Is couple's joint decision making associated with favorable household consumption patterns for children? Evidence from Cebu, Philippines

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April 11, 2011

Abstract

Using a cross-sectional dataset from a set of communities in Cebu province, Philippines, this paper seeks to characterize the relationship between a couple's decision-making arrangement and their household's consumption pattern. I construct indices of the mother's and the father's prevalence in decision making based on the proportion of important decision-making situations wherein the mother and the father each became solely decisive, while allowing for a distinct third category of joint decision making, a proxy for cooperative spousal behavior. After controlling for total household resources and several factors that influence each spouse's bargaining power, the estimates I obtain from a system of demand functions for household consumption goods suggest that, relative to sole decision making by either parent, joint decision making is related to favorable spending patterns for children (higher budget shares on milk, schooling, medicine, and clothing and lower budget shares on beverages and alcohol). In addition, the mother and the father do not seem to exhibit conflicting preferences across a range of household consumption goods, so that it is likely that joint decision making allows couples to coordinate their resource allocation decisions and mitigate the underprovision of household public goods.

JEL classification: D13, D12, D70, J12, J13

Keywords: joint decision making, cooperative spousal behavior, intrahousehold resource allocation, household bargaining models

1 Introduction

Interest in the analysis of decision making within the household has mainly focused on tracing how the balance of bargaining power between spouses affects household resource allocation decisions. Many empirical studies have established that mother-specific income changes tend to increase spending on children's goods and human development, while father-specific income changes tend

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to increase spending on vices, e.g. alcohol and tobacco (Haddad, Hoddinott and Alderman [14]; Bobonis [2] for recent evidence in a randomized experiment setting). In addition, relatively higher income or assets in the hands of mothers is associated with improved outcome measures such as better household nutrition and health, and enhanced anthropometric development and survival for children (Thomas [20]). These findings support the belief that mothers care for their children's well-being more than fathers do,[1] and underpin policies that encourage improvements in women's bargaining power relative to their partner or spouse.[2]

The key assumption in cooperative bargaining models that attempt to provide a theoretical basis for this literature is that mothers and fathers have distinct preferences, and that their relative bargaining strength determines the extent by which each spouse's preferred resource allocation gets implemented in the final outcome, regardless of whether the couple reaches agreement or not. If agreement is reached, an application of the Nash bargaining solution concept is used to propose a possible efficient equilibrium outcome; if agreement is not reached, bargaining breaks down and the couple settles for an inefficient noncooperative outcome with voluntary contributions to the household public good.[3]

What seems to be missing in much of the empirical analysis of household decision making is a determination of the role of spousal agreement in attaining an efficient outcome. Research on the role of cooperative spousal behavior in determining what kind of outcome is obtained has been largely unexplored, overshadowed by reduced-form investigations of how bargaining strength relates to the eventual outcome, regardless of whether the outcome is efficient or not.[4]

In this paper, I attempt to fill this gap by considering decision-making arrangements that characterize a couple's propensity to agree and make household decisions together (joint decision making) or apart (sole decision making by the mother or father). This decision-making arrangement is a description of the outcome of the decision-making process and can be interpreted as a measure of the extent of cooperative behavior or engagement among spouses. The paper's goal is to find out if this measure of spousal cooperation can be demonstrably linked to distinct spending patterns that characterize benign outcomes. Figure 1 illustrates how this paper's approach differs from the present literature.

Using a cross-sectional dataset from a set of communities in Cebu province, Philippines, I find that compared to households where sole decision making by either parent is prevalent, the con-

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[1]Several papers, however, have noted that these findings may apply only up to a point; they provide evidence that when women have much greater bargaining power than men, results get reversed such that spending on children and school enrollment are lower (Felkey [9], Gitter and Barham [12], and Lancaster, Maitra, and Ray [16]). This implies that household welfare is best served when bargaining power is more evenly spread between spouses, although this is not yet relevant in most developing countries where conditions are heavily stacked against women.

[2]These findings have been influential in the design of aid and welfare programs in poor communities, primarily through micro-credit and cash transfers given to mothers.

[3]We are interested in the setting wherein marriage continues even if agreement is not reached, so that threat points internal to the marriage are relevant (Lundberg and Pollak [17]). In the long run, the external threat point under divorce or separation that is available to each spouse gains more salience. In the Philippines, the setting of this study, divorce is prohibited, while legal separation is allowed only under very limited circumstances.

[4]The exception is the "collective" approach championed by Bourguignon, Browning and Chiappori [3], which explicitly tests for Pareto optimality but dispenses with a bargaining setup.

Figure 1: Conceptual diagram of relationship between distribution factors, decision-making arrangement, and intrahousehold resource allocation
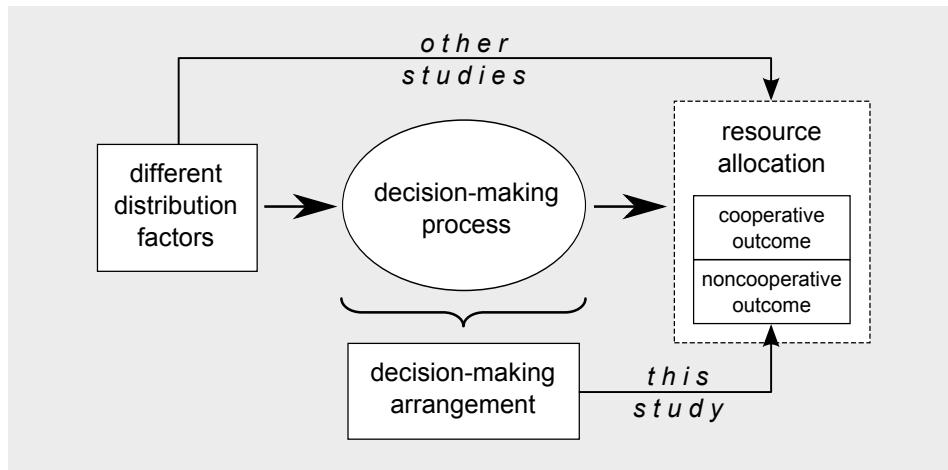
sumption patterns in households where joint spousal decision making is practiced more intensively are more favorable to children (budget shares on milk, schooling, medicine, and clothing are higher while budget shares on beverages and alcohol are lower). Moreover, if we assume that the prevailing decision-making arrangement conveys information on spouses' preferences (such that households with solely-decisive mothers or fathers have consumption patterns that reflect the preferred resource allocation of the dominant spouse), we find that, for the most part, spouses do not have conflicting preferences. This suggests that joint decision making is an arrangement that fosters the coordination of spouses' spending priorities and lets them obtain a household consumption pattern that they both prefer but could not achieve if they were deciding on their own.

Thus, this paper contributes to the literature on bargaining models of family behavior by providing evidence on the importance of joint decision making, a likely proxy for cooperative spousal behavior, in obtaining favorable consumption patterns for children and in mitigating coordination problems in the provision of household public goods.[5]

The rest of the paper is organized as follows. Section 2 presents the estimation procedure and a description of the dataset that we use to answer our research question, together with details on the decision-making arrangement index that we employ to gauge cooperative spousal behavior. Section 3 discusses the results, and Section 4 provides concluding remarks.

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[5]These results are compatible with both cooperative and noncooperative bargaining. In cooperative bargaining, e.g. Lundberg and Pollak's [17] separate spheres bargaining, joint decision making may be associated with spousal agreement and the attainment of the efficient Nash-bargained outcome, while sole decision making may be associated with a breakdown of bargaining and settlement on an inefficient noncooperative outcome where voluntary contributions to household public goods are less than optimal. In noncooperative bargaining, joint decision making may be associated with the cooperative outcome that is sustained by the threat of punishment in repeated games, with sole decision making associated with the noncooperative outcome.

2   Data and estimation

This section covers the econometric methodology used in this paper to estimate household demand functions for consumption goods, and then provides details on the variables used from the cross-sectional dataset that was employed to look at the prevalence of joint spousal decision making and how it correlates with household consumption patterns.

2.1   Estimation procedure

We model households' demand for different consumption goods as a function of the couple's decision-making arrangement, total household resources, individual and household characteristics, wages, and prices. We estimate the following system of demand functions:

$$\ln(q_{ji}) = \alpha_j + \beta_{j1} z_{1i} + \beta_{j2} z_{2i} + \ln(x_i) + c_i \gamma_j + \epsilon_{ji}, \tag{1}$$

where q_{ji} is the expenditure share on consumption good j for household i, z_{1i} and z_{2i} are the two indices of the decision-making arrangement,[6] x_i is the level of aggregate household resources, the vector c_i denote a set of household and individual member controls, and ϵ_{ji} are unobservable determinants of household demand for each good j. Total household consumption expenditure is used for x_i, which is instrumented by measures of household income to address potential endogeneity concerns. Because wages and prices are available only at the village level, we first estimate models where they are part of the residual, and include them later as part of a robustness exercise.

