

# Power and Bargaining in Intra-Household Resource Allocation: Race, Class and Gender in South Africa

May 2001

Jeffrey T. Bookwalter  
Department of Economics  
University of Montana  
Missoula, MT 59812-5472  
jeffb@selway.umt.edu  
406-243-4667

James Michael Warner  
Department of Economics  
College of Wooster  
Wooster, OH 44691  
jwarner@acs.wooster.edu  
330-263-2257

Jeffrey T. Bookwalter is an Assistant Professor at the University of Montana in Missoula, Montana.

James Michael Warner is an Assistant Professor at the College Of Wooster in Wooster, Ohio.

**Abstract** – Traditional development policy assumes that the construct of gender is relatively unimportant at the intra-household level. Further, the inter-relationships of race, class, and gender are rarely examined. Using data from South Africa we find that sources and levels of income, as well as individual power, significantly vary expenditure patterns. This violates the mainstream unitary household model and provides evidence that the unit of analysis should be shifted away from the household and towards its individual members.

## ***I. Introduction***

South Africa faces the daunting post apartheid task of increasing the well being of all of its citizens. The design and implementation of these new economic policies often center on the household as the beneficiary. However, a majority of policy design is based on the assumption that households behave in the same manner as individuals, and that when economic benefits accrue to the household, all members are better off. Mainstream models consider the household as a united entity where a single altruistic voice – referred to as a unitary model – makes productive and allocative decisions that increase the well-being of all its members (L. Haddad, J. Hoddinott, and H. Alderman 1997). Out of this assumption comes the notion that households pool their income and allocate the money according to a joint utility function.

This assumption, however, includes some controversial beliefs about pure altruism within the typical family unit. Of particular importance are the assumptions concerning gender relations and conflict over productive and allocative priorities within the household. Recent theoretical models specify some amount of intra-household conflict arising from different individual preferences and more accurately model bargaining over resource allocation (See, for example, James Warner and D.A. Campbell 2000). Effective policymaking at the household level requires an understanding of the growing evidence showing conflict over productive and allocative decisions within households.

This paper extends the existing literature in several ways. First, using income and expenditure profiles for male and female headed households, we show that South African households do indeed have differing expenditure preferences based on gender. In addition, we empirically model the power relationships among household members that shape expenditure

allocations. Estimating expenditure functions for subsets of households we show that the expenditures are affected by a number of factors, including the sex and educational attainment of the earner. The analysis is extended by making race and class distinctions. One overall implication of the empirical evidence is that households do not pool income, and do not behave as the unitary model suggests. Recognition that households are groups of individuals with differing resource endowments and varying preferences allows policymakers to design more appropriate and targeted policy initiatives.

## ***II. Race, Class, and Gender in South Africa***

Race, class, and gender differences are all critical for understanding the earning and allocation of resources in any country. However, the apartheid policy in South Africa made race and class synonymous and determined access to economic opportunity and income. At the extra-household level, apartheid determined economic opportunities via race. For example, from the national data set used in this paper, the average black household earned only 15.5 percent of a typical white household. Gender is an additional social construct that cuts across class and racial lines, adding another level of complexity to the interactions of the household and has important intra-household implications affecting both opportunities for income generation and allocation of those resources.

In general, definitions of class in the economic literature implicitly refer to access to resources. High levels of income imply access to resources, and residence in some certain 'class.' Low incomes, however, do not necessarily imply lack of access to resources. In some cases, low incomes may indicate a certain set of choices. Someone may opt for the life of a religious missionary and have a very low income, yet that implies little about the resources they are able to access. Access to resources define what Amartya Sen (1988) calls a capability set.

This set allows people to choose the types of things they would like to do and be. Using his methodology, people may have vast capability sets and yet have modest incomes. While acknowledging the problematic nature of assigning income as a determinate of class, we do so, and go one step further by equating class with race.

Apartheid policy and its legacy make the analysis of class as a unique analytical category less useful than it may be in other contexts. Under apartheid, race was the overwhelming determinant of access to resources. State policy prescribed the particular types of jobs available to the four official race groups. Race determined access to and quality of education. According to the survey, black household heads, on average, had less than four years of formal education, while comparable whites had more than ten years of education. Perhaps even more telling of this process is that only one in two hundred black households in the survey had income that met or exceeded that of the average white household. Race enforced a particular class position, and indeed became the expression of class.

While race and class define some of extra-household environment, gender is a particularly important aspect of differentiation within the household. Numerous case studies show that husbands and wives have different productive and allocative priorities and that conflict, rather than strict cooperation, is an important consideration in the household. Given this conflict, a potentially welfare-enhancing change, such as rising household income, is less likely to be successful if the benefits accrue to a member of the household who does not exhibit altruistic behavior. If the increase in household income gives one member an exploitative bargaining advantage, the additional income may not even represent a Pareto improvement for the entire household. Further complicating this analysis, is how gender relations are affected by class positions. For example, does the struggle over resources intensify at lower levels of

income? Recognition of these various issues within the household has profound implications for designing and implementing appropriate economic policy.

