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## UNITARY VERSUS COLLECTIVE MODELS OF THE HOUSEHOLD: IS IT TIME TO SHIFT THE BURDEN OF PROOF?

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*Most development objectives focus on the well-being of individuals. Policies are targeted to increase the percentage of individuals who avoid poverty, who can read, who are free from hunger and illness, or who can find gainful employment. Individual welfare, however, is based in large part on a complex set of interactions among family members.*

*Until recently most policy analyses implicitly viewed the household as having only one set of preferences. This assumption has been a powerful tool for understanding household behavior, such as the distribution of tasks and goods. But a growing body of evidence suggests that this view is an expedience that comes at considerable, and possibly avoidable, cost. The article argues that more effective policy instruments will emerge from analyzing the processes by which households balance the diverse interests of their members.*

Experience in several sectors shows that, when policymakers neglect patterns of distribution within households, they do so at their peril. Consider government attempts to target programs to individuals in certain age groups, rather than to households: nutritionists, for example, recognizing the vulnerability of preschool children, often target supplementary feeding to this age group. International experience, however, indicates that such interventions will not succeed unless the actions of other household members are taken into account; households often reduce the amount of food given to the target child at home and distribute it among the child's siblings (Beaton and Ghassemi 1982; Kennedy and Alderman 1987). At the other end of the age spectrum, the

full impact of targeting programs to the elderly can only be effectively assessed if the responses of other family members are taken into consideration (Cox and Jimenez 1992).

Similarly, many attempts to introduce new crops or agricultural technologies have not fared as well as expected because policymakers did not give adequate consideration to different household members' responsibilities for crops. For example, in her study of rice production in Cameroon, Jones (1986) found that rice was considered to be a "male" crop, that is, men controlled any income generated from rice, even if the crop was produced by women. Despite recommendations to concentrate on rice cultivation, few women planted rice; instead, they grew sorghum, which they controlled, despite its lower returns.

As a result of these and similar experiences, there is increasing recognition that distribution of tasks and goods within households is important in project design. In this paper we provide an overview of the burgeoning literature on this subject. Our principal goal is to demonstrate that understanding the process by which resources are distributed within households has important implications for policy.

We call the prevailing model of distribution within households the unitary model. This model implies that what matters for certain policy initiatives—such as public works schemes or transfer programs—is the amount of income the household receives, not the identity of the individual within the household who is the target of the public program. Conversely, under some alternative models, the efficacy of programs depends on the member of the household targeted. The guide to policy-making implied in the unitary model is simpler if it is correct, inefficient if it is not.

Models that assume that households behave as if they had a single decision-maker can lead to a failure to understand the long reach of some public interventions. We provide examples in which understanding how resources are distributed within a household can strengthen policy design. We also review the theory and evidence accumulated by a range of studies that indicate weaknesses in the unitary model.

Although this evidence still requires some bolstering, we suggest a shift in emphasis; what we refer to as the collective models of household behavior should be regarded as the standard approach, with the unitary model regarded as an important but special case. We do not counsel abandonment of the unitary model; it has proved to be a powerful and pliable tool for household studies. But in many circumstances, using a unitary model of the household in inappropriate situations has more serious policy consequences than using a collective model when a unitary model would have been appropriate (see Chiappori 1992b; Haddad, Hoddinott, and Alderman 1994; and McElroy 1992).

## **The Unitary Model of Household Behavior**

Until fairly recently, most economists viewed the household as a collection of individuals who behave as if they agreed on how best to combine their time,

goods purchased in the market, and goods produced at home. This approach originates in standard demand analysis and has been extended to include household decisions about child care, crop adoption, education, fertility, health, home production, labor supply, land tenure, and migration. Indeed, this view even offers a perspective on the formation and dissolution of the household, that is, on marriage and divorce (Becker 1973).

This approach is appealing because it allows us to analyze the impact of changes in policy and other relevant variables on individual behavior with relative ease and it can address diverse issues. It is sometimes called the common preferences model, the altruism model, or the benevolent dictator model. We call it the unitary model because this label describes how the household is assumed to act (as one). Other labels tend to reflect the means by which the household is hypothesized to act as one. Common preferences are only one way in which the household can act as one; violence or the threat of violence is another. Altruism has also been used to explain why households might behave as one individual, but it is altruism under very restrictive conditions, as we shall show later.