To allow for correlation of disturbances among the different goods, the seemingly unrelated regression (SUR) model is used to estimate system of functions (1), with standard errors that are adjusted for clustering at the village level.

While the log-transformation used for the expenditure share above does not correspond to a proper demand system as in the Almost Ideal Demand System (AIDS) by Deaton and Muellbauer [8], we adopt it for its capability to handle outliers and heteroskedasticity and also for convenience in the interpretation of the model coefficient estimates.[7]

2.2   Cebu Longitudinal Health and Nutrition Survey

The data I use is from the 1994-1995 follow-up round of the Cebu Longitudinal Health and Nutrition Survey (CLHNS).[8] The CLHNS tracks an original sample of 3,327 Filipino women who gave birth

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[6]Since we classify each decision situation as being decided by the mother, the father, or both spouses, we adopt a three-way classification for the couple's decision-making arrangement, which then requires two indices in order to be identified; further details are provided in the next subsection.

[7]This comes at a price of being unable to impose an adding up restriction, such that the implied predicted expenditure shares on the different consumption goods do not necessarily sum up to unity. Bobonis [2] used a similar functional form for the budget share, although he adopted more flexible functional forms (i.e. polynomials) for total household resources.

[8]It is part of an ongoing study conducted by the Carolina Population Center of the University of North Carolina at Chapel Hill, in collaboration with the Office of Population Studies of the University of San Carlos and the Nutrition Center of the Philippines. The data files and codebooks are publicly available and can be accessed from

between May 1, 1983 and April 30, 1984 in 33 randomly selected *barangays* (villages) in and around Cebu City, the second largest city in the Philippines and the capital of the island province with the same name.

The CLHNS initially looked into infant feeding determinants and practices (1984-1986), but was later on extended to include detailed questions on, among others things, intellectual and nutritional development of the children (1991-1992); women's status, family planning use and labor force participation (1994-1995); adolescent reproductive health and sexual behavior (1998-1999); and educational attainment, work patterns, and wages of young adults (2002 and 2005).

Modules on household expenditures and household decision-making were both included in the 1994-1995 round,[9] when the index children (those born during the sample window) have turned 11 years old. I used these modules to construct the components of the demand system and the decision-making arrangement, while other modules provided the data for household and individual control variables.

The sample households in the CLHNS live in a culturally homogeneous location, with 1990 census figures both placing Cebuano ethnicity and Roman Catholic religious affiliation at more than 95 percent of the population in Cebu City and the larger Cebu province.[10] Thus, it is likely that the sample households share the same values and norms and that concerns about comparability across communities, as expressed by Ghuman, Lee and Smith [13], will be at a minimum.

2.2.1 Decision-making arrangement indices

The household decision-making module in the CLHNS contained questions that asked the mother how decisions were made regarding different household situations, including identifying who was involved in decision making and whose will prevailed in each particular situation. The questionnaire did not restrict respondents to name just one person as the ultimate decision maker, and also allowed respondents to name household and family members other than the mother and the father in the decisive set. In the majority of cases, the respondents indicated that the final decision was made by one of the following: just the mother, just the father, or both spouses deciding jointly.[11] These three responses enable me to ascertain the decision-making arrangement prevailing in the household, where joint spousal decision making constitutes an arrangement that is separate and distinct from mother or father decisiveness.

I selected five situations which (i) plausibly solicit discussion and negotiation between spouses,[12] and which were (ii) least likely to be subject to disinterested decision making by either spouse: buy-

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<www.cpc.unc.edu/projects/cebu>.

[9]While the Philippines' Demographic and Health Survey (DHS) also contains information on household decision making, it is not suitable for this paper's research question because it lacks household expenditure data.

[10]The survey sample reflects this religious homogeneity (ethnicity was not asked in the survey).

[11]As will be explained in the next subsection, I will restrict my attention to households that only had these responses.

[12]Lack of involvement is likely to arise in situations where gender-specific roles are strong (e.g., Cabaraban and Morales [5] find that traditional norms give Filipino women control over subsistence resource allocation decisions, while Filipino men exert control over decisions involving large/expensive items such as durables). Lundberg and Pollak [17] point out that a division of responsibilities based on gender roles likely emerges without explicit bargaining.

Table 1: Indicators of marital quality as a function of decision-making arrangement

Independent variables	Dependent variable			
Decision-making arrangement index:	Father physically hurts mother when he gets angry		Father takes care of the children	
Joint relative to mother	−.204***	−.162***	.007	.046+
	(.029)	(.038)	(.025)	(.028)
Joint relative to father	−.162***	−.132**	.097***	.141***
	(.048)	(.051)	(.024)	(.032)
Constant	.027*	.048**	.138***	.159***
	(.016)	(.019)	(.018)	(.014)
Village-level fixed effects	No	Yes	No	Yes
$N = 2,051$ households				

Note: The table presents coefficient estimates and standard errors from a linear probability model, with disturbance terms clustered at the village level. The sample is composed of all intact households with non-missing data for the five decision-making arrangement index components listed in Table 2.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

ing or selling land, practicing family planning, mother working outside the home, mother traveling outside the province, and spending of mother's earnings. I then constructed two indices that capture the proportion of situations wherein the mother and the father each became solely decisive,[13] with joint decision making as an omitted category.

I use these indices as proxies for the decision-making arrangement, which can be thought of as a description of the outcome of the decision-making process[14] in terms of the extent of cooperative behavior or engagement among spouses. In addition, these indices may also capture certain aspects of marital quality. Using the full sample of responses, Table 1 shows that in households where joint decision making is practiced more intensively relative to either mother or father sole decisiveness, the chances of wife abuse are slimmer, while the likelihood of father involvement in child care is higher.

It is noteworthy that previous attempts to describe the decision-making process within the household portray spouses as largely having adversarial relations, such that an increase in one person's bargaining power allows him/her to exert more influence in decision making and extract a bigger share of the marital surplus.[15] This kind of setup is silent about the possibility of having cooperative relations among spouses, which may actually have a favorable impact on the size of the marital surplus that the spouses try to divide among themselves.

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[13] Note that it was possible to relax this and look into the proportion of situations wherein either the mother and/or the father was involved in decision making, regardless of who prevailed at the end. This approach couldn't be used reliably since the questionnaire was structured in such a way that the interviewer inquired first who were consulted by the mother in decision making before asking whose will prevailed; this resulted in the mother being automatically involved in decision making in each situation.

[14] In this sense, we utilize information that is closer to the decision-making process than other variables that try to measure bargaining power.

[15] In the case of the collective approach and its interpretation as a two-stage budgeting process, this is analogous to obtaining a bigger share of the total household budget.

Table 2: Descriptive statistics: Decision-making arrangement index and its components

| | Mother only | | Father only | | Joint decision | |
	Mean	SD	Mean	SD	Mean	SD
Decision-making arrangement index	.382	(.242)	.159	(.220)	.459	(.278)
Index components:						
Buying or selling land	.068	(.253)	.137	(.344)	.795	(.404)
Practice of family planning	.291	(.455)	.073	(.261)	.636	(.482)
Mother working outside the home	.484	(.500)	.205	(.404)	.311	(.463)
Mother traveling outside the province	.242	(.429)	.345	(.476)	.413	(.493)
How to spend mother's earnings	.824	(.381)	.037	(.188)	.139	(.347)

$N = 409$ households

Note: The sample is composed of nuclear households with children 12 years old or younger and which had the mother or father (or both) prevail in deciding each of the following five situations: buying or selling land, practicing family planning, mother working outside the home, mother traveling outside the province, and spending of mother's earnings.

We present descriptive statistics for the indices and its components in Table 2 using the restricted sample that we will estimate the SUR on. We find that, on average, 38.2 percent of the decisions were made by the mother only and 15.9 percent by the father only, with the rest (45.9 percent) jointly decided by the couple. When it comes to looking at individual decision items, the predominant decision-making arrangement varied.

Joint decision making was the most prevalent arrangement, followed by father only, when decisions were made on buying or selling land and whether the mother was to travel outside the province. Joint decision making was also the most prevalent arrangement, but this time followed by mother only, when it came to deciding whether to practice family planning or not. Mother sole decision making was the most prevalent arrangement, followed by joint decision making, when situations involved deciding how to spend the mother's earnings and whether the mother was to work outside the home.

The joint distribution of the two decision-making arrangement indices, in terms of number of observations, is presented in Figure 2. We see that all combinations of decision-making arrangements are present in the sample, although there were only a few observations where the father or the mother decided all of the given decision items on his or her own. Note that the diagonals (moving downwards from left to right) correspond to the levels of the joint decision making index, with the main diagonal denoting absence of joint decision making while the top-right corner represents complete joint decision making.

