a social asset from Mailath & Postlewaite (2006, p. 1084) that does not arise from matching concerns.

There are overlapping generations of lawyers, each lawyer living two periods. There is a single nonstorable good over which lawyers have identical utility functions,  $u(c_1, c_2) = c_1 \cdot c_2$ , where  $c_i$  is consumption at age  $i$ . There is a continuum of lawyers born in each period indexed by  $i \in [0, 2]$ . Each young lawyer generates an output of 2 in his first period, but lawyers differ in their output in period 2. In period 2, lawyer  $i$  can produce  $i$ . Each lawyer can go into practice on his own and consume his own output, which generates total utility  $2i$  for lawyer  $i$ . Alternatively, a new lawyer can apprentice himself to a so-called white-shoe lawyer, who, in addition to being a lawyer, has social skills.<sup>10</sup> The social skills have no use in and of themselves but can be transmitted to others. Each white-shoe lawyer can take on at most one apprentice, and a fraction  $\alpha$  of the lawyers are white shoe. At the beginning of each period, each young lawyer who had apprenticed himself to a white-shoe lawyer in the previous period becomes a white-shoe lawyer himself and makes an offer of an apprenticeship to a new lawyer. The offers are take-it-or-leave-it offers, which will be accepted by young lawyers if and only if their utility will be higher from accepting the offer than rejecting the offer and practicing on their own. If a period 2 white-shoe lawyer is able to hire an apprentice for a wage  $w \leq 2$  (the output of all young lawyers), the old lawyer will have a profit of  $2 - w$  from the young lawyer, in addition to her own output.

Consider steady-state outcomes, in which the fraction of white-shoe lawyers is constant at  $\alpha$ . As each old lawyer can take on exactly one apprentice, a fraction  $\alpha$  of the young lawyers must accept apprenticeships. Clearly, a wage offer of 2 yields an equilibrium in which the social skills have no value, all young lawyers are indifferent between accepting and rejecting the offers, and all old white-shoe lawyers are indifferent between successfully hiring an apprentice. Consider now a wage of  $w = \alpha$ . All young lawyers  $i \leq \alpha$  will accept the offers, and the remainder reject. If a young lawyer with index  $i$  accepts the offer, his income in period 1 will be  $\alpha$  and his income in period 2 from his apprentice will be  $2 - \alpha$  (output of 2 less the wage of  $\alpha$ ). His own output is  $i$  (his index); hence his total income in period 2 is  $2 - \alpha + i$ , yielding a utility of  $\alpha(2 - \alpha + i)$ . If he rejects the apprenticeship, his income will be 2 in period 1 and  $i$  in period 2, which yields utility  $2i$ . Hence, young lawyer  $i$  accepts the offer if and only if  $i \leq \alpha$ .

Thus there exist qualitatively different equilibria. First, there is an equilibrium in which the social skills that are the mark of a white-shoe lawyer have no value. In addition, there is an equilibrium in which social skills have value, and this equilibrium Pareto dominates the one in which the social skills have no value.

In this example, social value is not driven by risk aversion because there is no uncertainty. Rather, it is driven by the desire to transfer consumption from the first period of an agent's life to the second period. As above, missing markets are key; if there were a vehicle

<sup>10</sup>The phrase white shoe refers to the white buck shoes that were a fashion requirement within U.S. elite social organizations in the 1950s.

for agents to intertemporally smooth their consumption, the social asset could have no value. In the absence of such a market, some individuals make an investment in learning the social skills that constitute being a white-shoe lawyer, which they can then sell to another lawyer in the future. The social skills that constitute the social asset in the example truly have no productive value: The output of every lawyer in every generation is independent of whether there are any white-shoe lawyers. This example also highlights the connection to models of money, as the social skills play the role of a record device, similar to money as memory as described by Kocherlakota (1998).

## 2.8. Multiplicity of Equilibria

The multiplicity of equilibria plays an important part in the examples above, as it is this multiplicity that gives rise to different reduced-form preferences in otherwise identical societies. Because the examples were dynastic and have an infinite number of periods, one might worry that folk-theorem-type arguments could make any behavior part of an equilibrium, providing little guidance about what social norms we might expect to see. Several comments are in order regarding this concern.