The unitary model has some important limitations. It can allow prices to differ for various household members (the wife's and husband's wages, for example), but it assumes that all household resources (capital, labor, and land) are pooled. This assumption requires that at least one member of the household is able to monitor the other members and to sanction those who fall foul of its rules, an issue both of information flows and control.

We are critical of the unitary model because it fails to incorporate the process by which resources are distributed within households. The model is able to explain differences in individual welfare within a household, however, even when these differences are exhibited systematically by gender, age, or relation to household head.<sup>1</sup> These distributional inequalities could be generated by preferences for inequality shared by household members. Moreover, unequal distribution of resources may be considered efficient for households. For example, resources may be distributed on the basis of differences in individuals' ability to earn higher incomes, and the higher income would then be shared by all members. In such a manner individual differences are treated as different prices and wages.

Pitt, Rosenzweig, and Hassan (1990), who extend the agricultural household model of Singh, Squire, and Strauss (1986), illustrate the adaptability of unitary models. They suggest that, if some individuals can earn or produce more for the household when they are healthy and better fed, then it makes sense for the household to provide extra calories to those individuals. They also find that, in some seasons, individuals with the best health in a family do not receive enough calories to compensate them fully for their effort. Thus, within households, resources may be distributed so that consumption is more equitable than work effort.

If, as it is likely, individual household members have different preferences, then each individual's preferences would have to be considered in assessing the total well-being of the household. A vast literature on social choice illustrates the theoretical difficulties associated with aggregating individuals' preferences. It is

difficult to reflect the preferences of all household members and not just those of a single member, even if a single member were to act as a so-called benevolent dictator.

Various approaches to solving the problem of aggregation of preferences have been offered. Samuelson (1956) suggested that the aggregation of preferences and the pooling of household resources could be achieved by consensus among household members, but he did not indicate how such a consensus is reached. Other proposed solutions include the assumption that individuals tend to seek spouses with similar preferences (assortative mating) and the treatment of households as markets in which bartering or trade occurs (Becker 1973). These solutions are not satisfactory because assortative mating does not resolve the potential conflict in preferences across generations and a model of households as markets fails to address the problems of monitoring and incentives. An alternative approach is based on Sen's (1966) model of cooperatives. Here, family welfare is the weighted sum of the net utility of all members, but the model begs the question of how these weights are determined.

Another attempt to resolve the problems of aggregation and enforcement is Becker's "rotten kid theorem" (1974, 1981). Becker considers the case of a household with two members, a benefactor and a recipient. The benefactor, who is an altruist, transfers consumption to the recipient, a selfish individual who cares only about personal consumption. Now suppose the recipient undertakes some action that raises his or her consumption but lowers that of the benefactor (hence the "rotten kid" sobriquet). The benefactor could respond by lowering transfers so that the recipient's new level of consumption is below the original level. Consequently, the recipient is not likely to behave rottenly in the first place. Thus, the preferences of the altruist and the preferences of the household converge.

Unfortunately, the rotten kid theorem only holds under restrictive circumstances (Bergstrom 1989; Haddad, Hoddinott, and Alderman 1994). It has proved to be important, however, because it provides testable assumptions and because the underlying altruism has strong policy implications regarding the extent to which government policies are mitigated by private response.

## Collective Models of Household Behavior

Several formulations of the unitary model contain an assumption that inequitable distribution of resources or leisure within a household represents a willing act on the part of all household members. Although models of the distribution of resources within households are as much about sharing among generations as between genders, this assumption is viewed as particularly restrictive when it is applied to decisionmaking between spouses. As one of the most noted critics of the unitary model, Folbre (1986, p. 251), comments:

The suggestion that women and female children "voluntarily" relinquish leisure, education, and food would be somewhat more persua-

sive if they were in a position to demand their fair share. It is the juxtaposition of women's lack of economic power with the unequal allocation of household resources that lends the bargaining power [collective model] approach much of its persuasive appeal.

Similar concerns have given impetus to several collective models that focus on the individuality of household members. These models explicitly address the question of how individual preferences lead to a collective choice. These are sometimes referred to as bargaining models, but we prefer the more generic label of "collective" models, partly because some important collective models do not explicitly address bargaining. Moreover, the phrase can be neatly juxtaposed with the term "unitary" models.