### ***III. A Statistical Profile of South African Households***

The use of a particular specification of household model requires some understanding of the ways in which households operate. Do households behave in a unitary way, pooling their income and allocating resources according to some joint household utility function? Do they cling to their individual earnings and allocate them according to their own preferences? Or, is there a more nuanced process by which income earners bargain over both income pooling and resource allocation? Finally, do these struggles change significantly at different levels of income?

One of the more serious problems with the unitary model involves the reallocation of income among family members. With the unitary model, initial allocation of endowments is irrelevant because the joint utility function determines the household's distribution. However, numerous studies reveal that husbands and wives do not pool resources and that expenditures change dramatically if income is reallocated within the household (see, E.R. Fapohunda 1988, 147, and Lawrence Haddad and John Hoddinott 1995, among others). For example, one study shows that if cash income is diverted from men to women, food expenditures rise and alcohol and cigarette expenditures fall (Simon Appleton 1991: 20). This evidence empirically supports the idea that men and women have distinct allocative priorities within the household. The unitary model cannot explain this income reallocation and has no way to incorporate power and bargaining within the household.

An analysis of income and expenditures is one way to shed light on this issue. Income data show the distribution of income within households and how it varies by household structure and characteristics. If this income is pooled, expenditure patterns should not vary according to income allocations within the household. We look at income and expenditures on certain classes of goods broken down by sex of the household head, race, and other structural features of household.

### **Section III.A—The Saldru Data**

The data cited in the following sections are drawn from a household survey commissioned by the World Bank for the Project for Statistics on Living Standards and Development (PSLSD). With World Bank technical support and funding, the study was undertaken by the South African Labour and Development Research Unit (SALDRU) at the University of Cape Town, and the data collected in late 1993.

Many of the data in this paper are broken down by the sex of the household head. The category of household head is itself fraught with controversy over both what constitutes a household and the designation of its “head.” Using the SALDRU data, K. Le Roux (1994), cited in Debbie Budlender (1999), elucidates ten different categories of family and household in South Africa. In addition, nearly twenty percent of them fit into an eleventh category that could be classified as “other,” implying an even wider range of existing household types and structures.

A second household headship controversy is summed up in the question, “head of what?” Definitions of headship historically have not focused on any one particular characteristic of the designate. Sometimes headship refers to ownership of a dwelling, others by economic contribution to collective household income, still others by the oldest adult resident in the

household. Some surveys rely on the judgment of the enumerators, while others allow the specification of the household head to be decided by the household during the interview. To avoid imposing a certain definition of household head, the SALDRU survey allowed respondents to classify themselves. This reconciles the survey results with actual household perceptions of headship. However, it leaves largely unexplained, the question of “head of what?” In some cases, the household’s self-defined head is clearly the owner of the dwelling or the largest source of income, other times not. In the end, the analytic breakdown employed in following sections is useful for understanding some of the basic characteristics of households and how they differ by the perception of their household head, but sheds less light on the circumstances that drive the creation of those perceptions.

### **Section III.B – Income Generation**

South African households generate income from a wide variety of sources. A common view of the African household is of an entity isolated from markets and producing agricultural products for home consumption. However, the data show this is misleading in the discussion of South Africa. Even the poorest, black and rural South Africans earn little more than ten percent of household income from agriculture. The majority of income comes from wages, remittances and pensions. These households create livelihoods with a small amount of agriculture, some wage work, and remittances from household members working in cities, mines, or large commercial farms. In the higher income quartiles, wages become increasingly important.

The following section uses both the aggregated total monthly income figures and household member-specific income to show the interaction between household structure and income generation. Income and expenditure data is quoted in South African Rand (SAR).<sup>1</sup> The

mean black household monthly income for male and female-headed households is R1102.78 and R820.94, respectively. For whites the numbers are R7106.64 and R3321.27, respectively.

In addition to income levels, it is important to understand how household members contribute individually to the household’s collective income. Income flows into the household from male and female household heads, male and female spouses, children and other household members. Our assertion here is that sources of income are an initial indicator of control and therefore shape the final allocation of resources. In order to evaluate this claim it is important to determine the relative income contributions of household heads, spouses, children and others.

The first step was to assign income to individual earners within the household.<sup>2</sup> We aggregate individual incomes from various income sources, including wages, remittances, and other types of income attributable to individual household members. This total assignable male head and female spouse income was subtracted from the composite household total monthly income figures. The residual was classified as joint income. The majority of this joint income comes from the value of imputed household production, imputed rent from owner occupied or in-kind housing, the production and sale of agricultural goods, and profit from household businesses.

Table 1:Assigned Incomes, Black Male Headed Households with Spouse

Income Quartile	Male Head		Female Spouse		Other Household Members	
	Assigned Income	Percent of Total	Assigned Income	Percent of Total	Assigned Income	Percent of Total
1	118.75	60	22.20	11	57.45	29
2	287.20	56	72.42	14	154.07	30
3	463.41	51	136.84	15	313.88	34
4	1080.24	42	434.83	17	1064.80	41
All	526.16	45	184.90	16	444.52	38

Table 2:Assigned Incomes, White Male Headed Households with Spouse

Income Quartile	Male Head		Female Spouse		Other Household Members	
	Assigned Income	Percent of Total	Assigned Income	Percent of Total	Assigned Income	Percent of Total
1	1015.83	54	192.24	10	672.01	36
2	1870.93	46	552.55	13	1674.47	41
3	2332.22	38	1116.82	18	2709.79	44
4	5341.89	38	1753.17	12	6961.42	50
All	2831.37	39	986.84	13	3404.75	48

Within both black and white male-headed households, the male head is the source of the largest percentage of income. However, in the upper quartiles male head income is less than half the household's total. This occurs for several reasons. First, a higher household income usually means that more household members are earning. Second, at higher incomes, households report more profit income and larger imputed rents from owner occupied housing. These categories of income could not be assigned to individual household members.

