



Preference Heterogeneity, Power, and Intrahousehold Decision-Making in Rural Malaysia

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Summary. — This paper examines conjugal household responsibilities/roles, preference heterogeneity and intrahousehold power relations in rural Malay families. Its three major contributions are to: provide an effective initial indicator of separate spheres within the family; develop and implement a method for measuring the extent of conjugal preference heterogeneity; and, illustrate the value of combining this direct measure of preference heterogeneity with a measure of power in estimating household expenditure patterns for three major items, food, schooling, and housing improvement. These three measurement innovations applied to the rural Malaysia context demonstrate the potential for more direct efforts to model and measure intrahousehold decisions. © 2001 Elsevier Science Ltd. All rights reserved.

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1. INTRODUCTION

A fundamental issue in microeconomics, especially as it pertains to developing economies, concerns how to model household resource allocation decisions. Clearly, many decisions crucial to the welfare outcomes of families and their individual members are made by “households,” such as where to live, how to generate income, who will work, how many children to have, how much to invest in each child’s well-being, and how much to consume or invest in other ways. In precarious situations—those where households have low wealth and limited options in labor, credit, and other key markets—the intrahousehold dynamics of resource allocation decisions may be especially crucial to basic welfare outcomes of family members (Haddad, Hoddinott, & Alderman, 1997 contains several analyses that make this basic point).

Intrahousehold decision-making theory has advanced notably since Becker’s seminal work on new household economics (NHE) extended the neoclassical model of individual consumer

demand to households by assuming a single, well-behaved utility function (Becker, 1973, 1974, 1981a,b). Three basic models—collective, cooperative, and non-cooperative¹—have been used to explore how heterogeneous preferences, almost exclusively those of fathers and mothers, might be combined with various specifications of decision-making power into a coherent household allocation mechanism (Doss, 1996 reviews these theoretical models and Haddad *et al.*, 1997 examine both the models and empirical methods used to study issues of intra-household resource allocation.) Specific conditions have been identified under which

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“separate spheres” of resource allocation are likely to emerge either explicitly, wherein household members attempt to maintain individual discretion over allocable resources in order to pursue their distinctive preferences, or implicitly, wherein joint decisions are shaped by the member(s) with more power, often described in terms of “voice” and “exit potential.”² Although some differences across intrahousehold models are axiomatic (e.g., is income pooled?), theory has illuminated several factors that can shape whose preferences get expressed to what degree, such as transaction costs and cultural rules, human and financial capital endowments of members (including transfer payments or options provided by extended family), and their subjective perceptions of alternative options (Anderson-Schaffner, 1995).

Empirical advances in intrahousehold analysis have been hampered by measurement issues (Doss, 1996), especially the fact that the vast majority of consumption and expenditure data are collected at the household rather than individual level, thereby leaving as unobserved individual preferences, consumption outcomes, and allocation choices. As a result, tests of intrahousehold allocation models have been largely inferential (Thomas, 1990), aimed, for example, at determining whether household expenditure shares on various goods differ based on who controls income (Haddad & Hoddinott, 1991; Hoddinott & Haddad, 1995). They are inferential because they do not explicitly incorporate data on the preferences of individual family members into the analysis of whether who controls income matters to expenditure patterns. Indeed, these studies rely implicitly on the broad presence of systematic differences in male and female preferences for certain goods (such as males preferring durable assets and women preferring expenditures on children’s well-being). Without these systematic differences in male and female preferences, variations in income control would not have significant impacts on expenditure shares, because implicitly it is the combination of heterogeneous preferences and power that give rise to the distinctive expenditure patterns (Smith & Chavas, 1999). In other words, these inferential approaches are, in effect, conservative tests of the income pooling hypothesis, because they require sample-wide preference differences between the genders rather than household preference differences in their probe of whether income control matters.

To date, most of the controversy in these income control and expenditure share models has focused on whether they offer a discerning test of the income-pooling hypothesis. One key issue is the potential endogeneity of the income control measure to nonpower related factors, especially because of the joint nature of labor and consumption allocation decisions within households. Yet, this endogeneity concern persists even when nonlabor income, such as transfers or pensions, are used (Thomas, 1990, 1993), because in various ways nonlabor income might still be endogenously related to differences in productivity and common preferences within the household (either over time or across other family members).³ Put differently, then, the basic concern is that there is no income control measure, which offers a clean reflection of “power,” because of the potentially endogenous relationship between income control and other factors, especially productivity, tastes, and relative prices. Therefore, differences in expenditure patterns associated with who controls income can be consistent with a variety of intrahousehold models, including a unified household modeling approach (Haddad *et al.*, 1997).