Common among the various collective models is their interest in directly addressing how individual household members reconcile different preferences. These approaches can be subdivided into two broad categories: those that rely on noncooperative relations; and those that rely on cooperative solutions.

In common with the unitary model, the cooperative approach begins by noting that individuals form a household when it is more beneficial to them than remaining alone. Higher benefits could occur because forming a household is a more efficient way to produce household goods or because some goods can be produced and shared by married couples but not by single individuals. For example, household formation may generate benefits such as "love" or "companionship." In any case, gains accrue from household formation, and these need to be distributed across the members. Where collective models depart from unitary models is in the rule governing this distribution.

The noncooperative approach (Ulph 1988; Kanbur 1991; Carter and Katz 1992; Lundberg and Pollak 1993) relies on the assumption that individuals cannot enter into binding and enforceable contracts with each other. Instead, individuals' actions are conditional on the actions of others. For example, Carter and Katz's fairly polar "reciprocal claims" model depicts the household as consisting of largely separate, gender-specific economies linked by reciprocal claims on members' income, land, goods, and labor. A wife's budget is separate from her husband's; she responds to changes in her husband's allocation of labor solely according to her own needs. The transfer of income between them establishes the only link between the wife and husband. Similarly, in Lundberg and Pollak's model, "each spouse makes decisions within his or her own sphere" (p. 994) and responds to the other's decisions by altering the level of voluntary contribution to shared goods.

In efficient cooperative models, it is assumed that household decisions are always efficient in the sense that no one can be made better off without someone being made worse off. The models make no assumptions about how resources are distributed within households. A simplified version of this approach is as follows. Suppose a household consists of two individuals. Once a decision has been reached regarding expenditures on public goods, remaining household

income is allocated among the private goods according to a sharing rule. The sharing rule in turn is affected by the incomes of the two household members. This model can illustrate how individual incomes affect the household's consumption of different goods (see Bourguignon, Browning, and Chiappori 1994). Further, it is possible to identify the household's sharing rule even if no individual consumption is observed.<sup>2</sup>

A key feature of the efficient cooperative approach is that the rules regarding distribution within households come from the data and are not assumed. This is especially convenient for assessing the relevance of the alternative models (Chiappori 1992b).

Some cooperative models impose structure by representing household decisions as the outcome of some specific bargaining process and applying the tools of game theory to this framework. Then the division of the gains from marriage depend on the "fallback," or "threat point," position of each member. These fallback positions are a function of extra-environmental parameters, that is, demographic, legal, and other macroeconomic conditions external to the household. These include sex ratios in marriage markets, laws concerning alimony and child support, changes in tax status associated with different marital states, and, in developing countries, the ability of women to return to their natal homes and prohibitions on women working outside the home (McElroy 1990, 1992).

Collective decisionmaking can be enforced in two ways. The first is through the threat of household dissolution. McElroy (1992) notes, however, that in the context of small daily decisions, it is not credible for either spouse to threaten divorce. She suggests that a second way to analyze decisions regarding short-run issues is to use differences in impatience to reach an agreement, with the noncooperative solution acting as the threat point.

## **Policy Implications of Alternative Models of Distribution within Households**

Is the distinction between unitary and collective models merely an arcane academic curiosity? Or do differences in how resources are distributed within households, as the various theories imply, reflect appreciable differences in the outcomes of policy measures?

Clearly, how resources are distributed within households affects the measurement of poverty and inequality. Consider a country in which the central government makes transfer payments to provincial or state authorities. The size of these transfers is determined by estimated levels of poverty. Does it matter if poverty is measured with reference to households or to individuals? If resources are equally distributed among household members, either measure will yield the same estimate of the degree of poverty. As Haddad and Kanbur (1990) demonstrate, however, this no longer holds if resources are unequally distributed within the household. Drawing on individual- and household-level data on caloric availability in the Philippines, they estimate the incidence of poverty using the

income-gap poverty measures proposed by Foster, Greer, and Thorbecke (1984) and find that ignoring unequal distribution within households understates poverty by 18 to 23 percent.

