The Demand for Unobservable and Other Nonpositional Goods

By ROBERT H. FRANK*

The importance of demonstration effects in consumption behavior has long been recognized by economists and other social scientists.[1] But such demonstration effects by their very nature cannot apply with equal force to all categories of goods. We may know very well, for example, what kinds of cars acquaintances drive or the types of homes they live in, but we are much less likely to know how much they save or the amounts they spend on insurance.

Even in circumstances where what others consume is known, interpersonal comparisons with respect to certain *types* of consumption will be more important than will others. As Thorstein Veblen emphasized in 1899, at least some people appear actively concerned about how the amount of leisure they consume compares with the amounts consumed by their peers. But for most people, we may safely assume that such comparisons pale in relation to the corresponding comparisons regarding, say, the education of their children.

Following Fred Hirsch (1976, ch. 3), I use the term "positional goods" here to mean those things whose value depends relatively strongly on how they compare with things owned by others. Goods that depend relatively less strongly on such comparisons will be called nonpositional goods. As noted, the nonpositional category includes, but is not limited to, goods that are not readily observed by outsiders. This paper explores how patterns of spending behavior are affected by the fact that interpersonal comparisons apply with greater force to some goods than to others.

Section I begins with an example that illustrates why interpersonal comparisons are more important for some goods than for others. This example also illustrates, in a qualitative way, the conclusion that noncooperative consumption decisions result in an underconsumption of nonpositional goods.

Section II then describes a formal model in which rank effects produce downward distortions in individual demands for nonpositional goods. Under certain circumstances, collective restrictions on consumption behavior are shown to produce welfare improvements, even for fully rational consumers operating in structurally competitive environments. Budget shares for certain nonpositional goods are shown to vary systematically with income and with the access individuals have to mechanisms for implementing cooperative consumption agreements.

Section III further explores the adaptive significance of imitative behavior. Such behavior is shown to be individually adaptive, but collectively maladaptive, in the context of a signaling competition in which observable consumption goods help identify individuals of high ability.

Section IV summarizes a variety of empirical evidence that bears on the hypotheses put forward in Sections I and II. This evidence suggests that James Duesenberry's relative income hypothesis (1949) was abandoned prematurely by the economics profession. It also suggests an alternative interpretation of the economic role of the trade union.

The paper concludes by noting that forced savings programs, safety regulation, overtime laws, and various other regulations of the labor contract may be interpreted as devices for mitigating the consequences of competi-

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[1] For an extensive list of citations, see my 1985 study, chs. 2 and 7.

tions between workers for favored positions in the income hierarchy. The apparent strength of consumption externalities suggests that supply siders are barking up the wrong tree when they say that income and consumption taxes introduce distortions into important economic decisions. Rather, such taxes alleviate existing distortions in those same decisions.

I. Individual Consumption Decisions when Relative Standing Matters

In my 1985 study (ch. 2), I have argued that useful insights into people's economic behavior are afforded by the view that the utility function (or what psychologists would call the structure of motivation) was shaped by the forces of natural selection. By this view, the human nervous system is hard-wired with a panoply of tastes and aversions that contribute (or once contributed) to the individual's reproductive fitness. Sugar tastes sweet to us, for example, because having had an affinity for ripened fruit once contributed significantly to our primate ancestors' capacities to survive and leave offspring.

A more general implication of this view is that an element of almost overriding importance in the structure of human motivation will be a taste for seeing to it that one's children are launched in life as successfully as possible. Now, how successful one's children will be in life depends much less on their skills and endowments in any absolute sense than on how these compare with the skills and endowments of others. Success in the labor market, for example, depends much less on the quality of instruction one receives, per se, than on how one's training compares with the training received by others.[2] Suppose we take as a working hypothesis that a parent's utility function is programmed with an instruction something like, "Feel bad whenever your children are less well provided for than are the children of your peers." What sorts of behavior would such a utility function predict that would not be predicted by the utility functions that economists generally work with?

To pursue this question, consider an example in which two persons, A and B, are each faced with the choice of working in a clean mine or a dusty mine. Wages in the clean mine at $200 a week are lower than those in the dusty mine by $50, an amount that reflects the cost of maintaining a dust-free working environment. The lone adverse consequence of working in the dusty mine is that life expectancy is shortened by fifteen years.

If A is strongly concerned about where his children stand vis-à-vis B's (with respect to education and various other advantages), and if B feels that same concern, then the payoff to each from working in a given mine will depend in a clear way on the mine chosen by the other. In choosing between the two mines, each must weigh not only his feelings about the value of extended longevity in the abstract, but also the fact that his choice will affect his ranking in the income hierarchy. Suppose the two rank the four possible outcomes in the way shown in Table 1.

The rankings in the upper-left and lower-right cells of Table 1 indicate that, in the absence of concerns about the relative standing, each would find it worthwhile to sacrifice $50 a week in order to escape working in the dusty mine. But neither is willing to make that same exchange if in the process he loses ground in the income hierarchy. As the rankings are configured here, A and B confront a standard example of the prisoner's dilemma. The dominant strategy for each is to choose the dusty mine. Yet, by so doing, an outcome results that each finds distasteful in comparison with the (feasible) alternative of both working in the clean mine.

If preferences were indeed forged in the crucible of natural selection, it is easy to see why people might find it attractive to sacrifice longevity in return for an opportunity to provide decisive advantages for their children (or in order to prevent their children from becoming seriously disadvantaged in a relative sense). Yet the number of favored positions in any rank ordering is fixed inescapably by the laws of simple arithmetic. And

[2] See for example, A. Michael Spence (1974), Hirsch, and Lester Thurow (1975).