This paper attempts to address the two issues of inferring preference differences from expenditure share models and endogeneity concerns with income control measures by explicitly testing the roles of preference heterogeneity and relative asset control (as a proxy for power) in determining expenditure share decisions. The measure of individual preferences is constructed from an expenditure game played separately with fathers and mothers, where they are asked to reveal how they would budget an extra \$40 a month. This direct approach is similar to Lampietti, Poulos, Cropper, Mitiku, and Whittington (1999) who used a contingent-valuation method for eliciting demand preferences of married women and men for malaria vaccines. Measuring power by using the share of assets controlled by the mother and the father builds on recent work by Doss (1996, 1997) and Quisumbing and Maluccio (1999) to identify a potentially more exogenous approach.⁴ Once the exogeneity of this asset measure and the individual preference data are examined, they are combined explicitly in a reduced-form econometric estimation of expenditure shares on some key consumer goods in an augmented Working-Lesser specification (Deaton, 1988, 1989). The results of this direct econometric approach are compared

with those generated by an inferential approach and a unified model to probe their explanatory power.

The paper stems from a larger study on intrahousehold decision-making in Malaysia that focuses on female rural to urban migration and remittance decisions (Kusago, 1996). Using household data gathered for this study,⁵ we offer three measurement innovations that provide valuable insights into intrahousehold decision-making studies and demonstrate the potential value of pursuing more direct measures in future household level research. The first measurement innovation—a set of questions on financial and market purchase responsibilities—builds on previous efforts to identify the presence of separate roles and spheres between conjugal partners (Katz, 1992), and serves as an initial indicator of the presence of separate spheres. The second innovation offers a means for measuring the degree of heterogeneity of household members' preferences by separately eliciting their individual preferences in an expenditure game. The third involves a more explicit identification of the effects of power and preference heterogeneity in a classic expenditure share model by incorporating a direct measure of preferences and an alternative measure of power elicited from the household respondents. Combined, these innovations provide evidence that casts further doubt on the NHE model, because they illustrate the distinctive roles of both preference heterogeneity and power in determining household expenditure patterns in rural Malaysia.

This paper is organized as follows: Section 2 describes the conjugal context among rural Malay households in the study. Sections 3–5 present the intrahousehold measurement innovations and expenditure econometrics. Section 6 discusses the implications of the results for understanding intrahousehold decision-making processes in rural Malaysia and beyond.

2. INTRAHOUSEHOLD DECISION MAKING IN KELANTAN

Our study examines intrahousehold decision-making in the rural and predominantly Islamic state of Kelantan, Malaysia, where 96% of the population is Malays.⁶ Among these families, land is their predominant physical asset holding, and their primary economic activity is smallholder agriculture. Ethnographic studies

of family life in Kelantan (Banks, 1983; Tsubouchi, 2002) have documented the highly paternalistic patterns of behavior, where, for example, husbands have traditionally held authority over many aspects of family life, including the right of their spouse and daughters to work outside of the house.⁷ As we show in Section 3, husbands and wives in these families widely recognize the dominance of husbands in decision-making on financial matters. Yet, despite the strong paternalistic orientation of rural life in Kelantan, there is also clear recognition within the Islamic tradition that control over individual asset holdings (especially land brought into the marriage by men and women) and over transfers received from other family members can and do remain in the hands of women (Rauf, 1994). In this sense, asset holdings especially may provide a good measure of the bargaining position of husbands and spouses over some types of decisions. It may also help that these land holdings tend to be quite stable over time, with relatively little accumulation or deaccumulation of land.⁸