Haddad and Kanbur's illustration is based on a poverty measure that pays particular attention to food consumption, but the general result also holds when income is used instead of food. For example, Apps and Savage (1989) find that the welfare rankings of households in Australia depend critically on transfers between spouses. To the extent that there are empirical difficulties in identifying how resources are distributed within households, however, determining the changes in rankings caused by these spousal transfers is difficult.

Does the analytical complexity associated with collective models offer any additional insights for policy interventions? We illustrate below four areas in which the choice of model is important.

### *Public Transfers to Individual Household Members*

The claim that household decisions are not affected by the identity of the individual earning income has been refuted in a number of settings. This has obvious implications for policy, as the following quotations illustrate.

Many participants in the public debate concerning actual government transfers take it for granted that intrafamily distribution will vary systematically with the control of resources. When the British child allowance system was changed in the mid-1970s to make child benefits payable in cash to the mother, it was widely regarded as a redistribution of family income from men to women and was expected to be popular with women. (Lundberg and Pollak 1993, p. 989)

Indeed, so convinced did some Ministers become that a transfer of income "from the wallet to the purse" at a time of wage restraint would be resented by male workers, that they decided at one point in 1977 to defer the whole child benefit scheme. (Brown 1984, quoted in Lundberg and Pollak 1993, p. 989)

Most examples of income pooling revolve around the fact that women spend more of their income on food and child care. Thomas (1990, 1992) finds that in Brazil, for example, the identity of the household member controlling income affects nutrient intake, fertility, child survival, and young children's weight for height. The results for child survival are particularly dramatic; increases in the mother's unearned income raise child survival by twenty times that resulting from a comparable increase in the father's unearned income. We discuss such evidence in greater detail in the next section.

The importance of potential policy failures arising from neglecting the identity of the transfer recipient is likely to grow as social safety nets are implemented to ameliorate the short-run negative effects of economic adjustment. Newman,

Jorgensen, and Pradhan (1991) found that in Bolivia the urban infrastructure construction project of the Social Emergency Fund bolstered the incomes of the poor in a cost-effective manner. But only 2 percent of the participants in the fund were women. The untested assumption seems to have been that fund income would trickle down to wives, mothers, and children or that they would be better served through credit and other programs in which female participation was substantial.

### *Public Transfers and Interactions between Household Members*

The nature of interactions among household members determines whether changes in household behavior mitigate or enhance the effectiveness of public transfers.

The potential for changes in household behavior to offset the effectiveness of public transfers has been recognized as important since Barro's (1974) seminal paper on family obligations and tax policy. Barro noted, for example, that households may respond to the introduction of a social security system by eliminating completely any private transfers from the young to the old.

If intergenerational sharing within a household is not purely altruistic, however, households may respond differently. For example, Cox and Jimenez (1990) consider a hypothetical family with young members residing in towns and old members living in rural areas. They consider the case in which transfers are made from the young to the old, and individual consumption depends on the family's total income. Suppose a social security program is introduced that taxes the young and subsidizes the old, leaving total family income unchanged. If individuals in the household acted altruistically, this might well lead to a reduction in urban-rural remittances (although consumption is unchanged). But it may be that transfers from the young to the old were undertaken in exchange for services (such as home production). Once social security payments are provided, rural residents might be less willing to provide services to urban residents. As a result, the urban household members must transfer higher amounts to their elders to retain the same services. This is the opposite result of that predicted by the altruistic unitary model.

### *Policy Initiatives Directed to Individual Household Members*

The unitary model implies that it does not matter how policy initiatives are directed; the household will respond to that policy *independently* of the recipient of information or services. This assumption gives rise to two potential policy failures: a resistance to particular policies that appear beneficial, and the unintended costs of policies that are adopted. Consider the consequences of these two policy failures in terms of the adoption of new technology in developing countries.<sup>3</sup>

The first example (mentioned in the introduction) described women's opposition to recommendations to plant rice in Cameroon. In another instance, rural

households in Zambia were encouraged to intercrop maize, a male-controlled crop, with beans, a female-controlled crop (Poats 1991). Diets would have improved as a result of the well-known complementary benefits from consuming these two crops, and less work would have been required because the interplanting scheme reduced weeding time. Women refused to adopt this change, however, because if they planted beans on land normally allocated to maize, they would lose ownership of the beans.