First, there are a number of assumptions that are necessary for folk theorems, and the particular structure of a problem of interest may fail to satisfy some of these assumptions. Cole et al. (1998) show that for the model in Cole et al. (1992), there are substantial restrictions on the parameters for which the aristocratic equilibrium described above will be an equilibrium. In many such instances, a natural equilibrium will have a hybrid character, in which behavior for the wealthier agents can be as in the aristocratic ranking above, but for poorer agents ranking must be according to rank.

Second, even if there are many equilibria, some will resonate more than others. The focus on the two different forms of ranking in Cole et al. (1992)—by wealth and by name—will seem natural, if stylized, versions of the societies we observe. They can usefully guide empirical work on differences in savings behavior, labor supply decisions, and consumption behavior across different societies. They can provide a structured way to investigate connections between social behavior and economically important decisions.

The methodology can also be used in a reverse-engineering way to investigate differences across societies. If we observe bequest behavior that seems anomalous, we immediately are led to analyze the reduced-form utility function behind the behavior. What are the consequences to the parents and the offspring of the unusual bequests, and why are these important? This framework provides a disciplined way to formulate and test hypothetical answers to these questions.

## 2.9. The Importance of Reduced-Form Preferences for Empirical Work

I argue above that if we are to incorporate social norms into economic models, we should maintain the standard discipline of requiring that agents behave optimally. Thus, if we want to say that it is a norm in society  $X$  that agents behave differently than agents in other societies (holding other things fixed), it must be that agents' preferences are different in society  $X$  to account for the different behavior. The model above illustrates how reduced-form preferences can differ across societies that are fundamentally identical. If fundamentally identical societies can exhibit qualitatively different choices and behavior, attempts to

understand cross-country differences in economic performance by looking at differences in fundamentals are likely to fall short. I would argue that there is substantial variation in the social value of being wealthy across countries. In some societies, this would afford entry to elite groups and make one's children desirable mates, whereas in other societies, these benefits might be reserved for those who come from the right families. Although deep preferences might be the same in these societies, reduced-form preferences in work-leisure and spend-save choice problems will be very different. To understand different choices in such societies, one needs to identify the link between the observed choices and the elements that affect deep preferences.

Identifying the nature of reduced-form preferences is important to understand differences across different societies. We typically assume that agents' preferences are fixed. Although it is plausible that deep preferences are fixed, reduced-form preferences are equilibrium objects and can easily change. Consider the example above of mixed matching when the attribute has no intrinsic value but has nontrivial social value. The social value and the (reduced-form) preference for the attribute stem from the fact that parents cared about the riskiness of their children's income, but could not insure against low income. If insurance against low income becomes available through the market or by government policy, mixed matching will no longer be stable:  $Hn$  agents will no longer be willing to match with  $Ly$  agents. Agents' reduced-form preferences will change markedly: There will no longer be a strict preference for mates with the attribute.

Goldin (1992) provides a nice example of the importance of focusing on the underlying basis of reduced-form preferences. Women in the United States in the 1950s who went to college typically worked a relatively short time before leaving the workforce for a number of years while they raised children. Because of this absence from the workforce, the return to a woman's college investment was lower than it was for men. Goldin estimates that because of the time out of the workforce, the rate of return was only about half what it was for men at this time, about 4%–6%, as compared with 10% for men. But this standard estimate ignores the social arrangements in place at this time. Going to college had a substantial impact on the kind of man a woman ended up marrying. Goldin estimates that attending college at this time increased the income of the man a woman would marry by about 40%. There are many assumptions that one can make about what share of this increase is captured by women, about how long marriages last, and so on, but Goldin estimates that this indirect return to college in the form of higher spousal income approximately doubles the rate of return on investment in college, putting it in the same range as that for men.

It is not important that this particular estimate is absolutely correct. Rather, it is important that the paper takes seriously the endogeneity of women's reduced-form preferences about college, including the effect on matching. Taking account of the effect of the social arrangements on economic decisions changes our estimate of the rate of return on investment in education by women by a factor of 100%.