Note that while the two indices capture the extent by which the three different decision-making arrangements are prevalent in each household, the discussion we will undertake in the next section will focus on comparing the extremes, i.e. sole decision making by either parent versus joint decision making, for ease of interpretation.[16]

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[16]Keep in mind that the regression estimates come from considering all of the different combinations present in the

Figure 2: Joint distribution of decision-making arrangement indices, Number of observations
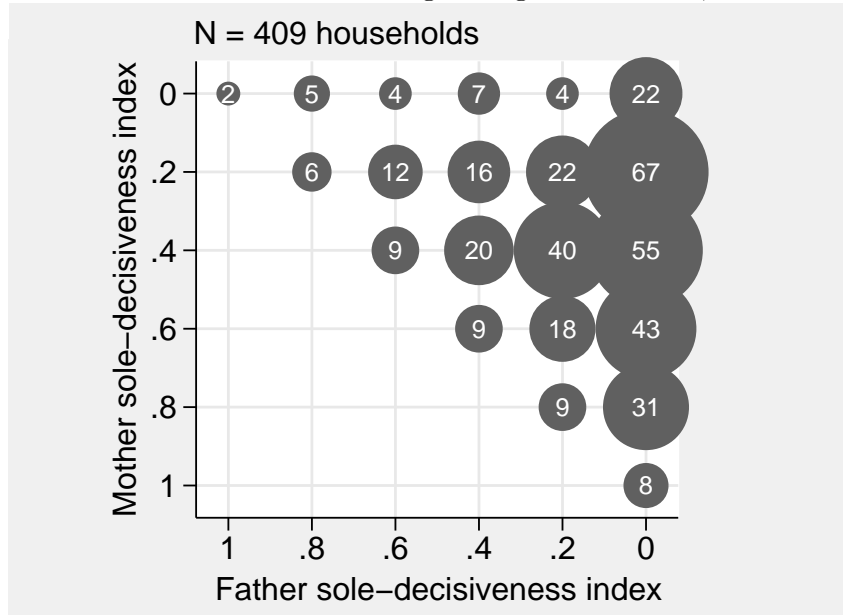
Because mothers were the only respondents in the survey, I rely exclusively on mother-reported evaluations for the construction of the decision-making arrangement indices.[17] Ghuman, Lee and Smith [13] warn about the validity of similar approaches in the context of measuring women's autonomy, mainly because spouses' responses were not always consistent when they were independently asked the same questions pertinent to gauging the woman's level of autonomy. They conclude that it is likely that the questions do not have the same cognitive or semantic meaning to men and women, which brings up the question of what, if anything, it is measuring.[18] However, unlike other research that ascribes values of women's autonomy and empowerment to responses to these decision-making questions, we utilize mother's responses here as simply a gauge, however imprecise, of whether cooperative behavior is present in the household or not, and it is sufficient for our purposes that one spouse thinks this is so.[19] At any rate, if measurement error is present in mother's reporting, then we would expect that attenuation bias would make it harder for us to get statistically significant estimates.

sample.

[17] The only item in the survey that asks about differential couple preferences is each spouse's preference for having more children, of which there was 82 percent agreement.

[18] This does not mean, however, that mother-reported evalutions are useless; in fact, the authors mention that in some cases, such as in relating women's autonomy to child mortality, mother's self-reports "appear to have some criterion-based validity."

[19] Thus, reports of joint decision making need not be consistent for both spouses.

2.2.2 Sample restrictions

While the CLHNS started out with 3,327 mother and child pairs in the original sample, only 2,483 households were re-interviewed in the 1994-1995 round,[20] mainly because of attrition due to out-migration.[21] From this number, I imposed particular sample restrictions that allow me to address my research question with the least amount of ambiguity.

As a practical matter, I used the sample of households which had the parents of the index child (those born during the initial sample window) both alive and living together. I then restricted the sample to households which had nuclear family living arrangements, so that the estimated demand functions for consumption goods can be attributed to consumption only by the couple and their children.

To ensure that no outside person is influential in the decision-making process, I restricted the sample further to households which had either the mother or the father (or both) prevail in deciding each of the five situations mentioned above.[22] This allows me to interpret the negative of the coefficient estimates as the full impact of shifting away from either mother or father sole decisiveness towards joint decision making.

Lastly, I only consider households with children who are 12 years old (when children are typically at the last year of elementary school) or younger. This restriction affords me several advantages: children are less likely to directly influence decision making the younger they are; some household expenditure categories can be successfully assigned to the parents; and it further homogenizes my sample in that all the households I consider are similarly situated in terms of rearing young children.

After imposing all these sample restrictions, I ended up with a sample of 409 households.

2.2.3 Household resources and demand system components

Various items from the household income and expenditures modules were consolidated and converted to common (monthly) units to come up with the values for total household resources and consumption expenditure that will be used in estimating the system of demand functions. Table 3 presents the average household income, in-kind transfers, and expenditures and the expenditure shares of the different household consumption goods.

Total household income was computed as the sum of the following income categories: wage income, self-employment income, net income from agricultural activities[23] (composed of farming, fishing, livestock raising, and home gardening), and income from other sources (property rental, pension and dividends, and cash remittances from relatives). Because it is possible that in-kind transfers of food and clothing received by the household may also affect its level of consumption expenditures, especially for poorer households, I include it, together with total household income,

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[20]The survey tried to follow the mother and the index child in their new households if they were separated for any reason.

[21]Feranil, Gultiano and Adair [10] mention that attrition has resulted in a bias "towards rural and poor households with fewer modern amenities or assets and less educated parents."

[22]Indeed, for some households and in some situations, parents-in-law or other relatives acted as decision makers.

[23]This includes the value of own consumption.

as instruments in the first stage regression of total consumption expenditure.[24]

Average monthly total household income for the sample was rather limited at 5,787 pesos ($230 using the exchange rate prevailing at that time), while average monthly total household expenditure was 5,184 pesos ($205), with 3,952 pesos ($155) going to consumption. The average value of monthly in-kind transfers received was rather low at 161 pesos ($7).

The 16 consumption expenditure categories are also listed in Table 3, arranged according to groupings by food (cereal and grains, meat and seafood, milk and milk products, vegetable and fruits, ready-cooked food, other food, and beverages), goods typically preferred by fathers (alcohol, tobacco, and transportation), goods typically preferred by mothers (hygiene, clothing, and medicine), and public goods from the parents' point of view (child allowance, schooling, and recreation).[25] Details on the example items under each category are available in Appendix C.

While all the data on the expenditure items in the CLHNS were collected only at the household level, we can safely assign four consumption categories to particular household members: child allowance and schooling for children, and alcohol and tobacco for the parents. All the rest are treated as collective goods.

On average, food items account for about 69.5 percent of monthly total household consumption expenditures. This is dominated by cereal and grains (23.1 percent) and meat and seafood (22.1 percent), with the rest going to ready-cooked food (6.1 percent), other food (5.5 percent), vegetable and fruits (5.1 percent), beverages (4.6 percent), and milk and milk products (3.0 percent).

The remaining 30.5 percent of total household consumption expenditures are allotted, on average, in the following manner: 5.6 percent go to hygiene, 5.3 percent go to transportation, 4.1 go to child allowance, 3.4 percent go to schooling, 3.1 percent go to tobacco, 2.7 percent go to clothing, 2.4 percent go to alcohol, 2.1 percent go to medical expenditures, and 1.7 percent go to recreation.

2.2.4 Basic set of control variables

Table 4 presents the descriptive statistics for the basic set of controls used in all subsequent regressions. These controls include age, education, and employment characteristics of the mother and father, the age distribution and school attendance of children, and several household characteristics.

Based on the average age at marriage[26] of 22 years for females and 25 for males, about half of the mothers (50.6 percent) and a little more than half of the fathers (56.2 percent) in the sample had children at an age younger than average at the time when they were first surveyed. In terms of education, only about a quarter of fathers (27.9 percent) and mothers (25.4 percent) in the sample

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[24]All the results that follow are robust to just using total household income as the lone instrument for total consumption expenditure (first-stage F-statistics are highly significant as well).

[25]We adopt the same order and grouping scheme in the tables that follow.

[26]Usually, controls for age-related preferences utilize indicator variables for each age group for each spouse. However, because there was little variation in parent ages (since the sample was based on a cohort of individuals born to families during 1982-1983, there was a concentration of parent ages between 29 and 35 years for mothers and between 30 and 41 years for fathers in the follow-up survey taken in 1994-1995), I decided to use just one indicator variable to control for age-related preferences, with the threshold being the published singulate mean age at marriage (SMAM) for males and females in the country in 1980.