By contrast, a project in Togo to encourage soybean production to supplement the household diet with much-needed protein succeeded precisely because it took into account the collective nature of household behavior (Dankelman and Davidson 1988). At the outset, the project was targeted toward women, through exchange visits and workshops organized in women's homes. Also, soybeans were not introduced as a cash crop, which would have changed women's status within the household. Instead, they were promoted as legumes that could be used to make sauces. The result was that the crop remained in the hands of women, who in some cases were allocated small plots of land for cultivation.

Even when the neediest group is correctly identified, however, the policy might have adverse unintended impacts. Von Braun and Webb (1989) report that in the early 1980s in the Gambia, rice irrigation was introduced to an area of swamp rice production to raise yields and commercialize the product. Although this initiative was designed to raise women's share of household income, it reduced that income because yield increases transformed the status of rice from a private crop under women's control into a communal crop under men's control. *Prior knowledge of the relative bargaining positions of men and women might have helped predict the outcome and enabled policymakers to redesign the program to meet the original goals.*<sup>4</sup>

### *Long Reach of Policy Measures*

The unitary model depicts as impotent several policy initiatives that neither directly affect the technology of production nor affect household preferences but that may in fact have a major impact on household allocation decisions. An example particularly relevant to developing countries is that of managing common property resources, such as access to common grazing land.

Haddad and Kanbur (1992) outline the following model. A household has two individuals, each of whom produces output as the result of two tasks. Each individual is better at one or the other task, so it pays to specialize and cooperate in tasks. But how should the two individuals divide the benefits of cooperation? Suppose that the fallback option for each individual is to work alone. Now suppose that the government introduces a scheme that guarantees better access for all to common property resources. How will the government scheme affect inequality within the household? The income generated from improved access to common property resources might be higher than the income from working

alone, but still less than the income from cooperation. Then, even if it is not actually used, more equitable access to common property resources actually improves equality within the household. The scheme has a remarkably long reach—it equalizes distribution within the household by altering outside options.

Several other features of this example are worth noting. The credibility of the scheme is at the heart of some of the policy debates on the extent of access to common property resources. Access might be rationed in a manner that imposes limits and does not effect distribution within households. Moreover, the results of the model hold for several other policy interventions, such as Maharashtra's employment guarantee program in India, if the guarantee of employment acts as an inalienable property right.

Most important, Haddad and Kanbur's work illustrates the importance of distinguishing among different classes of collective models. For example, in a cooperative model based on bargaining, if improved access to common property resources is guaranteed only to married women, distribution within households will be unaffected because women's position outside of marriage is unaffected. Here, only changes in access to common property resources for women outside as well as inside marriage would alter the distribution of resources within households. By contrast, if households are operating in a noncooperative setup, changing married women's access to common property resources would be sufficient to affect the position of women within the household.

In a similar manner, a policy might aim to change the distribution of transfers within a household without influencing the distribution in the event the household dissolves. Such a policy would be ineffective in the context of a cooperative bargaining model, but it might lead to a redistribution within the household if a noncooperative model holds. Lundberg and Pollak (1993) modeled a shift in the distribution of public child support supplements from fathers to mothers but left intact the distribution of support payments to mothers in the event of a divorce. In this example, the entitlement influenced the woman's position within marriage in a manner similar to the increased access to common property resources. Because the shift did not affect the situation in the event of household breakup (by assumption), it had no influence in the cooperative model.

## **Casting Doubts on the Unitary Model—Evidence**

We have argued that the unitary household model faces serious theoretical challenges and that using this approach entails important policy implications. In this section, we review evidence that supports these challenges. We begin with some informal evidence. This material is not necessarily nested within a formal test procedure; nevertheless, it casts doubt upon certain aspects of the unitary model.

We then present some more formal evidence although we recognize that not all the studies are ideal. Particularly problematic is the fact that income reflects

past and current household choices and that measurement is complicated by the assumption—also held by many applications of the unitary model as well—that household formation and sometimes composition can be regarded as predetermined. Other studies pertain only to specific regions or are based on relatively small samples. In the examples referred to here, aspects of the unitary model are seriously questioned or rejected using data drawn from twelve different countries.<sup>5</sup> It is this steady accretion of results that legitimates concerns about the unitary model.