TABLE 1—MINE SAFETY CHOICES WHEN RELATIVE STANDING MATTERS

	B	
A	Clean Mine	Dusty Mine
Clean Mine	Second best for A Second best for B	Worst for A Best for B
Dusty Mine	Best for A Worst for B	Third best for A Third best for B

Note: Clean mine: $200 a week; Dusty mine: $250 a week.

thus the exchange that is so attractive from each individual's point of view has no similar allure when viewed from the perspective of the population as a whole.

A related distortion is present when individuals make decisions about how much leisure to consume. To the extent that extra income is valued not only for its own sake, but also for the *relative* advantages it affords, the option of working an additional hour will appear misleadingly attractive to individuals.[3] Conventional economic analysis shows the workweek that emerges in an atomistically competitive labor market to be Pareto optimal, but when relative standing is a primary concern, this result no longer holds. For the perceived individual payoffs from the sale of leisure will then add up to more than the realized aggregate payoff.

Such distortions as these need not be viewed as having arisen because people are concerned about relative standing per se. As Hirsch, Amartya Sen (1983), and others have emphasized, having high relative standing is *instrumental* to the realization of numerous legitimate human objectives.[4] Disdainful attitudes towards people's efforts to "keep up with the Joneses" should not be allowed to obscure the fact that concerns about relative standing are completely consistent with the rational pursuit of self-interest.

[3] Duesenberry makes a similar point. See also Richard Layard (1980) and Michael Boskin and Eytan Sheshinski (1978).

[4] See also my 1985 study.

II. A Simple Model of the Demand for Nonpositional Goods

Though the characteristics of consumption goods clearly vary continuously along many different dimensions, it will be convenient for analytical purposes to think of goods as falling into one of two classes, positional goods and nonpositional goods. Let us assume an individual's utility is determined by how much of each type of good he has and how his consumption compares with the consumption of others. Interpersonal comparisons matter, by definition, only with respect to positional goods. Specifically, let us assume a population of individuals in which all have identical utility indexes,

$$U = U(x, y, R(x)),$$

where x = positional consumption level, y = nonpositional consumption level, and $R(x)$ is a number between 0 and 1 indicating the percentile ranking of x in the population of x values. If $f(x)$ represents the density function for x values and x_0 is the smallest value taken by x in the relevant population, then an individual with $x = x_1$ will have

$$(1) \qquad R(x_1) = \int_{x_0}^{x_1} f(x)\,dx.$$

When individuals are spoken of below as making consumption decisions noncooperatively, this will mean that they make the Nash-Cournot assumption that their own spending behavior does not perceptibly alter the spending behavior of others. That is, noncooperative consumption demands are defined as those that emerge when individuals maximize utility taking the density $f(x)$ as being externally fixed.

The first-order conditions for the utility maximization exercise here are

$$(2) \quad (U_1/U_2) + (U_3/U_2)R'(x) = P_x/P_y,$$

and

$$(3) \qquad P_x x + P_y y = M,$$

where U_i is the partial derivative of U with respect to its ith argument, P_x and P_y are the prices of x and y, and where M is income, which is exogenously given for each individual. Equation (1) says that $R'(x) = f(x)$, so equation (2) may be rewritten as

$$(2') \quad (U_1/U_2) + (U_3/U_2) f(x) = P_x/P_y.$$

Against the equilibrium condition given in (2′), let us now contrast the solution that emerges when individuals maximize utility by acting cooperatively. First we must specify what purpose cooperative behavior is meant to achieve in this context. In equation (2′) we see that when individuals act noncooperatively, each perceives that additional consumption x augments utility not only through its direct effect, U_1, but also through its indirect effect on the rank term, $R(x)$. Yet the assumption of identical utility indexes assures that once the noncooperatively determined equilibrium is reached, each individual's ultimate ranking in the positional goods hierarchy will be the same as his original ranking in the exogenously given income hierarchy. Viewed from the perspective of the collective, the second, indirect return to positional goods consumption is thus entirely spurious.

Let us assume, therefore, that the objective of the cooperating population is to eliminate the influence of this spurious return from individual consumption decisions. If $g(m)$ represents the original density function of income values and m_0 the smallest income level in the population at issue, a natural way of accomplishing this objective is for each individual to allocate his income M across x and y as he would if his rank in the positional goods hierarchy were taken to be fixed in advance at

$$(4) \quad R(x) = \int_{m_0}^{M} g(m)\, dm = G(M).$$

That is, let us assume that the cooperative case may be thought of in terms of a collection of individual maximization problems of the form

$$(5) \quad \max_{x,y} U(x, y, G(M)),$$

$$\text{subject to} \quad P_x x + P_y y = M.$$

Equation (5) is, of course, the same as the simple utility maximization problem from the traditional independent preferences setting, and its first-order conditions are thus

$$(6) \quad U_1/U_2 = P_x/P_y,$$

with the same budget constraint as in equation (3).[5]

Comparing the equilibrium equations (2′) and (6), the following propositions may be easily established:

PROPOSITION 1: *Cooperatively determined demands will be higher for nonpositional goods and lower for positional goods than the corresponding demands determined noncooperatively.*

PROPOSITION 2: *Each individual's utility level will be higher in the case of cooperatively determined demands than in the case of noncooperatively determined demands.*

Both of these propositions reflect the fact that the presence of $R(x)$ in the utility function acts as an implicit subsidy to positional goods consumption in the noncooperative case, with the usual attendant consumption distortions and welfare reductions.