This income assignment is crucial to the identification of expenditure preferences based on control of income. However, a complete picture of bargaining within the household needs to relate individual income generation, specific individual member characteristics, and household expenditure preferences. The following section creates expenditure profiles different classes of goods and household types.

### **Section III.B – Household Expenditure**

Households allocate their incomes to a wide variety of consumption expenditures. A starting point for this analysis is to aggregate individual expenditures into five categories representing different types of household expenses.

Table 3: Expenditure Categories

Expend1	Expend2	Expend3	Expend4	Expend5
Food Items	Household Expenses	Personal Care	Discretionary	Savings/Other
Grains	Rent	Meals Eaten Out	Cigarettes	Savings
Dairy	Washing Supplies	Personal Care Products	Alcohol	Dues
Meat and Fish	Child Care	Clothes	Entertainment	Donations
Fruit	Telephone	Dentist/Doctor	Luxury Goods	Remittances
Vegetables	Newspapers/Magazines	Hospital	Holidays	
Oil	Bedding/Towels	Medical Supplies		
Sugar	Furniture	Traditional Healer		
Other Foods	Cloth Materials	Shoes		
	Home Repair			
	Kitchen Equipment			
	Transportation			
	Automobile Expenses			
	Insurance			
	Utilities			
	Household Help			

Expenditures on these categories of goods reflect the preferences of the household or the household decision maker. These preferences depend on a wide variety of individual and household characteristics, including sex and age structure, education levels, and total household income. As a preliminary approach to analyzing gender issues, households were divided by whether the household was male or female headed.

From a power and bargaining perspective, the two household categories suggest different degrees of autonomy and decision making power for women. Presumably, the household with a designated male head would exhibit preferences more consistent with the male household head's own preferences. Women within these households may well have some decision making power, but are constrained to a menu of choices heavily influenced by the head's preferences. The male head has the power to make an initial set of decisions resulting a restricted set of expenditure options, and the women chooses from this limited set.

In a household headed by a woman with no spouse, resource allocation choices, as reflected in expenditure patterns, are not the result of an intra-household bargaining process and are less likely to be distorted by power of someone else to impose their preferences on the

household. However, extra-household constraints, including her race, community, education, income and others, continue to influence these expenditure decisions.

Male headed households, regardless of race spend more on all of the categories because their incomes are larger. This expenditure gap is small in food and other household items (Expend1 and Expend2, respectively), and large between discretionary and miscellaneous expenditures (Expend4 and Expend5, respectively).<sup>3</sup> The following table reports these expenditure patterns as household per capita figures.

Table 4. Per-Capita Household Expenditures

	Black Households			White Households		
	All	Male Headed	Female Headed	All	Male Headed	Female Headed
Per Capita Expend1	104.72	109.19	94.91	235.60	232.99	246.46
Per Capita Expend2	117.01	131.22	86.01	1111.32	1096.38	1202.03
Per Capita Expend3	26.67	29.73	19.93	167.79	165.61	181.95
Per Capita Expend4	17.72	22.56	7.11	142.41	147.07	115.66
Per Capita Expend5	38.55	48.59	16.81	136.99	128.94	185.66
Per Capita Total Expenditures	293.73	326.73	221.28	1793.60	1769.05	1939.35
Valid N	6403	4406	1956	1353	1146	202

The per capita expenditures highlight the same patterns as absolute expenditure levels. However, the difference in expenditures on different categories is also driven by income differences between different household configurations. While the descriptive statistics for per-capita expenditures do not show large absolute differences across different household types, the percentage differences are large and consistent with the conventional wisdom regarding the way in which households allocate expenditures. However, these per-capita figures mask the variation arising from the large income variations between households and across racial lines

There are perhaps two categories of expenditure that best illustrate differing household preferences – food and discretionary expenditures (Expend1 and Expend4, respectively). The following tables compare the expenditure – for each income quartile – on these two categories between households with 1) a present male head and female spouse, and 2) a female head with

no spouse. Households headed by men with no spouse were excluded because they tended to be young, single men with no dependants. Food expenditures are presented in household per-capita figures. Discretionary expenditures, comprised largely of alcohol and cigarette purchases, are unlikely to be distributed to individual household members and thus are presented as totals, rather than in per-capita figures.