Few researchers defend the unitary model on the basis of the validity of its assumptions; these “do violence to reality” (Rosenzweig 1986, p. 233). Echoing a previous debate in economics, however, one could argue that realism is unimportant. As Samuelson (1963, p. 232) put it: “a theory is vindicable if its consequences are empirically valid to a useful degree of approximation; the (empirical) unrealism of the theory ‘itself,’ or its ‘assumptions,’ is quite irrelevant to its validity and worth.” Ultimately, then, the accumulation of the type of evidence discussed here shifts the starting point in household studies. Again, echoing the earlier debate: “if the abstract models contain empirical falsities, we must jettison the models, not gloss over their inadequacies” (Samuelson 1963, p. 236).

### *Informal Evidence*

Many studies—from several disciplines and from both industrial and developing countries—indicate that income is not pooled within a household. Other arrangements that households adopt include systems where one person manages all finances and expenditures except for personal spending money; a “spheres of responsibility” system where, for example, a husband gives his wife a set amount for purchasing specified commodities; and an “independent management” system, whereby each individual has income and is responsible for certain expenditures and no one has access to all household funds (Pahl 1983). Not surprisingly, the different ways in which households control income translate into different patterns of expenditures. Case study material from anthropological and sociological studies indicates that men spend more of the income they control for their own consumption than do women. Alcohol, cigarettes, status consumer goods, even “female companionship” are noted in these studies. By contrast, women are more likely than men to purchase goods for children and for general household consumption.

There is considerable evidence that domestic violence is prevalent in both industrial and developing countries and that it affects income distribution within the household. Domestic violence clearly refutes justification for the unitary household model based on altruism. Violence may underlie a dictatorial version of a unitary household model. Jones (1986), for example, relates that respondents to a survey said that the threat of a beating influenced their decision to work. Rao (1994) finds that food purchases in India are influenced by domestic

violence. The study also indicates that extra-environmental parameters may affect domestic violence and attempts to incorporate domestic violence into a collective model of household behavior. Tauchen, Witte, and Long (1991) present further evidence that community factors, such as access to public assistance, affect the probability of domestic violence.

Extra-environmental parameters have an explicit role in some collective models and thereby provide additional indirect support for such models (Lundberg and Pollak 1993). A few recent studies use these conditions to support bargaining models. An illustration is Rao and Greene's (1993) detailed analysis of the impact of bargaining on fertility in Brazil. They find that fertility is lower than average when the ratio of males aged 25 to 29 to females aged 15 to 19 in the region is higher than average. It is reasonable to interpret this ratio as a measure of the availability of alternative spouses. As the ratio increases, women have a greater chance of remarrying if they leave their current household, hence a greater ability to bargain for the smaller families they prefer.<sup>6</sup>

### *Formal Evidence*

Several of the assumptions (or restrictions) of the unitary model do not hold when tested empirically. Three challenges to restrictions of the unitary model are considered here: nonpooling of labor income; strategic behavior in the context of intergenerational relations; and the impact of one family member's labor choices on those of another family member. Tests of the nonpooling of labor income challenge an underlying assumption of the unitary model. Such tests also show that policy measures might differ depending on the various methods by which household members control resources. The other tests of formal restrictions are not phrased in terms of policy. The tests might seem to state obvious points, but they contribute evidence that challenges the unitary model.

**THE INCOME-POOLING RESTRICTION.** A key assumption of the unitary model is the pooling of household income. Income pooling implies that the identity of the individual earning the income has no effect on the household demand for goods and leisure, except through the earning individual's choice between leisure and work. Direct tests of the pooling of labor income have econometric problems. Some studies therefore focus on unearned income. In his study, which concludes that not all households pool income, Schultz (1990, pp. 601-02) notes,

If non-earned income (or ownership of the underlying asset) influences family demand behavior differently, depending on who in the family controls the income (or owns the asset), then the preferences for that demand must differ across individuals and such families must not completely pool unearned income.