## 2.10. Related Work

There are a number of recent papers that show how seemingly anomalous behavior can be understood once market imperfections are taken into account. Since (at least) Veblen (1934 [1899]), economists have been aware that much of people's consumption is directed at

impressing others. It is typically taken as given that people desire to impress others, consciously or unconsciously, and the question of why people want to impress others is considered outside the domain of economics. Cole et al. (1995a), Bagwell & Bernheim (1996), and Corneo & Jeanne (1997) incorporate asymmetric information into agents' calculations and show that conspicuous consumption may arise from a desire to signal one's wealth. Hopkins & Kornienko (2004, 2006) analyze the effects of a concern for relative rank in reduced-form preferences; Zenginobuz (1996) analyzes a model in which agents conspicuously contribute to a public good due to a concern for relative position.

These papers are theoretical works investigating how concern for rank in reduced-form preferences can arise. There has also been empirical work on the concern for rank. This includes Charles et al. (2009), which documents empirically racial differences in consumption goods and argues that the differences arise because of different incentives to signal. Banerjee et al. (2009), Botticini (1999), and Corneo & Gruner (2000) employ reduced-form preferences for rank in empirical investigations. Lastly, there has been experimental work investigating concern for relative position, including Ball et al. (2001) and Bault et al. (2008).

### 3. ENDOGENOUS DEEP PREFERENCES

I state above that by deep preferences I mean those that are directly related to brain activity that is pleasant or unpleasant, as contrasted with reduced-form preferences.<sup>11</sup> We are interested in deep preferences because, along with the link between them and the observable decisions, they determine the reduced-form preferences. We see above how reduced-form preferences can vary across societies even when the deep preferences do not. Although different links between deep preferences and reduced-form preferences can be at the heart of social norms, we should not rule out the possibility that deep preferences themselves may vary across societies. Although the bulk of economic analysis takes preferences as exogenously given, most economists would accept that preferences are to some degree shaped by the society in which an individual is raised. Indeed, most parents exert huge amounts of effort trying to instill discipline and patience in their children, and the plethora of classical music programs for children suggests that many parents believe they can shape their children's taste in music (see Bisin & Verdier 2000, 2010; Bisin et al. 2004; and Lizzeri & Siniscalchi 2008 for examples of modeling along this line).

We may think these efforts are in vain, but it is hard to imagine that adult (deep) preferences do not internalize some of the values of family and society (on this point, see also the discussion in Bowles 1998). We observe a vast range of behavior that seems not in one's narrow self-interest but can be easily understood in terms of internalized preferences that are the result of indoctrination.<sup>12</sup> I do not take a pen off my colleague's desk when she is out of the office even when I am positive I will not be caught. If I were asked why, I would simply say that I would feel bad about myself if I did that. I was brought up to not take other people's things, not to make fun of handicapped people, to tip in restaurants, and to respond positively to requests for small favors. Likely, the indoctrination took the

<sup>11</sup>This section draws heavily on Postlewaite (2010).

<sup>12</sup>Although I focus in this section on indoctrination of children, Y. Weiss (personal communication) points out that the formation of internalized preferences does not occur solely in children. A few months of military training seems to dramatically alter the deep preferences of young adults so that they are willing to kill and be killed in ways that would have been inconceivable before training.

form of my mother's approval when I behaved in ways she felt appropriate and her disapproval when I did not. As with Pavlov's dog, my internal chemistry continues to respond to the external stimuli long after the associated consequences have disappeared.

It is clear that endogenizing deep preferences can lead to differences in behavior across groups. For example, if individuals in one group are indoctrinated so that work and savings lead to pleasant brain activity while those in another group are indoctrinated so that work leads to unpleasant activity, we would expect to see significant differences in behavior between the groups. In general, it is difficult to be sure that differences in attitudes toward work result from differences in deep preferences. As I argue above, differences in attitudes about work may easily stem from different links between work and the objects of deep preferences. There is recent work in economics, however, that is rooted in the notion that people's deep preferences are shaped by the environment in which they are raised.

Fernández et al. (2004) suggest that the environment in which men are raised has lasting effects on their preferences. They find that whether a man's mother worked while he was growing up is correlated with whether his wife works, even after controlling for a whole series of socioeconomic variables. They interpret this as preference formation on the men's part—growing up with a working mother affected their preferences for a working wife.