**Table 5: Household expenditures; Lowest Income Quartile**

Type of Household	Per Capita Food Expenditure	Discretionary Expenditure	Household Size	N
Black, Male Headed/Female Spouse	66.99	27.73	5.8	759
Black, Female Headed	89.75	14.30	5.0	606
White, Male Headed/Female Spouse	220.22	170.37	3.2	149
White, Female Headed	237.70	101.73	1.7	112

**Table 6: Household expenditures; Second Lowest Income Quartile**

Type of Household	Per Capita Food Expenditure	Discretionary Expenditure	Household Size	N
Black, Male Headed/Female Spouse	78.85	32.63	6.0	716
Black, Female Headed	88.34	17.96	5.4	585
White, Male Headed/Female Spouse	222.40	249.84	2.7	247
White, Female Headed	255.33	213.57	2.0	35

Consistent with our hypothesis, at low income levels female-headed households allocate more resources to food and less to discretionary items. In the middle income quartiles, expenditure on food essentially converges and the discretionary expenditure gap widens considerably. In these lower income quartiles, the data support the idea that men and women have different preferences and allocate resources to different priorities. Women allocate significantly more resources to food and far less to discretionary items. An interpretation is that male household heads satisfy demand for their discretionary goods first, followed by household goods. Female household heads seem to do the opposite.

**Table 7: Household expenditures; Second Highest Income Quartile**

Type of Household	Per Capita Food Expenditure	Discretionary Expenditure	Household Size	N
Black, Male Headed/Female Spouse	97.31	50.38	6.5	842
Black, Female Headed	98.92	33.10	5.9	346
White, Male Headed/Female Spouse	218.92	330.47	3.8	267
White, Female Headed	259.82	319.61	2.7	22

**Table 8: Household expenditures; Highest Income Quartile**

Type of Household	Per Capita Food Expenditure	Discretionary Expenditure	Household Size	N
Black, Male Headed/Female Spouse	118.77	84.10	6.4	985
Black, Female Headed	112.51	66.16	7.1	346
White, Male Headed/Female Spouse	232.36	649.24	3.8	287
White, Female Headed	298.02	539.18	3.2	11

The data continues to show the expected results. For example, the familiar Engel curve relationship, where households allocate a declining proportion of their income to food as household income rises, is apparent. Conversely, as incomes rise, a larger percentage of household income is allocated to discretionary expenditures. As incomes rise through the third income quartile, expenditures on both food and discretionary items begins to converge across male and female headed households. Both the gap in food expenditures for black households and the gap in discretionary expenditures for white households become statistically insignificant.

In this highest income quartile, expenditures on food are similar and discretionary expenditures continue to converge. As incomes rise, both male and female household heads allocate more of their resources to both goods. However, rising income for female household heads is allocated to discretionary goods at a rate higher than that of male household heads – implying a higher income elasticity for female heads. However, because the small initial expenditures on these goods for female headed households, even with the higher elasticities, the values never converge.

These expenditure patterns highlight some differences in resource allocation preferences between male and female headed households. Consistent with literature on this subject, male household heads satisfy their demand for discretionary goods first and then allocate increasing proportions of resources to household goods. Women seem to do the opposite; they first satisfy the demand for household goods, and then allocate increasing proportions of resources to discretionary goods.

The descriptive statistics analyzed in the previous section highlight some of the allocative priorities of different types of South Africa households. These differing expenditure patterns suggest that individuals within a household do not always pool income and allocate it according to the household's joint utility function. Rather, an individual earns the income, and other individuals within the household have the power to affect the available expenditure choices. Final expenditure patterns can be seen as the outcome of differing individual resource endowments (incomes), the effects of differing preferences and the existence of power differentials within the household. Differing resource endowments and expenditure preferences are documented in the descriptive statistics. The following section is devoted to modeling these differential power relationships.

#### ***Section IV – Modeling Household Consumption***

The household unit presents a conundrum for neoclassical microeconomics. Individuals are typically presented as rational economic actors in an unhindered market environment, maximizing their utility subject to specific constraints. These market exchanges represent mutually beneficial transactions to the participating individuals. While this may be appropriate at the individual level, a problem of aggregation emerges when the entire family is the unit of

analysis. Familial relations are often not deterministic and in many cases are not analogous to rational market exchanges.

This dilemma is solved in the neoclassical approach by assuming no individual economic optimizing behavior takes place within the household. The mainstream unitary model, as represented by Gary Becker's *A Treatise on the Family* (1991), portrays the household as a harmoniously acting collective unit in which the entire family's income is apportioned according to the needs of the household. A dichotomy emerges between the family and the market; pure rational economic behavior exists in relation to the outside market and pure cooperation exists between the family members. Market behavior does not enter familial relations and cooperative behavior is not exhibited outside the household.

Becker sees the household as a mutually beneficial unit where all actions of production and consumption are subordinate to the entire household's welfare. Throughout his analysis he interweaves both altruism and the notion of a benevolent dictator to make this point. Altruistic behavior necessitates "...that members do not have to be supervised because they willingly allocate their time and other resources to maximize the commodity output of their household (Becker, 32)." Conceding that altruism may not always be the primary motive in household action – although he always refers only to children and not adults as the violators of the altruism assumption – Becker invokes the "benevolent dictator" who will enforce the most productive allocation of labor time. Individual selfishness is not possible because household members are altruistic, or if they are not, an altruistic benevolent dictator makes the allocation decisions.