Similarly, Thomas (1990, 1992) finds that increased (nonlabor) income held by women leads to a greater share of the household budget devoted to expenditures on education, health care, and food.<sup>7</sup>

The use of unearned income to test the income-pooling hypothesis is subject to econometric criticisms because it likely reflects past choices (Haddad, Hoddinott, and Alderman 1994). Although none of the existing tests are definitive (the strongest proof may require an experimental design that randomly assigns transfers to males and females), many of the more recent studies have addressed the possibility that the results are an econometric artifact of an unmeasured factor or reverse causality. Thomas observed (1992, forthcoming) that fathers and mothers behave differently toward daughters and sons. One explanation—albeit somewhat strained—may be that mothers with daughters choose to work or invest differently from those with sons. In his household fixed-effects model, however, Thomas also includes several controls for unobserved individual factors by taking differences across children and across parents. His results do not disappear with these controls.

Taking a different tack, Hoddinott and Haddad (forthcoming) use traditional cropping patterns in Côte d'Ivoire to model household behavior based on income sources. They also find that income is not pooled. When the share of cash income received by wives in Côte d'Ivoire is increased, expenditures for food increase and expenditures on alcohol and cigarettes decrease. In their study of informal credit programs in Bangladesh, Pitt and Khandker (1994) also find that credit affects household education and consumption choices differently if it is given to women rather than to men. (This study also employs a methodology that treats the availability of credit much as an experiment and uses that to control for the fact that credit choices reflect household preferences.)

Collective models provide additional tests of income pooling. Moreover, the efficiency assumption within collective models strongly restricts the way in which different income sources may influence consumption patterns. Thus, the efficiency assumption provides additional tests of how changes in household and individual income affect household consumption (Bourguignon, Browning, and Chiappori 1994). Bourguignon and others (1992, 1993) construct a general model that encompasses both the unitary and the collective frameworks as special cases. Using data from France and Canada, they find that household income is not pooled in either country. The restrictions of the collective models do hold up; that is, the efficiency assumption is valid. Even more interesting is the comparison, in the second paper, between a sample of couples and two subsamples of singles. The unitary model fails for the couples, but not for the singles. This would be the case if the unitary model failed because of a sharing process negotiated between family members.

**INTERGENERATIONAL TRANSFERS.** The unitary model implies that benefactors have no incentive to behave strategically. Children, even rotten ones, do not attempt to raise their consumption at the expense of others because if they did, an altruistic benefactor would automatically reduce the size of the transfers made to the children. Correspondingly, it is possible to test the hypothesis that altruistic benefactors will not intentionally manipulate the behavior of the recip-

ient. If Becker's (1981) model holds, we should not find evidence of benefactors behaving strategically by using bequests to obtain attention or monetary transfers from their offspring. Lucas and Stark (1985) and Hoddinott (1992), however, find that parents do behave strategically; in Botswana increased holdings of inheritable assets lead to higher monetary transfers from nonresident family members (Lucas and Stark). The same pattern occurs in western Kenya in the case of sons who anticipate receiving an inheritance (Hoddinott). Similarly, the results in Cox and Jimenez's (1992, p. 167) study of Peru were found to be "inconsistent with the strict Barro-Becker altruism motive."

In a related vein, Altonji, Hayashi, and Kotlikoff (1992) formally test altruism by modeling the movement of children's expenditures when parents' income changes. They interpret their rejection of altruism as supporting the presence of bargaining within households and as a direct challenge to the central assumption in Barro's (1974) model.<sup>8</sup>

**LABOR SUPPLY DECISIONS.** Restrictions on decisions about labor supply (time spent earning income) provide some very specific tests of the effect of wages on the labor supply of spouses. The unitary model implies that, for a given increase in total income, an increase in the husband's wage will affect the amount of time his wife works to earn income exactly the same as an increase in the wife's wage will affect the husband's time spent earning income.<sup>9</sup> Evidence from the United States (Ashenfelter and Heckman 1974) rejects the equality of these effects (see also Killingsworth 1983). Further, using panel data to control for unobserved fixed effects, Lundberg (1988) rejects the hypothesis that the labor supply of the husband and wife is jointly determined, as predicted by the unitary model.

Similarly, recent work has focused on empirical tests characterizing the "collective approach. Chiappori (1988, 1992a) derives restrictions on labor supply in a model where consumption and leisure are private goods and extends the analysis to collective models. Fortin and Lacroix (1993) estimate a general model of labor supply in which both the unitary and the collective frameworks can be tested as special cases. Using data from Canada, they find that the restrictions of the unitary model are strongly rejected but that the analogous ones from collective models are not. Browning and Chiappori (1994) analyze data on consumption and find that the restrictions are rejected for couples but not for singles (who do not have to share consumption). Moreover, the collective generalization is not rejected for couples.