Table 3: Descriptive statistics: Household resources and its allocation

	Mean	SD
	Total monthly resources ('000 Pesos)	
Household income	5.787	(4.407)
Wage income	3.254	(3.534)
Self-employment income	1.936	(3.238)
Net income from agricultural activities	.189	(.855)
Income from other sources	.408	(.882)
Household in-kind transfers received	.161	(.590)
Household expenditure	5.184	(3.280)
Consumption expenditure	3.952	(1.888)
	Consumption expenditure shares	
Food		
Cereal and grains	.231	(.112)
Meat and seafood	.221	(.097)
Milk and milk products	.030	(.042)
Vegetable and fruits	.051	(.032)
Ready-cooked food	.061	(.080)
Other food	.055	(.024)
Beverages	.046	(.033)
Goods typically preferred by fathers		
Alcohol	.024	(.036)
Tobacco	.031	(.040)
Transport	.053	(.055)
Goods typically preferred by mothers		
Hygiene	.056	(.026)
Clothing	.027	(.028)
Medicine	.021	(.040)
Public goods from parents' point of view		
Child allowance	.041	(.031)
Schooling	.034	(.035)
Recreation	.017	(.043)

$N = 409$ households

Note: The sample is composed of nuclear households with children 12 years old or younger and which had the mother or father (or both) prevail in deciding each of the following five situations: buying or selling land, practicing family planning, mother working outside the home, mother traveling outside the province, and spending of mother's earnings.

Table 4: Descriptive statistics: Control variables

	Mother's characteristics		Father's characteristics	
	Mean	SD	Mean	SD
Had children younger than average	.506	(.501)	.562	(.497)
High school graduate or more	.254	(.436)	.279	(.449)
Wage laborer	.394	(.489)	.714	(.452)
Self-employed	.374	(.484)	.301	(.459)
Farm worker	.044	(.205)	.081	(.273)

	No. of boys		No. of girls	
	Mean	SD	Mean	SD
	Not attending school			
Age less than 1 year	.061	(.240)	.064	(.244)
Age 1-2 years	.183	(.400)	.176	(.406)
Age 3-4 years	.208	(.418)	.186	(.396)
Age 5-6 years	.220	(.449)	.200	(.407)
Age 7-8 years	.071	(.266)	.076	(.274)
Age 9-10 years	.066	(.258)	.044	(.269)
Age 11-12 years	.112	(.324)	.078	(.205)
	Attending school			
Age 5-6 years	.029	(.169)	.042	(.200)
Age 7-8 years	.225	(.435)	.208	(.424)
Age 9-10 years	.247	(.470)	.225	(.435)
Age 11-12 years	.379	(.543)	.359	(.543)

	Household characteristics	
	Mean	SD
Living in an urban settlement area	.709	(.455)
Drinking water from piped supply	.320	(.467)
House connected to electrical system	.804	(.397)
House has sealed toilet facility	.623	(.485)
House made of light materials	.457	(.499)
Living in own house	.819	(.385)
Living in own lot	.161	(.368)
Own motor vehicle/s	.103	(.304)
Own livestock	.533	(.500)
Own a household business	.411	(.493)

	Other household variables	
	Mean	SD
Marriage length	12.814	(3.543)
Mother has remarried	.105	(.307)
Mother's children not from the same father	.027	(.162)
Mother currently breastfeeding	.178	(.383)
Mother is ill or has been ill in past 3 years	.318	(.466)
No. of children* with chronic illness/disability	.100	(.324)
No. of children* hospitalized in past 3 years	.088	(.309)

$N = 409$ households

*Information available only for index child and next younger sibling.

Note: The sample is composed of nuclear households with children 12 years old or younger and which had the mother or father (or both) prevail in deciding each of the following five situations: buying or selling land, practicing family planning, mother working outside the home, mother traveling outside the province, and spending of mother's earnings.

had completed high school.

While 71.4 percent of fathers worked as wage laborers and 30.1 percent were self-employed, mothers were almost as likely to be self-employed (37.4 percent) as to work for wage labor (39.4 percent). Less than 10 percent of the fathers (8.1 percent) and mothers (4.4 percent) in the sample were involved in farm work.

The average number of children was 3.5, seemingly evenly-distributed by age and gender, although there is an expected concentration near 11-12 years because of the sampling basis used in the survey. Note that there were quite a few children of schooling age who were not attending school.

Seventy-one percent of the sample households were living in an urban settlement area, with 32 percent getting their drinking water from piped supply. Eighty percent of the sample households had electricity in their homes, 62.3 percent were using sealed toilets, and 45.7 percent were living in houses constructed from light materials.

About 82 percent of the sample households owned the house that they were living in, while 16.1 percent owned the lot where their house was located. About ten percent of the sample households owned at least one motor vehicle, 53.3 percent owned livestock, and 41.1 percent owned a household business.

Other variables included in the basic set of controls had to do with the couple's relationship and indicators that may be relevant to some of the consumption categories. Average marriage length was 12.8 years, 10.5 percent of mothers have remarried, and 2.7 percent of the sample households had children who had the same mother but had different fathers.[27] Almost 18 percent of mothers were currently breastfeeding (relevant for spending on milk and milk products), 31.8 percent of mothers were ill or recently ill, an average of 0.1 children were chronically ill or disabled, and an average of 0.09 children were recently hospitalized (all relevant to medical spending).

3 Results and discussion

In this section, we present the results from estimating the system of demand functions in (1) using the CLHNS dataset. We begin by determining the relationship between household consumption patterns and the decision-making arrangement using a basic set of controls. We then check if the statistically significant estimates hold up to the inclusion of household-specific distribution factors and village-level wages and prices in the set of controls. Afterwards, we try to gauge if spouses exhibit conflicting preferences on different consumption goods, assuming that decisiveness by either parent in the decision-making arrangement has information content on the decisive parent's preferences.

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[27]I included this last variable because Browning and Bonke [4] found that having children from before the current marriage significantly reduces the mother's share in total resources.

3.1 Decision-making arrangement and household consumption patterns

3.1.1 Baseline specification

Table 5 presents estimates from the SUR on the system of demand functions for consumption goods, with controls for log total consumption expenditure and the basic set of controls listed in Table 4. Since joint decision making is omitted in the decision-making arrangement variables, the negative of the coefficient estimates for mother and father sole decisiveness can be interpreted, conditional on (log) total household consumption expenditure (instrumented by income and in-kind transfers), as approximately[28] the percentage change in the expenditure shares given a full shift[29] towards joint spousal decision making from a case when only the mother's or the father's decision prevails.

We find that a shift in decision-making arrangement from mother sole decisiveness towards joint decision making is associated with the following significant[30] expenditure share increases: 91.5 percent on milk and milk products, 38 percent on clothing, and 57 percent on medicine. Relative to father sole decisiveness, joint decision making is associated with a significant 33.3 percent increase in the expenditure share for schooling, accompanied by significant reductions in the expenditure shares on meat and seafood (42.6 percent), vegetable and fruits (44.9 percent), beverages (72.3 percent), and alcohol (96.1 percent).

Note that while meat and seafood and vegetable and fruits are usually considered nutritious foods and thus one would expect that a reduction in the budget share for those items is not favorable to children, the significant reduction accompanies the shift to joint decision making from father sole decisiveness but not from mother decisiveness, which suggests that the budget share for such food items is higher than average when fathers are more decisive.[31]

Consumption of milk and milk products is considered favorable to children, and the significantly positive coefficient on milk and milk products that accompanies a shift from mother sole decisiveness to joint decision making suggests that the budget share on milk is lower than average when mothers are more decisive.[32]

Because spending on beverages is arguably unimportant, while drinking is a vice that should be controlled given limited resources, the decrease in the budget share for beverages and alcohol that accompany a shift from father sole decisiveness to joint decision making is favorable to children inasmuch as it allows higher budget shares on more important consumption categories.

To the extent that the increase in the budget share for clothing and medicine that accompanies

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[28]All percentage values in the discussion use approximate percentage change; the exact percentage change can be computed by raising e to the coefficient estimate and then subtracting 1.

[29]This is done for ease of exposition; it does not prevent one from making statements that consider marginal decreases in mother or father sole decisiveness in favor of joint decision making provided one rescales the coefficient estimates accordingly (this works as well for looking at particular combinations of decision-making arrangement indices).

[30]We use a significance level of 10% in this discussion. The tables give more information by including markers for significance at the 15%, 10%, 5%, and 1% levels.

[31]It is possible that the father consumes most of the meat and seafood and not the mother or the children, but the data does not allow us to distinguish this.

[32]Note that we include controls for the number of infants and toddlers in the household (by gender) and whether the mother is currently breastfeeding.