Using the notation E_{Ui} to represent the elasticity of U with respect to its ith argument, and E_{Rx} to represent the elasticity of $R(x)$ with respect to x, equations (2′) and (6) can be rewritten as

$$(2'') \quad (y/x)(E_{U1}/E_{U2} + (E_{U3}/E_{U2}) E_{Rx}) = P_x/P_y,$$

[5] It is easily shown that the allocation that emerges in the cooperative case lies in the core.

and

$$(6') \qquad (y/x)(E_{U1}/E_{U2}) = P_x/P_y.$$

In populations in which x_0, the smallest value of x, exceeds zero, E_{Rx} will be infinite at x_0 and, for any $f(x)$ likely to be observed in practice, decline monotonically to zero as x moves toward the maximum value in its domain. Let us suppose that E_{Rx} behaves in this fashion, and let $y = \lambda(x)$ represent the income expansion path that obtains for the cooperative case. Then, for all utility functions for which $(E_{U3}/E_{U2})E_{Rx}$ is a decreasing function along $y = \lambda(x)$ (a very unrestrictive condition, since E_{Rx} declines monotonically from ∞ to 0 along that path), we may easily demonstrate

PROPOSITION 3: *Budget shares for nonpositional goods grow more rapidly (or decline less rapidly) with income in the noncooperative than in the cooperative case.*

As a special case of Proposition 3, let us consider the nonpositional good "savings," and suppose that, except for the influence of rank effects, savings behavior would be governed by the forces contemplated in either the permanent income or life cycle hypotheses of savings. That is, holding $R(x)$ fixed, suppose that $U(x, y, R(x))$ is homothetic in x and y, where x is now consumption and y is savings. With $R(x)$ fixed, budget shares devoted to savings will then be constant across income levels. This means that Proposition 3 can be restated as

PROPOSITION 3′: *Noncooperative budget shares for savings are an increasing function of the individual's rank in the income hierarchy of the population of which he is a member.*

To go further in assessing the quantitative differences between noncooperative and cooperative demands, let us impose additional restrictions on the form of the utility index, U. The Cobb-Douglas form has the homothetic property assumed for the savings example, and is analytically convenient. Specifically, let

$$(7) \qquad U(x, y, R(x)) = x^{\alpha_1} y^{\alpha_2} (R(x))^{\alpha_3},$$

where $\alpha_1, \alpha_2,$ and $\alpha_3 > 0$.

Using equation (7), the first-order conditions for a maximum in the noncooperative case are given by the budget constraint from equation (3) and by

$$(8) \qquad \alpha_1 y/\alpha_2 x + \alpha_3 y f(x)/\alpha_2 R(x) = P_x/P_y.$$

For illustrative purposes, suppose the density $f(x)$ is uniform on the interval $[x_0, Kx_0]$, where K is some positive integer. Using this form for $f(x)$, equation (8) becomes

$$(9) \qquad \alpha_1 y/\alpha_2 x + \alpha_3 y/\alpha_2 (x - x_0) = P_x/P_y, \quad \text{for } x \in [x_0, Kx_0].$$

The corresponding first-order condition for the cooperative case is simply

$$(10) \qquad \alpha_1 y/\alpha_2 x = P_x/P_y.$$

Whether the demand functions that emerge from the cooperative case differ substantially from the corresponding noncooperative demand functions is thus seen to depend critically on the magnitude of the parameter α_3, the elasticity of utility with respect to rank in the positional goods hierarchy. For the particular case in which $\alpha_1 = \alpha_2 = \alpha_3$, budget shares for nonpositional goods are as depicted in Figure 1.

As indicated in Figure 1, the budget share for nonpositional goods approaches zero for individuals near the bottom of the positional goods hierarchy, even though the derivative $\partial U/\partial y$ becomes infinite as y approaches zero in the Cobb-Douglas form. Though the payoff to consuming y is very high at small values of y here, the payoff to additional consumption of x is even higher because of the advancement it enables in the positional goods hierarchy. That the hoped-for advance does not materialize in the end because of the parallel actions of others makes this con-

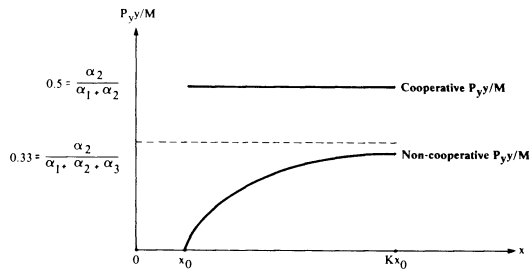

FIGURE 1. COOPERATIVE AND NONCOOPERATIVE BUDGET SHARES FOR UNOBSERVABLES

sumption behavior no less purposeful from the perspective of the individual; failure to allocate consumption in this fashion while others do would result in a backward movement in the positional goods hierarchy, hardly a better result under the assumed preference ordering.[6]

Elsewhere I have surveyed available empirical evidence from a number of studies on the comparative contributions to individual happiness levels made by absolute income levels on the one hand, and relative standing on the other.[7] All of the findings reported in these studies are consistent with the hypothesis that relative standing is far more important than the absolute level of consumption in determining individual well-being. In view of the breadth and consistency of the available evidence on this question, it is far from fanciful to assign a significant role to the relative standing parameter α_3 in equation (7). If the elasticity of utility with respect to relative standing in the consumption hierarchy is considerably greater than that for absolute levels of goods consumption, as all available evidence suggests, the resultant consumption distortions, and their implied welfare consequences, will be even larger than those pictured in Figure 1.

III. Consumption as a Signal of Ability

In the struggle to see the next generation safely launched, imitative behavior may, as noted in Section I, have individually adaptive consequences. Granted, by spending more on one's child's education today, one's rank in the consumption hierarchy may decline during retirement years. But from each individual's perspective, the decline in future ranking may be more than compensated for by the present gain. (The fact that the sought-after advance in the current rankings cannot be realized collectively is cold comfort to the individual who fails to keep rank today. I have argued elsewhere, 1985, ch. 7, that the divergence between individual and collective payoffs here may help account for what Pigou called the faulty telescopic faculty.)