Fernandez et al. interpret the effect as being on deep preferences, that it represents preference transmission. It is not clear, however, whether we can be sure that the effect is on men's reduced-form preferences rather than on their deep preferences. It may be that having a wife who works may affect differently the deep preferences of men whose mothers worked and those whose mothers did not work. Alternatively, it might be that deep preferences of men are the same, but the link between a wife who works and deep preferences differs across groups. For example, as I argue above, the reduced-form preferences for wealth can differ across groups. Consequently, wealth may be relatively more important in one group, and hence there is an extra bonus attached to wives who work in that group, while such a bonus does not exist in another group in which wealth is less important. In such a case, we would expect to see that whether a man's wife works is positively correlated with whether his mother worked, owing to the differences in the reduced-form preferences in the two groups (see Fernández 2010 for a detailed discussion of this and related papers).

### 3.1. Does It Matter?

Do we care whether the difference is in men's deep preferences or in their reduced-form preferences? Even though the outcome is the same in either case—whether a man's mother worked is related to whether his wife works—the distinction is important. We would go about estimating changes in female labor force participation in response to wage changes differently in the two case. When men's attitudes toward working wives are in their deep preferences, one could estimate those preferences and use them to estimate the changes in labor force participation to which a wage change would lead. Doing this when men's preferences are in their reduced form would be misleading because the reduced-form preferences would themselves likely change when wages change. It is not whether wives work, but the consequences of their working that matter.

For most economic problems for which we might want to estimate agents' preferences, the choices that are observable to the econometrician are reduced-form preferences. It is essential to understand that one is not estimating deep preferences, which are (more or less)



fixed and immutable; the reduced-form preferences that we estimate are themselves equilibrium objects that are likely to change when the environment the agents inhabit changes.

Cole et al. (1995a) illustrate the potential problems with estimating reduced-form preferences. They analyze a two-period model with a continuum of men and a continuum of women in which individuals match and jointly consume their combined incomes. Again, there is a ranking based on wealth; that is, wealthier individuals will match with wealthier mates. Individuals with differing abilities are faced with a labor-leisure choice. As above, the tournament-like competition for mates leads (in equilibrium) to greater effort than would be the case in the absence of the concern for rank. The central point of this paper is that an agent responds differently to a lower wage when other agents' wages remain the same than he would if those agents' wages were also lowered.

When all agents' wages are lowered, it is likely that all agents change their labor supply; hence an individual will face a different wealth distribution than she did previously. Thus the consequences of any given wealth, including the wealth of the partner this will result in, change. Agents' (reduced-form) labor-leisure preferences will not be the same after a wage change as before. If, alternatively, a single agent's wage was lowered, the wealth distribution of the other agents would be unchanged, and this agent's reduced-form labor-leisure preferences are unchanged.

In general, when increases in wealth or income lead to secondary benefits (or costs) because of market imperfections, agents will respond differently to individual-specific and aggregate shocks. For problems in which the difference is significant, the common practice of using microeconomic data to draw inferences about responses to aggregate shocks presents difficulties that are often overlooked because the microeconomic data may include responses to individual shocks that systematically diverge from responses to the same shock when it is applied uniformly to all agents in a society.

These considerations are particularly relevant for problems such as predicting the effects of an income tax. If the secondary benefits that stem from one's rank in a society overwhelm the direct consumption benefit from income, an increase in income tax might have no effect on labor supply as it leaves unchanged the relationship between effort and rank. One might speculate that a CEO's pay relative to other CEOs is nearly as important as the size of the compensation itself (see Bertrand 2009 for a discussion of CEO pay). To the extent that the secondary benefits are important and ignored, there could be a systematic overestimate of the effect of taxes on labor supply.

### 3.2. Concern for Rank Redux

I demonstrate above how reduced-form preferences can exhibit a concern for rank when there was no such concern in deep preferences. I do not mean to suggest that deep preferences cannot exhibit a concern for rank, however. It does seem that relative rank does matter in people's deep preferences. Winning in contests simply feels good, even with strangers whom one will never encounter again, even when there are no observers, and even when the contests have no economic consequences whatsoever.