The fabric of rural life in Kelantan has been transformed over the past two decades by the outmigration of young Kelantanese women to factory jobs in Penang and other locations along the West Coast of Malaysia (Ariff & Hill, 1985; Edwards, 1990; PDC, 1992; Sivalingam, 1994; FMM, 1994). In many Kelantan villages, the vast majority of families with daughters have at least one who has migrated to work in the city. Indeed, in some villages visited for the broader study of rural–urban migration by young, Kelantanese women, there were no households with daughters of eligible age without a migrant. Unlike many of their mothers, these daughters are earning sizable salaries as young women and living in much less traditional settings, where they have considerably more decision-making power over financial matters and labor decisions than they would have in rural Kelantan. Most of the daughters interviewed in Kusago (1996, 1998) send home remittances to their families, with 90% of the remittances being sent to mothers, from the perspective of the daughters to help support their siblings and family's well-being (inheritance options are probably quite limited for these daughters). While the cross-section data gathered do not allow an explicit examination of the dynamics of change in gender roles in rural Kelantan, the dramatic increase in labor opportunities, earning power, and deci-

sion-making for young Kelantanese women have almost certainly altered the reference frames of older Kelantanese women in their household situations. Thus, the context provides an excellent opportunity to explore intrahousehold decision-making outcomes.

3. HETEROGENEOUS PERCEPTIONS OF HOUSEHOLD EXPENDITURE DECISIONS

Early researchers on intrahousehold issues attempted to identify the presence of separate spheres of activity within developing country households (especially in Africa) as a means of comparing the appropriateness of the NHE model and alternative intrahousehold models (Fapohunda, 1988; Whitehead, 1981; Dey, 1981; Tripp, 1981; Guyer, 1988; Saul, 1989; Jones, 1983, 1986). Katz (1992) offers a variation of this approach by asking Guatemalan women questions about the presence of nonpooled income and separate expenditure responsibilities as an indication that each member is able to spend at least some of their income according to their own preferences. In this section, we build on her approach by asking a similar line of questions of both husbands and wives to see how their perceptions of responsibilities for financial decision-making and market purchases line up. Our goal is to see where their perceptions on control over expenditure decisions converge and diverge as a possible indicator of whether there might be either well-identified separate spheres or imperfect observability of expenditure patterns

and hence potentially implicit differences in perceptions of responsibility.

The total number of two-parent households interviewed was 120. Their perceptions on decision-making authority on 10 expenditure items are listed in Table 1.⁹ Husbands and wives were interviewed separately and asked: (1) who has financial decision-making power over the purchase of the household goods selected, and (2) who actually makes the purchase.¹⁰ Three response categories were used, and were scaled as: 3=father always/dominant, 2=father and mother equally (joint), and 1=mother always/dominant.

As shown by the overall averages in Table 1, fathers and mothers both see fathers as having considerably more financial decision-making power across all expenditure items (values greater than two denote fathers having more power) in financial decisions. These scores reflect the patriarchal tradition of Kelantan. It is also true that fathers tend to see themselves as having more financial power than do the mothers on almost all items. Only on cooking gas and decisions on children's marriage are the fathers' and mothers' perspectives on financial decision-making authority not significantly different at the 5% confidence level.

In terms of market purchase authority, fathers and mothers basically share the same perceptions of who is responsible. Only on the paying of medical expenses, the purchase of gifts, and decisions on children's marriage are there significant differences in perception of who is responsible (in the latter women perceive men to be more powerful than they perceive themselves). On all of the rest of the items, there is agreement among fathers and mothers,

Table 1. *Relative authority of fathers and mothers in financial decision making and market purchases*

	Financial decisions			Market purchases		
	Fathers	Mothers	<i>p</i> -value	Fathers	Mothers	<i>p</i> -value
Buying food	2.61	2.36	0.005	1.23	1.15	0.241
Paying school bus fees	2.66	2.38	0.048	1.52	1.42	0.495
Paying school lunch	2.58	2.35	0.019	1.37	1.32	0.602
Paying housing improvement	2.58	2.32	0.009	2.17	2.11	0.481
Buying cooking gas	2.56	2.39	0.082	1.44	1.28	0.092
Buying land	2.53	2.17	0.028	2.23	2.05	0.314
Buying petroleum	2.80	2.58	0.033	2.66	2.55	0.360
Paying medical expenses	2.39	2.07	0.034	2.13	1.41	0.000
Buying/paying gifts	2.76	2.25	0.000	2.52	1.43	0.000
Decision on children's marriage	2.54	2.32	0.066	2.11	2.32	0.042
Average	2.60	2.32		1.94	1.70	