Table 5: Demand for consumption goods as a function of decision-making arrangement, Baseline estimates

Dependent variable	Independent variables					
	Decision-making arrangement index Joint relative to:		Log total consumption expenditure	Controls		
Log consumption expenditure share in:	Mother	Father	(instrumented)	Basic set	Additional DF	WP
Cereal and grains	.089	.177	−1.013***	Yes	No	No
	(.120)	(.147)	(.233)			
Meat and seafood	−.248	−.426**	.064	Yes	No	No
	(.173)	(.192)	(.258)			
Milk and milk products	.915***	.304	.878*	Yes	No	No
	(.310)	(.400)	(.511)			
Vegetable and fruits	−.465	−.449*	.584+	Yes	No	No
	(.360)	(.250)	(.383)			
Ready-cooked food	−.281	−.179	−.616	Yes	No	No
	(.316)	(.404)	(.519)			
Other food	.049	−.084	−.266*	Yes	No	No
	(.099)	(.111)	(.136)			
Beverages	−.014	−.723***	1.437***	Yes	No	No
	(.179)	(.201)	(.338)			
Alcohol	−.151	−.961***	−.133	Yes	No	No
	(.404)	(.349)	(.681)			
Tobacco	−.076	−.682	.075	Yes	No	No
	(.361)	(.475)	(.688)			
Transport	.006	.465	.337	Yes	No	No
	(.296)	(.368)	(.441)			
Hygiene	.003	.109	−.246*	Yes	No	No
	(.111)	(.100)	(.147)			
Clothing	.380*	.313	1.948***	Yes	No	No
	(.226)	(.343)	(.459)			
Medicine	.570**	.296	.448	Yes	No	No
	(.270)	(.252)	(.465)			
Child allowance	−.112	−.033	.077	Yes	No	No
	(.220)	(.154)	(.307)			
Schooling	.268	.333*	.380	Yes	No	No
	(.196)	(.175)	(.292)			
Recreation	.189	.246	2.112***	Yes	No	No
	(.311)	(.305)	(.522)			
First-stage regression F-statistic			$F(2,93) = 20.3$ [p-value $< .001$]			
Joint significance of decision-making arrangement			$\chi^2(32) = 143.6$ [p-value $< .001$]			

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4; additional controls for distribution factors (DF) and village-level wages and prices (WP) are described in the Appendix.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

the shift from mother sole decisiveness to joint decision making accrues to children, then these changes are also favorable to children.

Clearly, the positive coefficients for schooling (significant for the shift to joint decision making from father sole decisiveness but not from mother sole decisiveness) denote a favorable scenario for children when joint decision making is more prevalent. On the other hand, we notice that the coefficients on child allowance are negative. While one would think that a positive estimate is favorable to children, in the Philippines, giving children money for allowance is usually meant to cover purchase of food from the school canteen in lieu of providing home-prepared lunch or snack. To the extent that children will likely spend their allowance on food that is less nutritious than home-prepared food, a negative estimate would thus be more favorable to children. At any rate, because the coefficients are insignificant, it seems that the budget share for child allowance does not differ systematically across households with different decision-making arrangements.

In terms of income elasticities of demand, we find that cereal and grains, other food, and hygiene are considered inferior goods, while milk and milk products, beverages, clothing, and recreation are reasonably viewed as normal goods. Moreover, because the computed income elasticities are greater than unity for beverages, clothing, and recreation, these three are treated as luxury goods. The plausibility of these estimates gives us more confidence in the appropriateness of the specification that we adopted.

All these results are consistent with the view that, holding other things the same, couples who practice joint decision making have household consumption patterns that are favorable to children, i.e. they spend a bigger chunk of their household budget on milk, clothing, medicine, and schooling and a smaller chunk on beverages and alcohol, compared to couples with other decision-making arrangements. This also supports the view that underprovision of household public goods may be less likely under joint decision making than under sole decision making by either parent.

To round out this discussion, we test for joint statistical significance of the decision-making arrangement indices in all of the estimated demand functions and find that the null hypothesis of joint insignificance is strongly rejected by the data.

3.1.2 Accounting for bargaining power of each spouse

While we use the decision-making arrangement index to gauge the extent of cooperative spousal behavior, it's possible that it also captures the structure of power relations between the mother and father. Because the relative bargaining strength of each spouse is expected to have an influence on the consumption patterns prevailing in the household, it is important to check whether the decision-making arrangement continues to exert the same influence on consumption patterns even when some of the usual variables considered to affect the bargaining power of each spouse are included as control variables.

We include distribution factors[33] for the spouses' relative age, educational attainment, and

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[33]This term is associated with the "collective" model, but we use it generally to denote variables that may affect the bargaining power of either spouse.

wage and self-employment income[34] in the set of controls used for the estimation of the system of demand functions. We find in Table 6 that the coefficient estimates are generally stable and that the significance of the decision-making arrangement index coefficients for certain consumption goods that we mentioned earlier mostly hold up to the inclusion of distribution factors. The only exceptions are the coefficients for schooling and vegetable and fruits when father sole decisiveness and joint decision making are compared, with the level of confidence in their statistical significance slightly dropping from 90% to 85%.

In addition, the negative coefficient for meat and seafood that accompanies a shift from mother sole decisiveness to joint decision making now becomes statistically significant, so that the budget share for meat and seafood is higher than average when mothers are more decisive. Likewise, the negative coefficient for tobacco that accompanies a shift from father sole decisiveness to joint decision making now becomes marginally significant (at 85% confidence level), so that couples' joint decision making is associated with lower household budget shares not only for alcohol but also for tobacco.

The estimated income elasticities of demand are generally similar to those in our baseline specification, and the data also reject the null hypothesis of joint insignificance of the decision-making arrangement indices across all estimated demand functions. In sum, the results from our baseline specification are robust to the addition of variables that are related to the bargaining power of each spouse.

3.1.3 Robustness to inclusion of wages and prices

Because decisions on what share of the budget will be allotted for particular consumption goods may be affected by the variation in wages and prices that different households face, we also checked how the results will be affected by the addition of village-level wages and prices. Note, however, that although the CLHNS has this information from a community questionnaire, the quality of the collected data leaves much to be desired due to the prevalence of missing entries and the use of different units across villages. Details on how this matter was handled are provided in Appendix B.

Keeping in mind this data quality issue, we find in Table 7 that, compared to the previous specification, the coefficients for meat and seafood, clothing, and medicine have lost statistical significance when the decision-making arrangement shifts from mother sole decisiveness to joint decision making. Note, however, that the mentioned coefficient estimates did not change by much (they are only a bit lower) and continue to have the same signs. On the other hand, the coefficient for milk and milk products continues to be highly significant.

Turning to the shift from father sole decisiveness to joint decision making, the coefficients for meat and seafood, vegetable and fruits, tobacco, and schooling have lost statistical significance, which seems to be due to a decline in the estimated coefficients (although the signs are still intact)

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[34]These variables are typically used in the literature to proxy for bargaining strength. See Appendix A for a description of the variables used and their estimated relationship to consumption goods.

Table 6: Demand for consumption goods as a function of decision-making arrangement, Estimates with distribution factors

Dependent variable	*Independent variables*					
	Decision-making arrangement index Joint relative to:		Log total consumption expenditure	Controls		
Log consumption expenditure share in:	Mother	Father	(instrumented)	Basic set	Additional DF	WP
Cereal and grains	.078	.209	−1.010***	Yes	Yes	No
	(.127)	(.148)	(.251)			
Meat and seafood	−.305*	−.336**	.070	Yes	Yes	No
	(.180)	(.167)	(.204)			
Milk and milk products	.957***	.431	1.071**	Yes	Yes	No
	(.328)	(.386)	(.509)			
Vegetables and fruits	−.449	−.409+	.582	Yes	Yes	No
	(.355)	(.258)	(.405)			
Ready-cooked food	−.172	−.213	−.863+	Yes	Yes	No
	(.309)	(.366)	(.556)			
Other food	.029	−.068	−.267**	Yes	Yes	No
	(.102)	(.110)	(.133)			
Beverages	−.011	−.677***	1.547***	Yes	Yes	No
	(.178)	(.202)	(.361)			
Alcohol	−.161	−1.062***	−.171	Yes	Yes	No
	(.378)	(.382)	(.702)			
Tobacco	−.014	−.708+	.073	Yes	Yes	No
	(.360)	(.431)	(.713)			
Transport	.012	.533	.462	Yes	Yes	No
	(.308)	(.387)	(.478)			
Hygiene	.000	.114	−.265+	Yes	Yes	No
	(.109)	(.103)	(.162)			
Clothing	.429*	.225	1.867***	Yes	Yes	No
	(.228)	(.347)	(.500)			
Medicine	.568**	.328	.454	Yes	Yes	No
	(.270)	(.250)	(.512)			
Child allowance	−.115	−.059	.066	Yes	Yes	No
	(.221)	(.153)	(.374)			
Schooling	.241	.307+	.335	Yes	Yes	No
	(.185)	(.192)	(.278)			
Recreation	.228	.142	2.317***	Yes	Yes	No
	(.323)	(.309)	(.545)			
First-stage regression F-statistic	$F(2, 93) = 20.4$ [p-value $< .001$]					
Joint significance of decision-making arrangement	$\chi^2(32) = 114.1$ [p-value $< .001$]					