Once production decisions are made, allocation of resources within the household is determined by the household's collective well being, represented by a joint utility function. An intra-household distribution where the marginal utilities of each individual and each good are

unequal is not efficient and could therefore not be the outcome. A critical implication of this result is that regardless of the recipient of household income, the distribution of goods will remain the same. This type of cooperation is the basis for traditional economic analysis at the household level.

An implication of this type of household model is that, because distribution is not in any way contested, it can be dropped in order to simplify the analysis. This convenient assumption highlights traditional economic view of the household as an “aggregated individual.” However, the data in earlier sections suggest that the earnings and demographic structure of household does affect the allocation of resources within the household. In addition, a wide variety of anthropological and sociological evidence supports the claim that conflict exists in the typical African household. As early as 1949, it was reported that husbands and wives do not have perfect knowledge about each other’s income (Jane L. Guyer 1988: 159). More recent studies also reveal such phenomena as husbands and wives loaning money to one another at relatively high interest rates, selling goods and services to each other, and paying each other for labor time (Christina H. Gladwin and Della McMillan 1989: 350, and Aili Mari Tripp 1989: 615). All of this evidence suggests a great deal of intra-household negotiation.

The portrayal of a unified household masks this increasing evidence that many decisions within the household are conflictual in nature. With the recognition that bargaining is at the core of household dynamics, a game theoretic paradigm, where rationality is assigned at the individual rather than the household level is a better way to model household outcomes. In this context, “players” try to maximize their gains while interacting with another rational utility maximizer who may have different preferences. When this heterogeneity is introduced, as it can be in these bargaining models, a greater realism emerges.

In every household men and women must struggle over productive and allocative decisions. Since they are not homogenous subsets of a larger unit, their individual specifications have to be considered. Quite simply, women do not always control the fruits of their labor and the extent to which they receive payments dependent upon the husband. While many of these studies cited above focus primarily on household production relations, the argument easily extends to the allocation of income derived from household production and other income sources.

### ***Section V – Empirical Model and Results***

To better understand the behavior of individuals within the household and how they use power in the bargaining process, we estimate expenditure functions. These estimates relate the expenditure on discretionary goods and food to certain household characteristics. The sample was limited to households with a male head and female spouse in order to illustrate how power differentials, proxied by education and income earning, and absence of the male head for a significant time period, affect the distribution of household resources.

The independent variables include dummy variables for an absent male household head (Absent), the log of household size (Lhhsiz), education of the male household head (Medhead), education of the female spouse (Fsped), the log of total monthly income (Lntotmnc), the log of income earned by the female spouse (Lnfsinc), and the log of income earned by the male head (Lnmhinc).

The dependant variables are percentage of total expenditures on Food (Expend1) and discretionary spending (Expend4). These dependent variables were chosen because they represent the two “extreme” types of consumption associated with males and females within the household. Consistent with the literature, we assume men prefer individual consumption on

discretionary items (Expend4) to more collective consumption (food), while women prefer the opposite (Simon Appleton 1999, Gisela Geisler 1992). This is consistent with the descriptive statistics presented here, which show that discretionary expenditures are a more important category of expenditures to men and male headed households (Tables 5-8). Clearly, women do purchase discretionary items but the evidence presented here shows that men consistently allocate more resources to discretionary expenditures.

Econometrically, if the unitary model holds, source of income should not matter in the determination of these expenditures within a male-headed and female spouse household. To test this proposition, we break the sample into groups for black and white households with a male head and female spouse at different education levels. Each of these models was similar, except the unitary model used a composite income figure, while the non-cooperative used incomes assigned to different members of the household. If the unitary model is correct, we could expect the coefficient on the total household income to be the roughly the same as that of the individually assigned incomes in the non-cooperative model. The other variables shed light on other factors influencing expenditures on discretionary goods. Regression results are presented in Table 9.

Table 9 Regression Results for Log Food Expenditures

	Blacks		Whites	
	Unitary	Noncooperative	Unitary	Noncooperative
Constant	.966811** (8.516)	.382752** (4.076)	1.201857** (4.108)	.336996 (1.369)
Absent	.003934 (1.076)	.007093 (1.878)	-.061294** (3.404)	-.065033** (3.524)
Lhhsz	.082133** (3.716)	.031495 (1.412)	.477783** (9.087)	.447005** (8.335)
Medhead	-.023443** (5.274)	-.026884** (5.825)	-.023513** (3.244)	-.028305** (3.834)
Fsped	-.011942** (2.7)	-.01683** (3.688)	-.002485 (.450)	-.002665 (.47)
Lntotmnc	-.256731** (14.886)		-.388026** (11.157)	
Lnfsinc		-.068417** (5.188)		-.121422** (4.562)
Lnmhinc		-.121465** (8.117)		-.194994** (7.14)
Adj. R <sup>2</sup>	.38931	.3474	.3616	.32868
F-Stat	136.8	95.5	49.6	36.0
Number of Observations	1065	1065	429	429

T-Statistics in Parenthesis (\*=Significance 95%, \*\*=99%)

Overall the results support our hypotheses. The signs are as our theory would suggest and are, for the most part, statistically significant. Table 9 also supports the growing evidence in favor of non-cooperative household modeling. More specifically, household size, as a control variable, has a positive impact on food expenditure. These coefficients are positive and three of the four are significant at the ninety-nine percent level. While the female spouse education variable is negative, the coefficient is smaller and statistically less significant when compared to the male's education. This supports the notion that male preference for food expenditures is less than their female counterparts. In other words, increasing male education, as a proxy for power, would decrease food expenditures.