and either the mother is primarily responsible as in food, cooking gas, school expenses, or the responsibilities are basically shared (housing improvement, land, and children's marriage). Only on petroleum purchases are men perceived by both to be primarily responsible for the market purchases. Since market purchase actions are more readily observed and may well reflect a well-accepted division of labor within the household, it is sensible that perceptions on responsibility would be more common than on who makes financial decisions. By the same logic, it also seems reasonable that the partial observability of market purchases might give rise to some discrepancy in viewpoints about who actually makes the financial decisions, especially when the parent is primarily responsible for the market purchases may have some income they earn or receive which is not be pooled or fully accounted for by the spouse (e.g., remittances). Thus, the fact that mothers make more of the market purchases may explain the finding that they view themselves as having more financial decision-making authority than do the fathers.

The next step is to examine the data on fathers' and mothers' preferences in order to identify the degree of heterogeneity, to see to what degree separate responsibilities might matter to the outcomes of household resource allocation decisions. Then, we need to explore our measures of conjugal power that could jointly influence the allocation decisions where preferences are heterogeneous between husbands and wives.

4. PREFERENCE HETEROGENEITY AND POWER MEASURES

Individual preferences are primal in consumer behavior theory. Along with prices, endowments, and productivity they shape the generation and allocation of income, consumption, savings, labor, and leisure. By assuming household preferences are unified or made by a benevolent dictator, the NHE approach largely ignores the potential interplay of household members and their distinctive preference orderings. While recent intrahousehold theory has explored the conditions under which differences in preferences result in distinctive resource allocation outcomes (Carter & Katz, 1997; Lundberg & Pollak, 1993; Manser & Brown, 1980; McElroy & Horney, 1981; Woolley, 1988), few empirical

advances have been made which identify the extent of preference heterogeneity and, to the best of our knowledge, very few direct measures of preference differences have been attempted (Lundberg & Pollak, 1993; Becker, 1996). Lampietti *et al.* (1999) introduced a new test of common preference models, where a hypothetical preference test (basically a contingent valuation approach) has been applied to the case of medical expenses to combat malaria among households in Ethiopia. They found that women tend to give higher preferences than men to purchasing malaria vaccines. This study limited its scope, however, to the analysis of a specific health care item, and as such little is directly known about how preferences across different types of goods might differ within households.

Preference differences clearly underlie the findings that Thomas (1990, 1993) obtains from studying allocation outcomes in Brazilian urban household budget data. He estimates that an increase in nonlabor income for women results in greater household spending on education, health and household service at about four times the rate that additional income for men increases similar expenditures. Astonishingly, he also finds that the effect on child survival rate is almost 20 times greater when nonlabor income accrues to women than men. These findings imply not only that preference orderings of men and women within households differ systematically across the population, but also that the potential welfare implications of these differences are large. These conclusions are inferential, however, and may actually understate the degree of preference heterogeneity within some households, because they rely on systematic gender differences existing across the population, not only within households.¹¹

Smith and Chavas (1999), using ICRISAT¹² data, explore the effect of preference heterogeneity on agricultural production decisions, household income, and household members' well-being in the context of Burkina Faso's export-promoting, agricultural liberalization policy regime. Their simulation exercises reveal, not surprisingly, that both the level of preference heterogeneity and the associated power divergence within the family are likely to influence the impacts of price liberalization on the household economy and household well-being. These findings are very similar to Jones (1983, 1986) and Wilk (1989), in that household responses to changes in economic opportunities

differ across households because of the difference in the household management system (pooling vs. non-pooling income, etc.). Smith and Chavas make a unique contribution, however, by mapping households based on assumed levels of preference heterogeneity and exploring the important role of heterogeneity in alternative bargaining approaches to models of household resource allocation. Yet, this simulation effort relies on basic assumptions about individual preference differences rather than on any direct or indirect measures. In sum, previous analyses of intrahousehold decisions have not measured directly household preference heterogeneity.