From the individual's perspective, it does not even follow that consuming more now will necessarily result in diminished future consumption, because the information implicit in present consumption levels may affect future incomes. In societies in which

[6] If people are certain of their rank in the positional goods hierarchy, the model as it is expressed above does not produce a stable outcome. The lowest-ranking member of the hierarchy could initially move past the second lowest-ranking member by increasing his consumption of positional goods; and the second lowest-ranking member could then restore the original ordering by carrying out a similar shift of his own. But then the lowest-ranking member could reduce his consumption of positional goods without adversely affecting his ranking, which would already be as low as it could get. In turn, the second lowest-ranking member could then reduce *his* consumption of nonpositional goods without penalty, and in like fashion the higher-ranking members would one-by-one have an incentive to follow suit. Their having done so, the cycle would be set to begin anew.

Alternatively, the lowest-ranked member of the hierarchy may not be certain he is lowest ranked, and thus may be reluctant to act as if spending less on positional goods will not adversely affect his ranking. Another simple modification to the model that would generate a stable equilibrium would be to add the plausible assumption that people care not only about their rankings, but also about where they stand vis-à-vis the mean or some other cardinal parameter of the distribution. These modifications complicate the exposition, but do not alter the conclusions stated in Propositions 1–3 above.

[7] See my 1985 study, ch. 2. I have also argued that an implicit market exists for high-ranked positions in the earnings hierarchies we call firms. For all of the specific occupations for which I was able to construct empirical estimates, the implicit price of such positions is a substantial fraction of total earnings (see my 1984 article).

economic and social interactions between individuals are important (which is to say, in every society), information about the others with whom one might interact has obvious value. The mates we choose, the employees we hire, the people whose company we seek —all depend in a clear way on the information we are able to gather about other individuals in our environment. Many of the most important decisions ever made about us turn on others' estimates of what talents, abilities, and other characteristics we possess. Consider a population in which individuals' abilities are known to differ substantially but in which any specific individual's ability cannot be observed directly. Even in a loosely competitive labor market, there will be a strong positive correlation between individual ability and income levels. Similarly, when there is broad dispersion in income levels, there will generally be a strong positive correlation between individual income levels and various observable consumption goods: the size and location of one's home, the quality of one's automobile or wardrobe, the clubs to which one belongs, and so on. When an individual's ability level cannot be observed directly, such observable components of his consumption bundle constitute a signal to others about his total income level, and on average, therefore, about his level of ability.[8]

Let us explore the extent to which imperfect information about ability might create incentives for people to rearrange consumption patterns to favor observable goods. Consider a population of N individuals with productive ability levels $A_1,\ldots,A_N$, which cannot be observed directly. The individuals are hired by firms in competitive labor markets, and are paid money wages, $M_1,\ldots,M_N$, that are based on the firms' estimates of their ability levels. Suppose, in particular, that

$$(11)\quad M_i = z\hat{A}_i + (1-z)A_i, \qquad i=1,\ldots,N,$$

where $0 < z < 1$, and $\hat{A}_i$ is the best estimate (in a sense to be defined presently) of individual i's ability that is available to persons outside the firm. That is to say, let us suppose that the wage a worker ultimately receives from the firm he works for is an unbiased amalgam of his true marginal product, A_i, and the best estimate thereof that was available to the firm when the worker was a job applicant. How job applicants look on paper may be of interest in its own right to employers (especially for jobs in which contact with people outside the firm is important), or may influence the extent to which firms invest in subsequent training for applicants.

Suppose that consumption of observable goods x_i is related to income M_i according to

$$(12)\quad x_i = g(M_i) + \gamma_i, \qquad i=1,\ldots,N,$$

where γ_i is a random term with $E(\gamma_i)=0$ and $\mathrm{var}(\gamma_i)=\sigma_\gamma^2$. Faced only with information on x_i, an outside observer who knows the parameters that characterize the deterministic component on the right-hand side of equation (12) then has available an unbiased estimate of M_i, in the form of

$$(13)\quad \hat{M}_i = g^{-1}(x_i),$$

where $g^{-1}(\ )$ denotes the inverse of the function g. Writing $g=\beta(M_i)\cdot M_i=\beta_i M_i$, and noting from equation (11) that the expectation of M_i equals A_i, the outside observer thus has an unbiased estimator of A_i, conditional on x_i, call it

$$(14)\quad \hat{A}_i^1 = x_i/\beta_i.$$

Now suppose the outside observer also has some other independent information about A_i. In particular, suppose there is a test T_i that satisfies

$$(15)\quad T_i = A_i + \tau_i, \qquad i=1,\ldots,N,$$

where τ_i is a random term with $E(\tau_i)=0$ and $\mathrm{var}(\tau_i)=\sigma_\tau^2$, for all i. The information in this test and the information about A_i from equation (14) can then be melded to form a composite estimate of A_i. From the

[8] Spence (ch. 8) attributes to Richard Zeckhauser the idea that consumption may act as a signal of ability.

stochastic independence of τ_i and γ_i, it follows that the weighted sum

$$(16) \qquad \hat{A}_i = \frac{\beta_i^2(1-z)\sigma_\tau^2}{\beta_i^2(1-z)\sigma_\tau^2+\sigma_\gamma^2}\frac{x_i}{\beta_i} + \frac{\sigma_\gamma^2}{\beta_i^2(1-z)\sigma_\tau^2+\sigma_\gamma^2}T_i,$$

is the minimum variance unbiased estimator for A_i in the class of linear combinations of T_i and x_i/β_i.

Given the ability estimate in equation (16), any individual can increase outsiders' estimates of his ability by devoting more of his resources to the purchase of x, according to

$$(17) \qquad \frac{d\hat{A}_i}{dx_i} = \frac{\beta_i(1-z)\sigma_\tau^2}{\beta_i^2(1-z)\sigma_\tau^2+\sigma_\gamma^2}.$$

The strength of this effect increases with the budget share for observables, β_i, and with the test variance, σ_τ^2, and is inversely related to σ_γ^2 and z. Unless the budget share for observables is very small, or the independent ability test extremely accurate, any one individual may substantially enhance others' estimates of his ability by increasing the share of his budget devoted to observables. For the particular case of $z=1/2$, $\beta_i=.8$, and $\sigma_\tau^2=\sigma_\gamma^2$, the elasticity of $\hat{A}_i$ with respect to x_i is more than .24, a very substantial effect indeed. Even when the effect on ability estimates of increasing x is much smaller than in the above example, it may nonetheless be sufficient to alter the outcome of important decisions regarding closely ranked candidates. Close employment decisions, for example, can obviously be influenced decisively even by very weak correlates of ability: placement counselors have long stressed the importance of quality attire and a good address in the job-search process.