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4; additional controls for distribution factors (DF) and village-level wages and prices (WP) are described in the Appendix.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

Table 7: Demand for consumption goods as a function of decision-making arrangement, Estimates with distribution factors, wages, and prices

Dependent variable	*Independent variables*					
	Decision-making arrangement index		Log total consumption expenditure		Controls	
Log consumption expenditure share in:	Joint relative to:			Basic	Additional	
	Mother	Father	(instrumented)	set	DF	WP
Cereal and grains	.169	.275+	−1.059***	Yes	Yes	Yes
	(.118)	(.171)	(.284)			
Meat and seafood	−.234	−.193	.184	Yes	Yes	Yes
	(.192)	(.187)	(.191)			
Milk and milk products	.900**	.521	1.029*	Yes	Yes	Yes
	(.373)	(.424)	(.532)			
Vegetables and fruits	−.148	−.163	.495	Yes	Yes	Yes
	(.300)	(.222)	(.384)			
Ready-cooked food	.042	−.064	−.847*	Yes	Yes	Yes
	(.290)	(.378)	(.498)			
Other food	−.017	−.059	−.366***	Yes	Yes	Yes
	(.102)	(.111)	(.127)			
Beverages	.119	−.670***	1.371***	Yes	Yes	Yes
	(.173)	(.194)	(.294)			
Alcohol	.175	−.657+	−.361	Yes	Yes	Yes
	(.332)	(.431)	(.620)			
Tobacco	.189	−.588	−.257	Yes	Yes	Yes
	(.366)	(.421)	(.723)			
Transport	−.219	.361	.808+	Yes	Yes	Yes
	(.284)	(.376)	(.531)			
Hygiene	−.091	−.003	−.401***	Yes	Yes	Yes
	(.112)	(.111)	(.151)			
Clothing	.316	.274	2.020***	Yes	Yes	Yes
	(.266)	(.345)	(.574)			
Medicine	.382	.271	.297	Yes	Yes	Yes
	(.316)	(.303)	(.523)			
Child allowance	−.160	−.135	.191	Yes	Yes	Yes
	(.208)	(.178)	(.377)			
Schooling	.147	.055	.459*	Yes	Yes	Yes
	(.214)	(.198)	(.274)			
Recreation	.126	.151	2.547***	Yes	Yes	Yes
	(.352)	(.331)	(.540)			
First-stage regression F-statistic			$F(2,93) = 22.8$ [p-value $< .001$]			
Joint significance of decision-making arrangement			$\chi^2(32) = 129.3$ [p-value $< .001$]			

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4; additional controls for distribution factors (DF) and village-level wages and prices (WP) are described in the Appendix.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

more than an increase in the standard errors. Meanwhile, the coefficient for beverages continues to be highly significant, while the coefficient for alcohol is now only marginally significant. The positive coefficient for cereal and grains has turned up marginally significant this time, suggesting that the budget share for it is lower under father decisiveness than it is under joint decision making.

In terms of income elasticities of demand, the same relationships hold as in the baseline specification, with the addition of statistically significant estimates for ready-cooked food[35] (an inferior good) and education (a normal good).

All in all, the remaining significant effects were concentrated on higher spending share for milk and milk products and lower spending share for beverages under joint decision making relative to the other two decision-making arrangements.[36] Thus, the inclusion of village-level wages and prices in the list of controls made our findings somewhat weaker, although it is comforting to note that the relevant coefficient estimates were quite stable, with intact signs despite dampened values.

3.2   Conflicting preferences between spouses along gender lines

Given that we have established that couple's joint decision making is favorable to children, we now turn to an investigation of how it is related to mother and father decisiveness after endowing these two decision-making arrangements with information content on mother or father preferences.[37] In effect, we are using the decision-making arrangement indices not only to proxy for the extent of spousal cooperation but also to infer the preferred consumption pattern by the mother and the father.

If one would be willing to make the assumption that dominance in the decision-making arrangement by either spouse is related to his/her capability to steer spending towards his/her preferred goods,[38] we can test if spouses have conflicting preferences over the different consumption goods directly using the variation in consumption patterns between households with mother- and father-dominated decision-making arrangements. If we find that spouses do have opposing preferences, this would suggest that joint decision making is an arrangement that represents a compromise between resource allocation decisions preferred by mothers and fathers (which we assume can be observed when either one becomes more decisive). This has the further implication that if one spouse's preferences can be considered more favorable to children than that of the other spouse's, then policies that encourage an increase in the bargaining power of the first spouse are warranted.

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[35]In this survey, most ready-cooked food came from street food stalls, not restaurants.

[36]Similar results were obtained regarding the significant coefficients that remain when village-level fixed effects were used instead of the village-level wage and price data (Table A.4). However, fixed effects estimation is less reliable in this data because of small group sizes, which is a problem because identification in fixed effects estimation relies on within-village variation. Out of the 94 villages in the restricted sample, 45 villages had only one observation each, so that the effective sample size is reduced to 364 households. Furthermore, out of the 49 villages included in the fixed effects estimation, 15 villages had two observations each, while 9 villages had three observations each. See Table A.3 for the full tally of group sizes.

[37]It is natural to differentiate spouses along gender lines in keeping with the literature on mothers caring for their children more than fathers do.

[38]Frankenberg and Thomas [11] hint on the possibility of using information on patterns of decision making as "outcomes (and thus indicators) of relative power within households."

On the other hand, if we find that spouses do not have opposing preferences, then this suggests that joint decision making is an arrangement that fosters the coordination of spouses' resource allocation decisions, which in turn lets them obtain a household consumption pattern that they both prefer but couldn't achieve if they were deciding on their own. In this case, the importance of policies that encourage joint spousal decision making is emphasized.[39]

The results from estimating the three sets of the SUR for system of demand functions are presented in Table 8, but this time the indices for mother sole decisiveness and joint decision making are used as the decision-making arrangement variables (instead of the indices for mother and father sole decisiveness) so that the omitted category is father sole decisiveness. The coefficient on mother sole decisiveness can now be interpreted as the percentage change in the corresponding budget share that accompanies a shift from father sole decisiveness to mother sole decisiveness. Given our assumption above, a significant coefficient, whether positive or negative, means that spouses' preferences are conflicting, while an insignificant coefficient means that spouses' preferences are not opposed to each other.[40]

Across all three specifications, we find that only beverages and alcohol have consistently significant coefficients, while all the rest are not significantly different from zero. This suggests that spouses have conflicting preferences over beverages and alcohol, and that mothers (fathers) would want to reduce (increase) the budget shares for these two consumption goods if given the chance to do so. For the 14 other consumption goods, however, spouses' preferences are not conflicting.

Thus, for the most part, spouses' preferences are not contradictory or pulling at opposite ends, which in turn makes it unlikely that joint decision making represents a middleground outcome between mother and father decisiveness. Instead, this result supports the view that joint decision making is a decision-making arrangement that is entirely different in character from mother or father sole decisiveness. Because we already established in the previous subsection that household consumption patterns are favorable to children in households where joint spousal decision making is practiced more intensively, we are led to the conclusion that joint decision making is associated with the coordination of spouses' spending priorities and the achievement of cooperative outcomes.

4   Concluding remarks

We have provided evidence that joint decision making is positively related to favorable household consumption patterns for children, and that this effect likely operates through the coordination of spouses' resource allocation decisions. This evidence is compatible with theoretical models on

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[39]This does not imply that policies which encourage an increase in the bargaining power of the spouse whose preferences favor children more would then be unimportant. These policies continue to be helpful if spouses have aligned preferences but one spouse has more intense preferences than the other, and also if the increase in bargaining power induces greater spousal cooperation in itself.

[40]Having aligned preferences, where the coefficients for mother and father sole decisiveness have the same sign (and thus are both non-zero), is a stronger condition than not having conflicting preferences. Testing for aligned preferences would require joint tests of one-sided alternatives; since the relevant null hypothesis cannot be specified as a linear combination of the coefficients, standard approaches cannot be used.