(a) *Data on individual preferences*

Our empirical method employs data collected directly from parents on their preferences by playing a spending game with fathers and mothers, separately.¹³ First, 13 items were selected, covering a wide range of household expenditures for rural Malay families: food, schooling, housing improvement, own savings, emergency fund for family (sickness, etc.), land, tractor, children's marriage, cigarette, car, kitchen appliances (refrigerator, washer), jewelry, and pilgrimage (going to Mecca).¹⁴ Pictures of each of these items were shown to the respondents and put in front of them.¹⁵ Then, respondents were given 10 photocopied RM10 bills, totaling RM100, and were asked the question "If you received RM100"¹⁶ (worth about US\$40 in 1995) in addition to your current income every month, how would you spend it? Please allocate RM100 to the items

which you prefer to do so from these 13 items."¹⁷

Asking each respondent "How do *you* prefer to spend the money?" instead of "How does *your family or household head* spend the money?", and doing so without any influence from other members while the game was being played, was meant to allow for a comparison of individual preferences of fathers and mothers.¹⁸ The amount allocated to each item was recorded, and used to construct an index of preference heterogeneity within the household by taking the absolute value of the difference between the two parents' preferences and summing that value over all of the expenditure items. Thus, the household economic preference index ranges from 0, perfect homogeneity, to 200, perfect heterogeneity.¹⁹ The index scores are upward biased by the fact that respondents were not allowed to break their bills into smaller units (such as RM1 or RM5 notes).

(b) *Preference heterogeneity among rural Malay families*

Rural Malay households appear to have rather heterogeneous preferences on the expenditure items (see Table 2). For the entire sample, the mean value of the economic preference heterogeneity index is 128 (its standard deviation is 47), which means that less than 40% of expenditure preferences were matched among husbands and wives. Considerable dispersion is also evident for individual expenditure items. The mean value of the heterogeneity index for food is 27, school 16, emergency 10, and pilgrimage to Mecca 23. *Prima facie*,

Table 2. *Measures of preference heterogeneity and economic preferences*

	(1) Average preference	(2) Mean of economic preferences		
	Heterogeneity measure	Fathers	Mothers	p-value
Food	27	23.1	30.2	0.030
Schooling	16	8.7	18.0	0.000
Housing improvement	8	7.5	5.0	0.060
Savings	20	11.7	13.5	0.566
Emergency	10	5.0	8.7	0.013
Land	10	8.6	2.3	0.000
Tractor	4	3.5	0.6	0.007
Children's marriage	2	0.9	1.8	0.178
Cigarette	1	0.5	0.3	0.639
Car	1	0.5	0.0	0.093
Kitchen appliances	2	0.4	2.2	0.018
Jewellery	4	1.4	2.3	0.275
Pilgrimage (Mecca)	23	28.1	15.2	0.000
Total	128			

these index measures of preference heterogeneity raise serious doubts about the integrity of the common preference assumption of NHE models. If the common preference assumption were accurate, index scores should be closer to zero. Even among the quintile of households with the lowest index scores (not reported in the tables), the mean value was 58, reflecting agreement on only 70% of expenditures. In the quintile with the highest index scores, however, the mean value of the index was 190, with average gaps on food expenditures and pilgrimage of 65 and 61, respectively.

A close look at Table 2 reveals systematic differences in the mean economic preferences of fathers and mothers for specific consumption items. On the one hand, the mean economic preferences of fathers and mothers are significantly different across seven of the 13 expenditure items at the $p < 0.05$ level. For example, on average, fathers would spend about 23% of their additional income on food, while mothers would spend 30%, or fathers would spend 28% on pilgrimage to Mecca, compared to 15% for mothers.

Table 3 shows the mean economic preferences of fathers and mothers across household income levels. These estimates show that gender-specific preferences differences exist across the spectrum of per capita household incomes, although because of the small sample size in each quartile many of these differences are not statistically significant (e.g., food). For example, mean of economic preferences of mothers on food are systematically higher than those of fathers across the income levels, but while for the whole sample they are significantly different for the quartile they are not. These data also reveal another important relationship; namely, mothers' preference orders move closer to fathers' at the higher income level as they begin to put less priority on food and emergency expenditures and more on pilgrimage and savings. These data suggest that household income level might influence the preference orderings of household members and imply that generalizing gender-specific responsibilities or preferences might be misleading to the analysis of household resource allocation outcome, if we ignore the influence of household income levels on individual preference orderings.