## Conclusions

Despite the accumulated evidence that income is not pooled, the unitary model, bolstered by ad hoc assumptions, retains an impressive ability to explain the new body of evidence on inequality within the household. Moreover, in many cases the choice of models will not affect either policy or research; Occam's razor argues that in these cases the simplest approach be taken.

That said, we maintain that the burden of proof should be shifted onto those who would claim that the unitary model should be the rule and the collective models the exception. Our intention is neither to discard the unitary model in its entirety nor to ignore legitimate concerns about interpreting the evidence critical of it. Although the rejection of the restrictions in some of the models discussed has few direct qualitative implications for policymakers, collective models themselves do have policy ramifications. Under many circumstances, acceptance of a unitary model of the household, when it is inappropriate, has more serious consequences for policy than does rejecting a unitary model when it is appropriate.

To reiterate an example, rejection of the collective model implies (erroneously) that targeting transfers to women is pointless; if the model is rejected when, in fact, it is valid, an efficient means of directing resources to women and children may be forgone. If the unitary model is rejected when it is sound, additional costs of targeting may be incurred. But most collective models imply equal or greater investment in children from income using resources controlled by women than the unitary model implies. Thus, unless the costs of targeting programs to women in poor households are significantly higher than targeting programs to poor households as a unit, the available evidence may be considered adequate to indicate that false rejection of the collective model is the more serious error.<sup>10</sup>

Equally important, a shift of theoretical focus will emphasize the need to question how resources and activities are allocated and monitored in program design and implication. In so doing, we surmise that more implications of household allocation processes will emerge.

Implicit in our arguments is a view that household economics has not taken Becker (1965) seriously enough. "A household," he wrote, "is truly a 'small factory': it combines capital goods, raw materials, and labor to clean, feed, procreate, and otherwise produce useful commodities." (p. 496) We, too, perceive the household as a factory, but like all factories, it consists of individuals who—motivated at times by altruism, at times by self-interest, and often by both—cajole, cooperate, threaten, help, argue, support, and, indeed, occasionally walk out on each other. In fields such as labor economics, policy has been informed by research that goes inside the "black box" of the factory and discusses individual incentives within a corporation. Those interested in the welfare of individuals, especially in developing countries, may benefit from a similar approach to the household.

## Notes

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1. Becker (1988) considers several policy issues, including growth and the intergenerational transmission of inequality, where an understanding of the distribution of resources within households is important.
2. Apps and Rees (1988, forthcoming) offer an alternative cooperative model.
3. Other areas, such as targeting and environmental degradation, are discussed in Haddad, Hoddinott, and Alderman (1994).
4. Dey (1992) reports that more recent attempts by donors funding this project to safeguard women's access to land were frustrated by the managers of the project, who sided with male household heads in disputes over access to land. Thus, although attention to decision-making within households is necessary to avoid such unforeseen policy failures, this example indicates it may not be sufficient.
5. Additional examples can be found in Haddad, Hoddinott, and Alderman (1994), Blumberg (1991), and Guyer (1980).
6. The relationship of sex ratios to allocation of output within marriage was also suggested by Becker (1973). Alternative interpretations of Rao and Greene's results are offered in Haddad, Hoddinott, and Alderman (1994).
7. Thomas (1992) also explores the sensitivity of results to identification assumptions, for example, by excluding pensions from nonlabor income.
8. For other evidence from the United States, see Cox (1987).
9. This statement is the labor analogue of the standard Slutsky restrictions of basic consumer demand theory.
10. Targeting to poor women should impose few additional information requirements or administrative costs over targeting on the basis of poverty alone (and, if targeting to poor women is a first-stage filter, it may reduce costs). Thus, the most likely cost from such targeting might be the imposition of extra time burdens on women, which could reduce the welfare of the women and, possibly, of their children. Most studies indicate, however, that increased labor income for women offsets any negative effects of reduced time for child care (Leslie 1988). Receiving transfers should require less time than laboring for increased income. Thus, the risks of presuming nonpooling of income in the absence of strong evidence to refute it seem low.

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