To the extent that important outcomes do indeed hinge on the signals implicit in observable consumption levels, individuals who do not rearrange their consumption bundles in favor of observable goods will not always fare better than those who do. It may even be the case that curtailing the *proportion* of income devoted to unobservable consumption goods will enhance an individual's earnings to such a degree as to raise the actual *level* of consumption of unobservables. Thus, while reduced consumption in the current period is normally thought of as enhancing consumption possibilities in later periods, precisely the opposite result may obtain if current consumption is an important indicator of ability. First impressions often count for a lot, and as the apparel companies are fond of reminding us, one doesn't get a second chance to make a first impression.

But while devoting extra resources to the consumption of observables may be highly adaptive from the point of view of the individual, it is clearly suboptimal from the point of view of the population as a whole. One individual's forward move in any hierarchy can occur only at the expense of backward moves by others. If some individuals rearrange their consumption bundles to favor observable goods, others who do not do so will then be perceived as standing lower in the distribution of productive ability than they actually do. One individual's "offensive" signal is cancelled by another's "defensive" signal, and in the end too many resources are devoted to the consumption of observable goods.

The ability-signaling rationale for imitative behavior suggests that incentives to distort consumption in favor of observable goods will be inversely related to the amount and reliability of independent information that exists concerning individual abilities. Stable environments in which long-standing social networks exist will have more such information than do less-stable environments, and for this reason the budget shares of unobservables should be larger in the former than in the latter. In the same vein, people who move frequently should have lower budget shares for unobservables than those who stay put.[9] To the extent that in-

[9] These observations are in accord with, and suggest a possible basis for, the fact that consumption patterns in small towns are often said to exhibit a certain sanity that metropolitan consumption patterns seem to lack.

dependent measures of an individual's ability become more numerous and reliable as an individual grows older, we expect budget shares for observables to decline with age. To the extent that individuals are in competition with one another for potential mates, budget shares for unobservables should be higher for married persons than for unmarried persons.[10]

Whether these predictions of the ability-signaling model will find empirical support remains to be seen. But even if imitative behavior could not be easily rationalized on the basis of the characterization of individual self-interest offered here, there would remain the question of whether the predictions about spending behavior made in Sections I and II are empirically valid. To this question let us now turn.

IV. A Survey of Empirical Evidence

A. *Savings* vs. *Income*

For many years economists struggled to resolve the apparent paradox implicit in the observation that the average propensity to consume falls with income in cross-section data, but is constant in time-series data. Duesenberry's proposed solution to this puzzle in 1949 was essentially the same as the one stated in Proposition 3′ above, namely, that demonstration effects weigh relatively more heavily on people with lower incomes, causing them to consume higher fractions of their incomes than do people with higher incomes. This sense of relative deprivation is not attenuated by across-the-board changes in absolute income, and Duesenberry thus saw no reason for aggregate income growth to alter the average propensity to consume over time.

Though Duesenberry's explanation was persuasive to many, and seemed an intuitively plausible description of how people actually behave, it is fair to say that many economists felt uncomfortable with what they regarded as a sociological theory of the consumption function. To many economists, the notion of consumers being strongly influenced by demonstration effects in consumption must have seemed troublingly at odds with the postulate of rational pursuit of self-interest. It is hardly surprising, therefore, that the profession later so warmly embraced Milton Friedman's permanent income hypothesis (1957) and the life cycle hypothesis of Franco Modigliani and Richard Brumberg (1955). Without relying on vague constructs borrowed from other branches of the social sciences, these theories provided clear a priori reasons, carefully grounded in utility-maximizing behavior, for the observed pattern of average propensities to consume in time-series and in cross-section data.

There is no question that the phenomena addressed by the permanent income and life cycle theories are real and important. But these theories simply cannot account fully for the positive relationship between savings rates and incomes we observe in cross-section samples of individuals. The life cycle and permanent income theories of saving both insist that if the influence of life cycle differences and transitory earnings could be eliminated, we would then see that high-income persons save the same fractions of their incomes as do low-income persons. In study after careful study, however, this prediction has failed to find empirical support. Thomas Mayer (1966), for example, has argued that one way of eliminating the effects of transitory earnings variations is to look at average savings rates across occupations. Though in any given year, for example, some

Differences between urban and rural consumption patterns may thus spring less from fundamental differences in the personal values held by the two groups than from differences in the payoffs they face from consuming observable goods.

[10] The importance of sending ability signals via the goods one consumes will naturally vary with one's chosen occupation. Earnings and the abilities that count most among research professors are not very strongly correlated, and many professors think nothing of continuing to drive a 10-year-old automobile if it still serves them reliably. But only in a very small town, where people know one another very well, might it not be a mistake for an aspiring young attorney to drive such a car in the presence of his potential clients. Good lawyers generally earn a lot of money, and people with a lot of money generally drive fashionable new cars. The potential client who doesn't know better is likely to assume that a lawyer with a battered car is not much sought after.

attorneys will have higher incomes than normal, others will have unusually low incomes; in a large sample of attorneys, therefore, the surpluses of those who had good years will largely cancel the shortfalls of those who had bad years. Mayer observed that the permanent income hypothesis requires that the average savings rate for an occupation should thus be independent of its average income level. He then gathered data on average savings rates and average income levels for different occupations in numerous Western countries during different periods in the twentieth century. For virtually every country for which the necessary data were available, Mayer found occupational savings rates positively correlated with average income levels by occupation, a pattern that is flatly inconsistent with the permanent income hypothesis.[11]

H. W. Watts (1958) went a step further by studying the savings behavior of groups of individuals selected so as to represent similar heterogeneous cross sections of the population with respect to age. In so doing, Watts eliminated not only transitory earnings effects by focusing on group averages, but life cycle effects as well. He notes that it is clear from his findings that other factors besides income affect savings rates, but that it is equally clear that there is a significant positive relationship between savings rates and lifetime income.