(c) *Measures of conjugal power*

As discussed above, recent attempts to test intrahousehold models have used men or

women's nonlabor income (Thomas, 1990, 1993) or relative income control (Haddad & Hoddinott, 1991; Hoddinott & Haddad, 1995) to see whether these measures impact household expenditure choices. Hoddinott and Haddad (1995) find in their analysis of household expenditure shares of 10 items that an increase in women's relative cash income is positively related to the expenditure share of food and fuel and negatively related to alcohol and cigarettes. They conclude that household expenditure patterns are shaped by the relative power of different members over income.

In the previous section, however, our data suggested as discussed in Haddad *et al.* (1997) that caution is in order when using income data as a power measure, because preference orderings might not be independent of the level of household income. If that is the case, the demand estimation using income control as a power measure could have endogeneity problems. Thus, to test the role of intrahousehold power in the household expenditures analysis or other household decisions (i.e. migration decisions), it seems advisable to apply an alternative power measure to one based on income control, especially if one can be found that is more likely to be endogenous to both current allocation decisions and to preferences.

In Kelantan, men and women often bring land into the marriage, generally land inherited from their individual families. These land assets typically dominate the overall asset holdings of the couple and because of restrictions on total land accumulation they do not generally change in major ways over the lifecycle of the family. Thus, we use the asset share of each conjugal partner as a measure of their relative power in the hope of finding a more "exogenous" power measure, one that might not be tied as explicitly to current allocation decisions as income measures. The average measure of mother's asset power in the sample was 0.4, with a range of (0–1.0), and a standard deviation of 0.4.

In Tables 4 and 5, we do a simple test of exogeneity between individual preference levels on expenditure items and asset (income) share to see whether the preference levels are systematically related to either of these conjugal power measures. We also did parallel regression analyses to probe whether asset shares and preferences were exogenous. They are exogenous for most but not for all expenditure items, e.g., land and kitchen. But, the regressions for food and schooling reveal no

Table 3. Mean of economic preferences of fathers and mothers by per capita household income levels

Per capita household income level	Lowest 25%			Low-mid 25%			High-mid 25%			Highest 25%		
	Fathers	Mothers	<i>p</i> -value	Fathers	Mothers	<i>p</i> -value	Fathers	Mothers	<i>p</i> -value	Fathers	Mothers	<i>p</i> -value
Food	32.3	37.3	0.538	24.8	30.0	0.392	19.0	25.9	0.115	16.5	27.4	0.127
Schooling	8.2	23.7	0.006	9.3	18.0	0.035	10.3	19.8	0.014	7.1	11.0	0.423
Housing improvement	10.0	8.3	0.538	6.5	3.7	0.162	6.9	5.5	0.677	6.8	2.4	0.144
Savings	4.7	11.0	0.030	16.9	11.7	0.398	6.9	14.1	0.260	18.1	16.9	0.882
Emergency	5.0	10.3	0.081	5.3	9.0	0.239	5.5	9.0	0.326	4.2	6.6	0.338
Land	9.7	1.7	0.034	11.3	1.3	0.001	9.3	4.1	0.199	4.2	1.9	0.256
Tractor	3.0	0.0	0.119	5.3	1.0	0.079	3.5	0.9	0.358	2.3	0.7	0.231
Children's marriage	1.0	1.3	0.662	1.1	1.7	0.624	0.7	1.4	0.537	1.0	2.6	0.325
Cigarette	1.3	0.0	0.211	0.3	0.0	0.326	0.0	0.3	0.326	0.3	1.0	0.423
Car	0.0	0.0	–	0.8	0.0	0.262	0.3	0.0	0.326	1.0	0.0	0.325
Kitchen appliances	0.0	0.7	0.326	0.1	3.3	0.107	1.7	4.1	0.243	0.0	0.7	0.161
Jewellery	2.7	1.7	0.669	0.1	3.0	0.057	2.1	2.4	0.851	0.7	2.3	0.258
Pilgrimage (Mecca)	22.2	4.0	0.000	18.1	17.3	0.878	33.8	12.4	0.000	38.1	26.6	0.140

Table 4. *Testing one's preference levels on one's own wealth/income shares: fathers' preferences on their own wealth/income shares^a*