Table 8: Demand for consumption goods as a function of decision-making arrangement, Test for conflicting preferences, Comparative estimates

Dependent variable	Independent variable		
	Decision-making arrangement index: Mother relative to father		
Log consumption expenditure share in:	Basic set of controls	Basic set of controls plus:	
		DF	DF and WP
Cereal and grains	.088	.131	.106
	(.140)	(.142)	(.125)
Meat and seafood	−.179	−.031	.041
	(.141)	(.149)	(.142)
Milk and milk products	−.611	−.526	−.379
	(.477)	(.455)	(.478)
Vegetable and fruits	.016	.040	−.015
	(.256)	(.260)	(.261)
Ready-cooked food	.102	−.041	−.106
	(.409)	(.390)	(.359)
Other food	−.133	−.097	−.042
	(.103)	(.109)	(.108)
Beverages	−.709***	−.665***	−.790***
	(.223)	(.222)	(.226)
Alcohol	−.810*	−.901**	−.832*
	(.428)	(.434)	(.470)
Tobacco	−.606	−.694	−.778+
	(.552)	(.524)	(.503)
Transport	.460	.522	.580+
	(.385)	(.390)	(.372)
Hygiene	.106	.114	.088
	(.107)	(.121)	(.117)
Clothing	−.068	−.204	−.043
	(.342)	(.336)	(.346)
Medicine	−.275	−.240	−.110
	(.290)	(.308)	(.318)
Child allowance	.079	.056	.025
	(.245)	(.261)	(.228)
Schooling	.066	.066	−.092
	(.180)	(.173)	(.173)
Recreation	.057	−.087	.026
	(.393)	(.384)	(.377)

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4; additional controls for distribution factors (DF) and village-level wages and prices (WP) are described in the Appendix.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

cooperative and noncooperative bargaining within households, in particular the theoretical result that contributions to household public goods are higher when spousal cooperation is obtained.

What is it about the nature of joint decision making that leads to empirical support for the theoretical result just mentioned? One possibility is that joint decision making connotes a more deliberative decision-making process wherein both spouses are actively involved and engaged in trying to determine the best solution to the problem at hand. This would tend to enhance the quality of decisions arrived at under joint decision making compared to sole decision making by either parent, similar to some findings in the literature on group decision making wherein groups are able to obtain higher payoffs compared to individuals (see, for example, Blinder and Mason [1], Cason and Mui [6], and Kocher and Sutter[15]). Joint decision making may also incorporate spousal behavior that is identified with relationship maintenance, such as the use of turn-taking as a means of preserving the marriage when spouses disagree (as argued in Munro, McNally and Popov [18]). Because cohesive marriages can be expected to have attributes that value cooperation and caring for children (as was suggested earlier in Table 1), couples who practice joint decision making may have greater concern for their children to begin with.

This study highlights the importance of cooperative spousal behavior in bringing about household consumption patterns that are favorable to children, and suggests another avenue by which policies that encourage better matching in the marriage (and remarriage) market, to the extent that it is associated with greater spousal cooperation, can help promote the well-being of children. Some of the policies that are relevant to high fertility countries include those that encourage the postponement of marriage and child birth, and it also argues for the legalization of divorce in countries where it is prohibited.

Suggestions for future work include the use of better measures of spousal cooperation, employing matching techniques to better control for observable heterogeneity, and the utilization of data on health, nutrition, and later schooling outcomes for children to verify and more reliably assess the beneficial impact of spousal cooperation.

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A   Distribution factors

Distribution factors are variables that influence each spouses' bargaining power, and may be related to personal characteristics (such as spouses' income, age, physical attractiveness, education, class or status, and asset ownership), the state of the marriage market (such as sex ratios and local customs), and specific government policies (such as those regarding taxation, welfare, civil union, divorce, and property entitlements). I use distribution factors that are typically used in the literature and available in the CLHNS: relative age, education, and earnings of spouses.

For age, I use the age difference in decades. While anecdotal evidence suggests that certain thresholds may be more relevant, e.g. an age difference of five years is material but an age difference of one year is not, the particular threshold is unknown and thus a linear approximation may be used for simplicity.

For education, I use the difference in educational attainment, where schooling is collapsed by levels and completion is differentiated from non-completion. The underlying index is as follows:[41]

0. no education
1. attended elementary school
2. elementary school graduate
3. attended high school
4. high school graduate
5. attended college
6. college graduate
7. took post-graduate studies

This is a more intuitive scale given that using just the difference in the number of years of schooling does not distinguish if the two spouses were at practically the same schooling level or not, and it probably does not matter if one spouse has more years of schooling than the other if it does not translate to completion or movement into another level.

For earnings, I use the difference in the spouses' share of wage and self-employment income, which means that zero corresponds to equal income shares, while unity corresponds to being the sole breadwinner.

Because the distribution factor effects need not be similar in magnitude and direction for each spouse, I deviate from the previous literature and allow for asymmetric effects on bargaining power by splitting each distribution factor into two depending on whether the mother or the father is in a more advantageous position. Thus, six variables for the three distribution factors were used in the set of controls, together with age and the educational attainment of one spouse.[42] Table A.1 presents descriptive statistics for the distribution factors and related variables, while Table A.2

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[41]This is similar to what Crespo [7] used.

[42]Estimates for the mother (father) were obtained by including the age and educational attainment of the father (mother).

Table A.1: Descriptive statistics: Distribution factors and related variables

	Mother		Father	
	Mean	SD	Mean	SD
	Distribution factors			
Age difference if older (in decades)	.074	(.204)	.307	(.365)
Difference in educational attainment if more educated	.447	(.809)	.550	(.848)
Diff. in share of wage and self-employment income if earning more	.139	(.298)	.518	(.427)
	Related variables			
Age (in decades)	3.343	(.425)	3.576	(.530)
Index of educational attainment*	2.670	(1.447)	2.773	(1.561)
No. of years of schooling	7.694	(3.482)	8.005	(3.740)
Wage and self-employment income share	.307	(.324)	.693	(.324)
Wage income (in '000 Pesos)	.648	(1.343)	2.604	(3.340)
Self-employment income (in '000 Pesos)	1.082	(2.626)	.840	(2.030)

	No. of households	
	Mother	Father
Older than spouse	87	284
Has higher educational attainment than spouse	119	150
Has higher wage and self-employment income than spouse	103	297

$N = 409$ households

*See previous page for a description of this index.

Note: The sample is composed of nuclear households with children 12 years old or younger and which had the mother or father (or both) prevail in deciding each of the following five situations: buying or selling land, practicing family planning, mother working outside the home, mother traveling outside the province, and the spending of mother's earnings.

shows the coefficient estimates that accompany the system of demand functions presented in Table 6.

All things the same, when the mother is a decade older than the father, the household's budget share is 95.9 percent lower on ready-cooked food and 64.7 percent lower on child allowance. On the other hand, when the father is a decade older than the mother, the household's budget share is 54.8 percent higher on milk and milk products and 16.7 percent lower on hygiene.

All things the same, when the mother's educational attainment is one level higher than the father, the household's budget share is 26.9 percent lower on tobacco and 24.4 percent lower on recreation. On the other hand, when the father's educational attainment is one level higher than the mother, the household's budget share is 9.7 percent higher on cereal and grains and 6.7 percent lower on other food.

All things the same, when the mother is the sole breadwinner, the household's budget share is 47.3 percent lower on meat and seafood and 43.6 higher on clothing. On the other hand, when the father is the sole breadwinner, the household's budget share is 63.8 percent lower on ready-cooked food, 31.3 percent higher on beverages, and 43.8 percent higher on transport.