Perhaps the most damaging evidence against the life cycle and permanent income theories has come in a recent study by Peter Diamond and J. A. Hausman (1982). Using data that record the spending and savings behavior of the same group of individuals over a multiyear period, Diamond and Hausman find that, even after accounting for permanent income and life cycle effects, savings rates still rise substantially with incomes. They write

> ...[O]ur most important finding is the extent to which the savings to permanent income ratio rises with permanent income. Not only does the level of savings (wealth) rise with permanent income, but it does so in a sharply non-linear fashion.... [for permanent incomes below $4770 per year, the savings-permanent income ratio rises by 3.3 percent for each extra $1000 of permanent income;] beyond $4700 it rises 5.7% for each extra $1000 and beyond $12,076 it rises by 14.2%. These results strongly confirm...that a simple linear relationship between savings and permanent income is not supported in our data.... [pp. 36–37]

Numerous other authors have presented evidence that savings rates are positively related to life cycle and permanent income.[12] In his review of this evidence, Mayer wrote, "....of all the many tests which have been undertaken by friends of the [proportional savings rate] hypothesis, *not a single one supports it*... I therefore conclude that the proportionality hypothesis is definitely invalidated..." (1972, p. 348).

The evidence on the savings vs. income relationship is so strong and so consistent that it would appear difficult for proponents of the permanent income and life cycle theories to continue to insist that savings rates are unrelated to income. Yet these claims persist in most major undergraduate and graduate texts in macroeconomics.[13]

I have argued here that, in contrast to the permanent income and life cycle theories, a consumption theory that incorporates people's concerns about relative standing is able

[11] Some authors (see, for example, P. L. Menchik, 1979) have attempted to reconcile the life cycle and permanent income hypotheses to the savings rate data by arguing that the rich are motivated to bequeath larger shares of their lifetime wealth to their heirs than are the poor. Yet the aggregate ratio of bequests to national income has not risen hand in hand with income as a consumption theory based on absolute wealth would require. If, on the other hand, the bequest motive depends on relative wealth, then the permanent income and life cycle theories are almost indistinguishable from Duesenberry's relative income theory.

[12] For a thoughtful survey of these studies, see Mayer (1972).

[13] At least two leading macroeconomics texts (Thomas Sargent, 1979, and Robert Gordon, 1978) do not even mention the relative income hypothesis at all.

to account for the observed positive relationship between savings rates and income. Granted, the permanent income and life cycle theories have made an important contribution to our understanding of consumer behavior—long-run considerations *are* important to most consumers, and anyone who ignores that fact will make systematic errors when trying to predict consumer behavior. But in view of the empirical evidence, the extent to which these theories have supplanted Duesenberry's relative income hypothesis in modern textbooks seems yet another testament to the power of the a priori beliefs held by most economists. This outcome is not without irony, since we have seen that concerns about relative standing may well be fully compatible with the rational pursuit of self-interest, and therefore presumably not at all in conflict with economists' important prior beliefs. If this view wins acceptance, it suggests that greater attention be accorded to Duesenberry's explanation of the savings rate paradox, at least until some new empirical evidence is uncovered that proves it faulty.[14]

B. *Union vs. Nonunion Compensation Packages*

To examine Proposition 1 requires that we uncover some source of variation in the extent to which individuals are able to form cooperative consumption agreements with other members of their personal reference groups (the "relevant population" noted in Section II). Both union and nonunion firms commonly facilitate collective consumption agreements regarding insurance, savings, and a variety of other fringe items. Several considerations suggest, however, that union members are relatively better positioned to implement such agreements than are their nonunion counterparts. First, the average length of job tenure is much higher for union than for nonunion members,[15] which presumably will give rise to closer personal associations between coworkers in union firms than in nonunion firms. Accordingly, a union member's personal reference group should be more heavily composed of coworkers than should the nonunion worker's. Second, a similar tendency should emerge as a result of union firms being larger, on average, than nonunion firms. Third, the very existence of the union's administrative apparatus may facilitate an exchange of information between coworkers that enhances the likelihood of their being able to form agreements about how compensation should be allocated between various budget categories.[16] These considerations suggest that budget shares devoted to nonpositional goods should be higher for union members than for nonunion members.

The sociological literature on reference group theory stresses that an individual's personal reference group tends to consist disproportionately of others who are similar in terms of age, education, and various other background variables.[17] We also know that union members earn significantly higher wages than do nonunion workers with comparable job skills.[18] These observations together imply that a union member with a given income level will have higher income relative to the noncoworkers in his personal reference group than will a nonunion worker with the same nominal level. Referring to Proposition 3, this union-nonunion difference in rank vis-à-vis noncoworker refer-

[14] Robert Clower was thus, in my view, correct when he wrote that "... there seems to be no reason why the basic Duesenberry ideas should not be accepted as an integral part of the pure theory of consumer behavior" (1952, p. 178.) But he went on to say "... one gets the impression... that the interdependence postulate is comparatively innocuous as concerns established doctrines; but this remark may require considerable qualifications in the light of subsequent, and perhaps more sophisticated, inquiries" (p. 178). This inquiry is hardly a very sophisticated one, but it does suggest a number of such qualifications.