All the coefficients on income support the Engel curve relationship. Consequently, percentage expenditures on food decline as incomes rise. The coefficients are consistently

higher for white households because of their higher overall earnings and lower percent allocation to food (roughly thirteen percent of white household expenditures is on food, which contrasts sharply to blacks who spend approximately fifty-three percent). While both white and black spouses reduce food expenditures with increases in their income, overall the women reduce expenditures at a much slower rate than that of an additional increase in the male's income. Again, increasing male income would more quickly reduce food expenditures.

The absent male variable raises interesting power and class issues. If men are absent, there is one less person to feed and food expenditures should decline, as shown by the negative coefficient for white households. However, while only statistically significant at the 92 percent level, it is interesting to note that the black households experience an increase in food expenditures when the male is absent. This is especially interesting because black households earn about 20% of what white households earn in this sample. An absent male suggests control going to the female spouse and therefore an increase in food expenditures. This is consistent with the descriptive statistics in Tables 5-8.

The econometric evidence shows that women, across race and class lines, prefer to spend money on food. The education variables, the assigned income, and the absence of the male support the idea that men prefer to spend less on food than women. The education coefficients are relatively small as compared to income and suggest individual assigned income is relatively more important in food expenditure outcomes. There are also sharp race/class differences shown by the relative size differences of the coefficients between the poorer black households and the richer white households. The absent male, particularly in the black households, suggests a heightened conflict over expenditures at lower incomes.

To test the robustness of the theory, similar equations were run on the “male” preferred good. The following table estimates expenditure functions for the log of percentage expenditures on discretionary goods (Lnexpend4).

Table 10. Regression Results for Log Discretionary Expenditures

	Blacks		Whites	
	Unitary	Noncooperative	Unitary	Noncooperative
Constant	-1.764989** (4.72)	-2.124726 ** (7.122)	-4.264** (6.7)	-4.735656** (9.169)
Absent	-.045901 ** (3.253)	-.044624** (3.142)	.132825** (3.582)	.130586** (3.582)
Lhhsiz	-.335864** (4.694)	-.3536** (5.021)	-.526993** (4.734)	-.536724** (4.926)
Medhead	-.014621 (1.019)	-.019818 (1.369)	-.010826 (.697)	-.012533 (.825)
Fsped	-.0133782 (.942)	-.014152 (.991)	-.009646 (.828)	-.012002 (1.046)
Lntotmnc	-.096126 (1.719)		.227943** (3.022)	
Lnfsinc		-.05848 (1.418)		.146156** (2.637)
Lnmhinc		.009630 (.201)		.181124** (3.291)
Adj. R <sup>2</sup>	.05774	.05542	.09724	.11511
F-Stat	10.15476	8.305	8.703	9.867
Number of Observations	747	747	409	409

T-Statistics in Parenthesis (\*=Significance 95%, \*\*=99%)

Given that these discretionary goods are more of a priority for men than women, we expect most of signs to be the opposite of those for the coefficients on food expenditures. While the overall explanatory power of these equations is lower than those for food expenditures, for the most part the signs conform to our theory. As expected, the signs on household size are negative and significant at the 99 percent level. None of the education variables for either race or sex are statistically significant. Perhaps most interesting is that when black men are absent, households spend significantly less on discretionary items. This illustrates women’s ability to make their own expenditure choices and limits the influence of men’s preferences and supports non-cooperative household models.

For white households, the positive coefficient on absent white male head coefficient suggests that the drop in food expenditure reported in Table 9 is replaced by an increase in discretionary spending for the richer white households. White households, with large, positive, statistically significant coefficients on income are clearly channeling additional income into discretionary items. This happens because white households have almost universally satisfied all their basic requirements and additional income is allocated to luxury goods. This is not the case for black households, who show a greater tension over discretionary expenditures. Although not statistically significant, the different signs on the male and female coefficients imply different allocative priorities. Overall, it seems that race, and therefore class, issues dominate expenditure patterns on these discretionary goods.

Both the descriptive statistics and the previous expenditure functions support the idea that, within the household, there is struggle, conflict, and bargaining over the allocation of resources. Education differentials are a way to begin to characterize power within the household. Additional education for any household member enhances the ability to generate income and increases bargaining possibilities improving the “threat point” of negotiation. Thus, education is a source of power, in part because of increased contributions to household income, but also because in the event of a total breakdown in intra-household bargaining, educated household members have a better fallback position. To see the effects of education differentials within households, we look at households with significant education gaps between the male head and female spouse. For black households, we looked at those households with a literate male head/illiterate female spouse and an illiterate male head/literate female spouse.

White households have much higher education levels, and literacy is near universal. Instead of literacy, we used completion of a secondary education (ten years) as the standard for

an 'educated' person. The white sample was broken down into two groups; those with an educated male head/uneducated female spouse and those with an uneducated male head/educated female spouse. The purpose of this education delineation is to identify the extreme power differentials, as proxied by education, between household male heads and female spouses. These specific samples allow us to better test power and expenditure preferences.