There is a compelling evolutionary argument for an innate concern for relative standing.<sup>13</sup> Human beings are the product of millions of years of evolution, and our basic preferences

<sup>13</sup>Robson (1992) makes a biological argument for why relative position should matter (see also Robson & Samuelson 2010 for a general treatment of the evolutionary foundations of preferences).

have evolved as a mechanism to induce us to behave in ways that have fitness value, that is, that increase the probability that we survive and have offspring. Certain preferences are hardwired in us that promote survival value, by which I mean are embodied in deep preferences. For example, our preference for sweet foods has evolved over a long period during which food was scarce and increased consumption of such foods was accompanied by increases in survival. A desire to ascend to the top of a social hierarchy has likely had selection value over the course of human evolution, and deep preferences plausibly include the concern.

To the extent that humans are the product of this evolutionary process, we should expect them to exhibit at least a residue of this direct concern for rank. The environment that modern humans inhabit may be drastically different from that which conferred an advantage on the largest and fastest of our ancestors, but the genetic structure that evolved when there was an advantage would remain long after the environmental change. Only if the characteristics that were once valuable become disadvantageous might we expect evolutionary forces to eliminate them, and, even then, very slowly. It would thus be natural that our deep preferences are affected not only by food and sex, but also by relative position in groups in which we find ourselves (see Maccheroni et al. 2010 for a nice discussion of why we should consider concern for relative position in deep preferences and axiomatic foundations of such preferences).

Even accepting the evolutionary argument that deep preferences are affected by relative rank, there is still a question of which characteristic ranking is based on. Sensitivity to characteristics like speed and strength might naturally be the residue of evolutionary forces; it is distinctly less likely that deep preferences dictate whether it is more important to have memorized large sections of the Bible or to have more journal citations. Winning may be important in deep preferences, but what the contest is in which people compete will vary across societies. In a society in which an important contest is an athletic competition, academic achievement will be less important in deep preferences than in a society in which the competition is intellectual. In general, although deep preferences are likely to include concern for relative rank, we should expect that the importance of such things as education, wealth, and particular occupations is culturally determined. Moreover, that relationship is likely to vary across societies, and within a single society, across time.

#### 4. CONCLUDING REMARKS

I argue above that a successful integration of social norms into economic modeling should begin with an analysis of the differences in preferences that lead to a specific behavior in a society. This presupposes a multiplicity of equilibria with different preferences, either reduced form or deep. I have not said anything about why preferences might be different in one society than in others. Thus one could complain that I just push the question of the different behavior in the society back a step.

I am sympathetic to a view that the work described above leaves unanswered the basic question of why different economies perform differently. For this we need an understanding of why different societies are governed by different social arrangements. The modeling approach in the examples above has the potential to do this. I describe above how decisions that are not mediated through normal markets could induce a concern for rank in reduced-form preferences and, furthermore, how there could be equilibria with reduced-form

preferences focused on rank by birth and by wealth. The additional structure that comes from the specification of the instrumental value of rank has the potential to provide insight into the circumstances when one or another rank would more likely arise.

Consider a variant of the models described above in which some nonmarket decisions induce a concern for rank in reduced-form preferences, but in which people have the opportunity to invest either in physical capital that could be bequeathed to one's children in the standard way or in human capital that could be passed on to one's children through training and teaching. Such a model might well have equilibria in which the ranking that determines the nonmarket decisions is based on either of the two variables.

Suppose there is a small probability that everything an agent owns is confiscated. To the extent that human capital is (at least relatively) freer from the risk of confiscation, it might be more likely to arise as the determinant of ranking than physical capital in the face of confiscation risks. This is not simply because human capital accumulation is necessarily a more efficient way to help one's children in this environment (which it may or may not be, depending on the parameters of the problem). Rather, it may be that ranking by human capital is more stable than ranking by physical capital, even if physical capital were more efficient than human capital to offset its greater vulnerability to confiscation. In other words, it may be that social norms based on physical capital simply have lower survivability rates than do social norms based on human capital; if so, we would expect to see human capital rankings in these environments.

The basic point is that some social arrangements are more stable than others. The fundamentals of one economy may allow a particular social arrangement to survive while the social arrangement might not be sustainable in another (Cole et al. 1992 and Brooks 2001 discuss this possibility in detail). Once again, the additional structure provided by a complete specification of the underlying foundations of the social norms provides implications beyond those that are possible when those arrangements are taken to be outside the scope of analysis.

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