[15] Jacob Mincer (1983) finds, for example, that quit rates in the union sector are about one-half as large as in the nonunion sector for young men and about one-third as large for men over 30.

[16] See, for example, the arguments advanced by Albert Hirschman (1970).

[17] See, for example, Robert Merton and Alice Kitt (1950), Leon Festinger (1954), James Davis (1959), and Robin Williams (1975).

[18] Mincer (1983), for example, finds ability-adjusted union wage premiums of 6–14 percent for men under 30, and 4–12 percent for older men.

ence group members will act to reinforce the specific predictions about union-nonunion differences in the shares of total compensation devoted to nonpositional goods.

Richard Freeman (1981) has examined the effect of collective bargaining on the fringe share of the compensation package, and his findings are strongly in accord with Proposition 1. Using data from the Bureau of Labor Statistics' *Expenditures for Employee Compensation Survey*, Freeman estimated the effect of collective bargaining on eight components of voluntary fringe benefits. These results are reproduced here as Table 2. The coefficients reported therein represent partial effects of unionism on the various fringe items, wage income having been included as an explanatory variable in the regression equation from which those coefficients were taken. Given what intuition tells us about what constitutes a positional consumption good, the coefficients in Table 2 are strikingly consistent with the hypothesized effect of unionism on the structure of compensation.

TABLE 2—THE EFFECT OF COLLECTIVE BARGAINING ON SPECIFIC FRINGES, ALL PRIVATE INDUSTRY, 1967–72

Fringe	Cents per Hour Spent on Fringe (1)	Coefficients (2)
1. Life, Accident, and Health Insurance	10.1	4.8 (0.2)
2. Vacation	8.3	1.6 (0.2)
3. Overtime Premiums	10.1	−0.5 (0.4)
4. Pension	9.4	3.9 (0.4)
5. Holidays	5.2	0.8 (0.1)
6. Shift Differential	1.1	0.3 (0.1)
7. Sick Leave	1.1	−0.5 (0.1)
8. Bonuses	1.8	−1.4 (0.3)

Source: Freeman (1981, Table 4, p. 503).

[a]For the effect of collective bargaining on col. 1. Standard errors are shown in parentheses.

Note, for example, that collective bargaining has its largest impact on fringe items 1 and 4. Union workers devote almost 48 percent more to insurance benefits than do nonunion workers with the same income levels. Similarly, union workers devote more than 41 percent more to pensions than do nonunion workers with the same income levels. These findings are in strong accord with the hypothesis that cooperative decisions will tend to favor unobservable goods. The finding that union workers devote a larger share of total compensation to "paid" vacations than do similarly situated nonunion workers is consistent with the view that leisure is a nonpositional good.

Freeman's estimates of the effects of collective bargaining on shift differentials and overtime premiums offer a mixed message for the theory of collective bargaining offered here. That union members have higher shift differentials (for example, premiums for working at night) is consistent with the notion that union workers will act more effectively than others do to limit the extent to which they exchange unfavorable working conditions for higher incomes. Freeman reports, however, that overtime premiums are actually smaller for union workers than for nonunion workers. That finding does not support the view of union objectives offered here. But the union-nonunion difference is less than 5 percent of the total devoted to this fringe item, and is not statistically significantly different from zero. Overtime premiums, moreover, are largely dictated to employers by the provisions of the Fair Labor Standards Act, so it is not clear that we would expect to see significant union-nonunion differences in this item in any event. Sick leave is also smaller for union than for nonunion workers, though the difference here too is small.

Note, finally, that Bonuses (item 8) are substantially smaller for union workers than for nonunion workers with the same incomes. Bonuses are equivalent to wage income insofar as both come in the form of cash. Bonuses therefore represent a portion of the compensation package that is left free from any collective allocation pattern the respective groups may wish to promote. Accordingly, Proposition 1 predicts that the bonus item will be larger for nonunion than

for union workers who have similar income levels. And Freeman does find the former to be four and one-half times the latter.

Needless to say, other explanations than the one advanced here may be offered in support of the coefficient pattern we see in Table 2. Freeman's own explanation for the observed difference in fringe shares relies on the assumption that older workers are simultaneously less mobile and have greater demands for fringe benefits than do younger, less tenured workers. He asserts that the demands of more senior workers are effectively expressed through the collective bargaining mechanism, but tend to be understated in the competitive outcome, where the compensation package is shaped primarily by the preferences of younger, more mobile workers, who are relatively less concerned about fringe benefits. Let us briefly consider this alternative explanation.

Freeman's explanation requires that nonunion employers, who are assumed to employ captive older workers, be unable to design a discriminatory compensation package that simultaneously appeals to the tastes of both junior and senior employees alike. If employers are free, as they appear to be, to offer compensation packages in which both wages and fringes can be linked by formula to the employee's length of tenure with the firm, then Freeman's nonunion firm must have higher labor costs than (and should eventually be driven out by) other nonunion firms that pay lower wages but provide greater fringe benefits to more senior workers. Indeed, union and nonunion establishments alike do in practice link both wage payments and at least some fringes, such as pensions and vacations, directly to length of tenure with the firm. Other fringes, such as life and accident insurance, are often linked to total compensation, which, in turn, is highly correlated with tenure. Just as Freeman's argument implies non-cost-minimizing behavior on the part of nonunion firms, it also requires non-utility-maximizing behavior on the part of unions. Since fringe packages are easily designed to discriminate by age, why should older union workers force younger workers to consume uneconomically large shares of compensation in the form of fringe benefits?

Mincer (1984) finds a pattern of union-nonunion compensation differences similar to the one found by Freeman, for which he offers yet another explanation. Mincer argues that union workers are fearful that if they raise wages too high, firms will find it profitable to constrain the number of hours employees may work. Mincer doesn't say, but the reason that unions don't simultaneously bargain with firms to prevent such hours reductions is perhaps that unpredictable variations in product demand (unobservable by workers) make it inefficient to do so. In any event, Mincer then argues that union workers try to frustrate this stratagem by demanding a larger share of their compensation in the form of fringe benefits, which act as lump sums in the compensation schedule, thus reducing the marginal gain to firms of curtailing hours worked.