Regression results expenditures on log food expenditures for these eight sub-samples are presented in Table 11. The first two columns show the coefficient estimates on the determinants of expenditures on food items for black households with a literate female spouse and an illiterate male household head. The estimates largely support the notion that education, as a proxy for power, is very important to the determination of expenditure patterns. First, in both the unitary and the non-cooperative regressions, as incomes rise households devote smaller percentages of their income to food expenditures. However, when broken down in the non-cooperative model, the estimates show that these expenditure declines are coming from men's income. This suggests that black women with relatively high levels of education – our proxy for power within the household – are able to control the allocation of their own incomes, and continue to allocate it to food.

In the case where black men are more educated than their spouses, several features stand out. First, increases in both education and income result in declining allocations to food. More importantly, rising incomes earned by either men or women in the household diminishes the expenditure share of food. This is further evidence that women with little power cannot exercise control over the resources they bring into the household.

Table 11. Regression Results for Log Food Expenditures

	Black				White			
	Literate Woman – Illiterate Man		Literate Man – Illiterate Women		Educated Woman – Uneducated Man		Educated Man – Uneducated Women	
	Unitary	Non- cooperative	Unitary	Non- cooperative	Unitary	Non- cooperative	Unitary	Non- cooperative
Constant	0.669 (1.78)	-0.051 (0.14)	0.849 (2.84)	0.384 (2.84)	2.02 (2.93)	1.171 (1.81)	1.34 (1.74)	0.462 (0.593)
Absent	-0.005 (0.34)	0.003 (0.23)	0.01 (1.19)	0.016 (1.79)	0.0009 (0.019)	0.009 (0.176)	-0.049 (1.52)	-0.059 (1.77)
Lhhsize	0.283 ** (4.10)	0.231 ** (3.20)	0.07 (1.12)	0.001 (0.01)	0.14 (0.93)	0.17 (1.07)	0.453 ** (4.32)	0.451** (4.10)
Medhead	0.062 * (2.62)	0.061* (2.40)	-0.046 ** (2.62)	-0.044 * (2.23)	0.001 (0.084)	-0.004 (0.208)	-0.049 (1.39)	-0.079* (2.27)
Fsped	-0.33 (1.11)	-0.06 (1.89)	0.021 (1.04)	0.021 (1.04)	0.023 (0.753)	-0.034 (0.83)	0.013 (0.972)	0.014 (1.06)
Lntotminc	- 0.27** (5.219)		- 0.227** (4.83)		- 0.496** (5.219)		-0.378** (3.97)	
Lnfsinc		0.015 (0.30)		-0.084 * (2.16)		-0.139 * (1.97)		-0.05 (0.674)
Lnmhinc		-0.176 ** (3.30)		-0.096 * (2.58)		-0.312 ** (4.27)		-0.215* (2.56)
Adj. R <sup>2</sup>	0.30	0.21	0.37	0.32	0.49	0.43	0.32	0.26
F-Stat	10.8	6.10	13.40	9.29	8.85	6.22	10.34	6.90
N	114	114	106	106	41	41	99	99

T-Statistics in Parenthesis (\* = Significance 95%, \*\*=99%)

Expenditures for white households follow a very similar pattern. Rising income results in a decrease in the percentage of income allocated to food. However, when that income accrues to women, the decline is slower and marked by significantly lower coefficients.

These results add further evidence to our central claims. First, the income earner matters when it comes to allocating household resources. The coefficients on men and women’s income, regardless of race show that they have distinct preferences and are able to use what power they have to enforce those preferences. Income accruing to men gets allocated to discretionary items at a higher rate than does income accruing to their spouses. This effect is highlighted by looking at the households with large education differentials. Women with significantly more education

than their husbands are in a better position to control the fruits of their labor, and this is evident by looking at how expenditures on food and discretionary items change with incomes and education levels.

## ***Section VI – Conclusion***

As South Africa emerges from apartheid planning and policymakers undertake the arduous task of implementing comprehensive development strategies it is critical that all members of society are taken into account. This requires a more thorough understanding of policy implications and their interactions between race, class and gender, particularly at the household level. In our framework, race and class are extra-household factors that influence the level of household income and the ability to access resources. Gender is the major factor in bargaining over those resources within the household.

Assumptions of altruistic behavior in the unitary household model lead policymakers to the conclusion that merely increasing income to households automatically benefits its members, via some process of income pooling and benevolent allocation. Some recent theoretical models show new ways to look at the household as a collection of members with different preferences, who bargain over the earning and allocation of resources. This paper empirically examines these issues and sides with the newer non-competitive models.

Looking at descriptive statistics, we show differing expenditure patterns of male and female headed households, which suggests the existence of different allocative preferences, and underscore the need to look at households as non-cooperative entities. Regression analysis of expenditures for different expenditure groups and different household types consistently support the idea that men and women choose to allocate resources in different ways. Individual sources of income as well as other factors do matter.