Table A.2: Demand for consumption goods as a function of decision-making arrangement and distribution factors (Basic set of controls included)

Dependent variable	Independent variables					
	Age difference if older (in decades)		Difference in educ'l attainment if more educated		Diff. in share of wage and self-employment income if earning more	
Log consumption expenditure share in:	Mother	Father	Mother	Father	Mother	Father
Cereal and grains	.004	−.102	.070+	.097*	−.150	−.003
	(.166)	(.119)	(.049)	(.056)	(.173)	(.091)
Meat and seafood	−.078	.134	.006	−.045	−.473*	.108
	(.285)	(.205)	(.065)	(.068)	(.256)	(.102)
Milk and milk products	.085	.548***	−.214	−.045	.097	.262
	(.516)	(.206)	(.149)	(.168)	(.278)	(.265)
Vegetables and fruits	−.471	.161	−.060	−.043	.120	.134
	(.360)	(.151)	(.102)	(.092)	(.176)	(.140)
Ready-cooked food	−.959*	−.154	.221	.150	−.043	−.638**
	(.546)	(.319)	(.160)	(.146)	(.314)	(.298)
Other food	−.091	.048	−.037	−.067**	−.108	.059
	(.108)	(.070)	(.039)	(.026)	(.119)	(.073)
Beverages	−.277	.102	−.070	−.058	.220	.313*
	(.378)	(.156)	(.079)	(.080)	(.161)	(.175)
Alcohol	.217	.075	−.060	−.218	−.026	−.201
	(.525)	(.297)	(.156)	(.160)	(.368)	(.298)
Tobacco	−.558	−.010	−.269*	−.118	.350	−.021
	(.573)	(.423)	(.152)	(.149)	(.386)	(.318)
Transport	.140	.209	−.085	−.002	.372+	.438**
	(.450)	(.212)	(.126)	(.109)	(.258)	(.222)
Hygiene	.041	−.167**	.033	.052	−.052	−.020
	(.132)	(.077)	(.038)	(.044)	(.088)	(.061)
Clothing	−.080	.007	.150+	.108	.436*	−.132
	(.415)	(.221)	(.094)	(.094)	(.227)	(.171)
Medicine	.081	.026	−.024	.118	−.159	−.028
	(.392)	(.188)	(.127)	(.110)	(.272)	(.178)
Child allowance	−.647**	−.128	−.161+	−.030	−.179	−.180
	(.327)	(.165)	(.101)	(.091)	(.213)	(.181)
Schooling	−.123	.111	−.048	−.106+	−.002	.028
	(.274)	(.182)	(.081)	(.067)	(.108)	(.128)
Recreation	.558	−.025	−.244*	−.009	.626+	.141
	(.457)	(.276)	(.128)	(.102)	(.425)	(.303)

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.

B Village-level wages and prices

In the CLHNS community questionnaire, data on prevailing wage rates for seven different occupations were obtained from two knowledgeable persons (community leader/councilor, school principal, teacher, etc.) in each village, and the wage rates were allowed to have different units (per piece, daily, daily with free meal, weekly, or monthly[43]). For price data, six knowledgeable persons were asked to identify the two most frequented markets or store for four different food categories, and then prices on 19 goods were obtained from these two stores, with different units (including local sizes that are not easily convertible) depending on what the store actually had for sale. In both cases, missing entries were prevalent. To limit the problem of arbitrary sample selection,[44] I used all of the different wage rates and prices, listed below, using the most common units mentioned for each, and using the average value if two sources were available. I also included dummy variables denoting missing entries (either due to the use of a different unit or actual missingness) for each wage or price.[45]

Occupations with wage rate information

- Unskilled wage labor in *poblacion* or city, government or private
- Unskilled farm labor
- *Yaya* (domestic helper whose primary responsibility is taking care of children)
- Other domestic helper
- Construction worker
- *Cargador* (stevedore)
- Cosmetologist (barber or hairstylist)

Goods with price information

- Rice (*wagwag*, first class)
- Corn grits (#14)
- Pork (pure meat, no bones)
- Beef
- Chicken
- Eggs, medium

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[43]It was unclear how weekly and monthly rates could be converted into daily rates since using the usual numbers resulted in wages that don't line up well with the reported daily rates for other villages.

[44]One possibility was to use variables with the least number of missing entries, and then use casewise deletion to drop observations. This was unsatisfactory because one would have to make choices about which variables to keep (sometimes, the more important items had more missing entries), and casewise deletion would lead to a further reduction in the sample size.

[45]The average wage or price for the whole sample was substituted into the corresponding missing entries for each variable.

- Bananas (*lakatan*, second class, small)
- Bananas (*latundan*, second class, small)
- Tomato (native, small)
- Cabbage
- Evaporated milk (cheapest brand, small)
- Condensed milk (cheapest brand, large)
- Powdered milk (cheapest brand, small)
- Infant formula (cheapest brand, small)
- Edible oil
- Salt (solar-evaporated, unrefined)
- Gasoline
- Kerosene
- Cement

C   Variable list

Components of consumption expenditure categories

- Cereal and grains: rice, corn, flour; cassava, sweet potato, potato, yam; bread, crackers, noodles, pasta
- Meat and seafood: beef, pork, chicken, goat, intestines, liver or gizzard, frozen or canned meat; fresh fish, dried fish, smoked fish, canned fish, salted fish, shrimps and other shellfish
- Milk and milk products: fresh milk, evaporated milk, condensed milk, powdered milk, cheese, butter
- Vegetable and fruits: swamp cabbage and other leafy vegetables, green beans, onions, tomatoes, carrots, cucumber; mango, banana, papaya, guava, pineapple, apple, pomelo; peanuts, mung beans, soy beans, green peas
- Ready-cooked food: gruel, meatballs, salad, mung beans, noodles
- Other food: chicken egg, duck egg, quail egg; oil, margarine; salt, pepper, ketchup, fish sauce, vinegar, sugar
- Beverages: tea, coffee, cocoa or native chocolate, juices, softdrinks
- Alcohol: beer, palm wine, rum, gin
- Tobacco: cigarettes, *abano*
- Transport: public transport, gasoline, vehicle maintenance

- Hygiene: laundry detergent, bath soap, toothpaste, toilet paper, cosmetics

- Clothing: clothes, shoes, socks, hats, accessories

- Medicine (medical expenditures): hospital, health center, doctor, traditional midwife, traditional healer

- Child allowance

- Schooling (educational expenditures): enrollment, matriculation/tuition fee, Parents and Teachers Association, Boy/Girl Scouts, vocational course, school materials, books, uniforms

- Recreation: newspapers, magazines; movies

D   Results with village-level fixed effects

Table A.3: Group statistics for village-level fixed effects estimation

Village sample size	No. of villages	Cumulative no. of groups
29	1	1
28	1	2
22	1	3
19	1	4
18	1	5
16	1	6
15	1	7
14	3	10
12	2	12
11	1	13
9	3	16
8	2	18
7	3	21
6	1	22
5	1	23
4	2	25
3	9	34
2	15	49
1	45	94

$N = 409$ households

Table A.4: Demand for consumption goods as a function of decision-making arrangement, Estimates with distribution factors and village-level fixed effects

Dependent variable	Independent variables					
	Decision-making arrangement index Joint relative to:		Log total consumption expenditure	Controls Basic	Additional	
Log consumption expenditure share in:	Mother	Father	(instrumented)	set	DF	FE
Cereal and grains	.203+	.262	−1.086***	Yes	Yes	Yes
	(.137)	(.187)	(.281)			
Meat and seafood	−.324	−.249	.274	Yes	Yes	Yes
	(.253)	(.222)	(.218)			
Milk and milk products	.783*	.469	1.514**	Yes	Yes	Yes
	(.403)	(.444)	(.598)			
Vegetables and fruits	−.206	−.110	.710*	Yes	Yes	Yes
	(.332)	(.233)	(.419)			
Ready-cooked food	.121	−.007	−.865+	Yes	Yes	Yes
	(.343)	(.401)	(.560)			
Other food	−.120	−.085	−.290**	Yes	Yes	Yes
	(.108)	(.122)	(.143)			
Beverages	.030	−.539**	1.537***	Yes	Yes	Yes
	(.191)	(.211)	(.308)			
Alcohol	.315	−.478	−1.180*	Yes	Yes	Yes
	(.397)	(.454)	(.640)			
Tobacco	.222	−.510	.119	Yes	Yes	Yes
	(.380)	(.439)	(.821)			
Transport	−.314	.324	.601	Yes	Yes	Yes
	(.292)	(.392)	(.524)			
Hygiene	−.107	.011	−.468***	Yes	Yes	Yes
	(.123)	(.120)	(.175)			
Clothing	.155	.051	1.653**	Yes	Yes	Yes
	(.282)	(.359)	(.654)			
Medicine	.308	.290	.220	Yes	Yes	Yes
	(.350)	(.325)	(.595)			
Child allowance	−.054	−.003	.236	Yes	Yes	Yes
	(.212)	(.174)	(.415)			
Schooling	.048	−.034	.610*	Yes	Yes	Yes
	(.238)	(.207)	(.320)			
Recreation	−.122	−.109	2.320***	Yes	Yes	Yes
	(.383)	(.381)	(.639)			
First-stage regression F-statistic			$F(2, 93) = 18.2$ [p-value $< .001$]			
Joint significance of decision-making arrangement			$\chi^2(32) = 196.7$ [p-value $< .001$]			

$N = 409$ households

Note: The table presents IV coefficient estimates and standard errors from a SUR, with disturbance terms clustered at the village level and allowed to be correlated across equations. The excluded IVs for (log) total household consumption expenditure are (log) total household income and in-kind transfers received. The set of basic controls used is listed in Table 4; additional controls for distribution factors (DF) are described in Appendix A, while FEs are village-level fixed effects.

Significance indicated at the following confidence levels: + 85 percent; * 90 percent; ** 95 percent; *** 99 percent.