This is a curious strategy for a union to pursue. Any union that had sufficient bargaining power to implement such a strategy presumably would also have sufficient power to demand and get a cash intercept term appended to its weekly salary formula. Shifting part of cash compensation into such an intercept term would produce the same change in marginal conditions facing firms as would shifting compensation into lumpy fringe benefits, but would afford workers greater latitude in their consumption decisions, and would lead therefore to higher utility levels for union workers.

Arguments similar to the ones discussed above may be applied to the comparison of safety levels across union and nonunion firms. Elsewhere (1985, ch. 7) I have argued that consumption decisions regarding "contingent goods" have many of the same properties as those that apply to nonpositional goods. A contingent good is one that has a payoff only if some unlikely event occurs. Insurance and safety devices are examples of such goods. If contingent goods are like nonpositional goods, then union workers should devote larger shares of total compensation to safety than should otherwise similar nonunion workers.

Unfortunately, little reliable information exists on the total level of expenditures firms make to promote health and safety in the

workplace. But if union workers are better able to express cooperative demands for safety than are nonunion workers, it then follows that (holding income and the level of risk exposure constant) the reservation price for accepting a given increment in risk exposure should be higher for union than for nonunion workers.

In their widely cited 1976 paper, Richard Thaler and Sherwin Rosen report the results of a statistical study whose structure is well-suited for testing this hypothesis. In their study, they estimate that the union worker must receive a risk premium that is $8.08 per week higher than the premium required by an identically situated nonunion worker for accepting a 1/1000 increase in the annual probability of death. The particular estimate of interest from the Thaler-Rosen study is their regression coefficient for the interactive effect of risk and union membership. A test of the null hypothesis that collective bargaining does not affect the wage-risk tradeoff translates in the Thaler-Rosen study as a test of the hypothesis that the coefficient on the (risk × union) variable is zero. The t-statistic for this coefficient is 2.02, which enables us to reject the null hypothesis at conventional significance levels. The union-nonunion difference in risk premiums amounts to a substantial fraction (often more than one-half) of the total risk premium workers receive in return for the performance of risky tasks.[19]

W. Kip Viscusi (1980) has constructed an alternative explanation for higher union safety levels by arguing that union and nonunion workers have the same preferences over safety and wage income, but weigh the preferences of older, more risk-averse employees differently during the bargaining process. This explanation is identical in its structure to Freeman's explanation of why the fringe share of the compensation package is higher for union than for nonunion workers. And it suffers, therefore, from many of the same difficulties. In most firms there is a menu of different tasks to be performed, and not all these tasks are equally risky. Under such circumstances, the preferences of risk-averse older workers can be accommodated by simply assigning younger workers to the relatively more risky tasks. That firms do not do so suggests that some factor other than age-related differences in preferences must explain the difference in safety levels between union and nonunion firms.[20]

The foregoing differences in the ways union and nonunion workers allocate their total compensation suggest an alternative interpretation of the role of the trade union movement. Many accounts of the trade union movement have stressed the role of unions as a force for neutralizing excessive market power in the hands of firms.[21] But if concerns about relative standing are as strong as they appear to be, the presence of monopsony power is not logically necessary to explain why individual workers might sell various aspects of their services too cheaply. When relative standing is important, there are sensible reasons, quite apart from the prospect of an increase in total compensation, why workers might seek to determine the distribution of compensation collectively rather than individually.

V. Concluding Remarks

The interdependent choice framework discussed here suggests alternative interpretations of a variety of apparently paternalistic laws and regulations. The Social Security program, for example, has been defended on the grounds that consumers lack sufficient

[19] For a thoughtful survey of the literature on compensating wage differentials for exposure to risk, see Robert Smith (1979).

[20] Perhaps the older workers are behaving paternalistically (and altruistically, too, since it costs them money) toward the younger union workers. But altruism cannot account for the parallel implications of Viscusi's argument for behavior in nonunion firms. For why would nonunion firms inflict uneconomically large risk burdens on risk-averse older workers? In Viscusi's framework, both the firm and the older worker could do better by shifting the older workers from risky to less-risky tasks.

[21] For a completely unequivocal statement of this view, see John Mitchell (1903). More recent accounts paint a much broader picture of what trade unions do, but their role as a countervailing force to the market power of firms continues to be emphasized (as, for example, in the Viscusi and Freeman papers cited above).

foresight and self-discipline to save effectively for their retirement. But we have seen that such forced savings programs might have a coherent role to play even in a world populated by rigidly disciplined consumers with perfect foresight. The problem of inadequate savings arose here not because of character defects, but because of a divergence between individual and collective incentives to save.

Overtime laws, health and safety regulations, and a variety of other restrictions of competitive labor contracts have similarly been explained as devices needed to protect workers from being ravaged by avaricious monopsonists. The interdependent choice framework discussed here suggests the possibility of a useful role for those same institutions even in perfectly informed, atomistically competitive labor markets.

Now, it is easy to imagine the line of discussion pursued here being used to justify a host of egregiously meddlesome regulatory activities. Yet such a regulatory response would hardly be in keeping with the traditional remedies economists have proposed for problems that arise from the presence of externalities. If consumption externalities do indeed motivate many of the command-and-control regulatory interventions we currently observe, then a simple tax on positional consumption expenditures might attenuate the need for many of these interventions. If consumption externalities are as important as they appear to be, then supply siders have got matters turned completely around when they insist that income and consumption taxes introduce serious distortions into the labor-leisure choice. When relative standing is important, such taxes serve, on the contrary, to mitigate an already present distortion in that choice.

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