Given that these different preferences exist, we show that power relationships in households with a male head and female spouse also matter. These power relationships are determined in part by intra-household gender relations. Women have stronger preferences for food expenditures, while men prefer larger amounts of discretionary goods. The paper goes on to demonstrate that women with power, as measured by education, and regardless of race, are better able to control their income. When they, rather than the male household head, make these allocation decisions, more is spent on food, and less on discretionary items. Policymakers attempting to improve household welfare by augmenting male wages for example, may do so at the expense of other members of the household. If rising wages alter power relationships in some manner, this increase in wages may not even be a Pareto improvement for the household.

Race and class issues also have effects on the household and its expenditure patterns. The legacy of apartheid has meant that race and class have been largely interchangeable. Using race as a proxy for class, we find significant effects on intra-household resource allocation. White and black households have distinct expenditure preferences, which are further defined by the gender-based power differentials between decision makers. Black households exhibit stronger power and bargaining effects, largely because their lower incomes intensify the struggle over very limited resources. This is consistent with the data showing that low income, male headed households exhibit large expenditure preference for discretionary goods.

A more sophisticated approach will better delineate power within the household. For a policymaker this is important because if the goal is to increase household food expenditures it adds an additional layer of complication. Success may be attained by increasing the power of female household members with strong preferences for food, or promoting some longer term expenditure determinants like education. Only by increasing the understanding of how both intra

and extra-household factors operate will policymakers be able to able to predict the effects of various policy prescriptions.

Increasing household income is a crucial part of the development process for all South African citizens. However it is critical to understand that a general rise in income may have little practical consequence, or indeed negative consequences, if allocation patterns are misunderstood. Gaining a better understanding the complex interaction of household members is an important step in this process.

## References

- Appleton, Simon, Ilaria Chessa, and John Hoddinott. 1999. "Are Women the Fairer Sex? Looking for Gender Differences in Gender Bias in Uganda," paper presented at the 2000 ASSA Meetings in New Orleans, Louisiana.
- Appleton, Simon. 1991. "Gender Dimensions of Structural Adjustment: The Role of Theory and Quantitative Analysis." *IDS Bulletin* 22(1): 17-21.
- Becker, Gary S. 1991. *A Treatise on the Family—Expanded Edition*. Cambridge, Massachusetts: Harvard University Press.
- Budlender, Debbie. 1999. "The debate over household headship." Analysis and Statistical Consulting Working Paper, Statistics South Africa.
- Darity, William Jr. 1995 "The Formal Structure of a Gender-Segregated Low-Income Economy." *World Development* 23(11): 1963-1968.
- Fapohunda, E. R. 1988. "The Nonpooling Household: A Challenge to Theory," in Daisy Dwyer and Judith Bruce (eds.) *A Home Divided--Women and Income in the Third World*. Stanford, California: Stanford University Press.
- Geisler, Gisela. 1992 "Who is Losing Out? Structural Adjustment, Gender, and the Agricultural Sector in Zambia." *The Journal of Modern African Studies* 30(1): 113-140.
- Gladwin, Christina H. and Della McMillan. 1989 "Is a Turnaround in Africa Possible without Helping African Women to Farm?" *Economic Development and Cultural Change* 37(2): 345-369.
- Guyer, Jane L. 1988 "The Nonpooling Household: A Challenge to Theory," in Daisy Dwyer and Judith Bruce (eds.) *A Home Divided--Women and Income in the Third World*. Stanford, California: Stanford University Press.
- Grosh, Margaret E., and Paul Glewwe. 1998. "Data Watch: The World Bank's Living Standard Measurement Surveys." *Journal of Economic Perspectives*. 12(1): 187-196.
- Haddad, Lawrence, John Hoddinott, and Harold Alderman (eds.). 1997. *Intrahousehold Resource Allocation in Developing Countries: Models Methods, and Policy*. Baltimore and London: Johns Hopkins University Press.
- Hoddinott, John and Lawrence Haddad. 1995. "Does Female Income Share Influence Household Expenditures? Evidence from Cote D'Ivoire." *Oxford Bulletin of Economics and Statistics*. 57(1): 188-204.

Moser, Caroline O. 1989. "Gender Planning in the Third World: Meeting Practical and Strategic Needs." *World Development*. 17(11): 1799-1825.

Murphy, Carol. 1990. *Gender Constraints to Increased Agricultural Production Faced by Rural Women in KwaZulu*. Unpublished Masters Thesis, University of Cape Town.

Sen, Amartya. 1988. "The Concept of Development," in Hollis Chenery and T. Srinivasan (eds.) *Handbook of Development Economics*, v. 1, North Holland.

Tripp, Aili Mari. 1989. "Women and the Changing Urban Household Economy in Tanzania." *The Journal of Modern African Studies*. 27(4): 601-623.

Warner, James and D.A. Campbell. 2000. "Supply Response in an Agrarian Economy with Non-Symmetric Gender Relations." *World Development*. 28(7): 1327-1340.

---

<sup>1</sup> At the time of the survey (1993), one US dollar was worth approximately 3.27 South African Rand.

<sup>2</sup> The following data focuses on two types of households; those with a male head and female spouse (approximately 5000 households), and one with a female head and no spouse (approximately 2300 households).

<sup>3</sup> Complete sets of these and other cited descriptive statistics are available from the authors.