	Food	School- ing	Housing improve- ment	Savings	Emer- gency	Land	Tractor	Children's marriage	Cigarette	Car	Kitchen	Jewel- ery	Pilgrimage
Constant	16.618 (3.020) ^b	7.759 (2.717)	11.154 (4.579)	6.015 (1.245)	3.752 (1.779)	13.451 (4.466)	6.358 (2.802)	0.591 (0.637)	-3.024E-02 (-0.050)	7.331E-02 (0.109)	-0.294 (-0.451)	0.966 (0.900)	33.594 (6.164)
F_WEA	26.723 (0.877)	-2.043 (-0.129)	-23.796 <u>(-1.765)</u>	39.512 (1.478)	15.847 (1.358)	-45.911 (-2.754)	-15.875 (-1.264)	-1.433 (-0.279)	8.551E-02 (0.026)	7.629 (2.048)	7.660 (2.124)	-0.333 (-0.056)	-8.219 (-0.272)
F_WEA ²	-17.338 (-0.592)	4.636 (0.305)	<u>19.463</u> <u>(1.501)</u>	-35.525 (-1.381)	-16.160 (-1.440)	43.340 (2.703)	13.372 (1.107)	2.308 (0.468)	0.831 (0.258)	-7.807 (-2.179)	-7.313 (-2.108)	0.849 (0.149)	-0.439 (-0.015)
Constant	25.625 (2.820)	8.019 (1.705)	8.226 (1.970)	5.364 (0.668)	7.911 (2.260)	16.481 (3.249)	-1.932 (-0.531)	0.722 (0.477)	-7.438E-02 (-0.073)	-0.218 (-0.201)	-0.137 (-0.129)	-0.806 (-0.423)	30.784 (3.489)
F_INC	-29.079 (-0.542)	-6.913 (-0.249)	6.952 (0.282)	37.826 (0.799)	-19.048 (-0.922)	-47.245 <u>(-1.578)</u>	31.713 (1.477)	2.517 (0.282)	4.295 (0.719)	0.803 (0.126)	3.507 (0.559)	14.838 (1.319)	0.248 (0.005)
F_INC ²	51.201 (0.747)	21.958 (0.619)	-22.019 (-0.700)	-42.829 (-0.708)	23.829 (0.903)	<u>53.927</u> (1.410)	-35.205 (-1.283)	-4.403 (-0.386)	-5.998 (-0.786)	3.724 (0.457)	-4.058 (-0.506)	-19.346 (-1.346)	-21.327 (-0.321)

^a F_WEA = Father's wealth shares; F_WEA² = Square term of F_WEA; F_INC = Father's income shares; F_INC² = Square term of F_INC.

^b Figures in parenthesis are *t* values.

Table 5. *Testing one's preference levels on one's own wealth/income shares: mothers' preferences on their own wealth/income shares^a*

	Food	Schooling	Housing improvement	Savings	Emergency	Land	Tractor	Children's marriage	Cigarette	Car	Kitchen	Jewellery	Pilgrimage
Constant	27.440 (7.080) ^b	20.748 (5.843)	5.864 (3.408)	16.954 (5.292)	7.422 (3.970)	1.287 (1.113)	0.435 (0.691)	0.709 (0.919)	0.196 (0.550)	–	2.442 (1.617)	1.055 (0.874)	15.450 (3.800)
M_WEA	–4.577 (–0.175)	–16.046 (–0.669)	–15.511 (–1.334)	–11.165 (–0.516)	–4.785 (–0.379)	12.916 (1.653)	6.696 (1.571)	–0.226 (–0.043)	–0.634 (–0.264)	–	8.883 (0.871)	16.591 (2.034)	7.858 (0.286)
M_WEA ²	12.202 (0.472)	12.660 (0.535)	16.143 (1.407)	2.869 (0.134)	6.459 (0.518)	–12.404 (–1.609)	–7.543 (–1.794)	2.872 (0.558)	1.307 (0.551)	–	–11.263 (–1.118)	–15.963 (–1.983)	–7.340 (–0.271)
Constant	48.479 (2.084)	56.723 (2.727)	–3.865 (–0.360)	8.237 (0.426)	5.603 (0.454)	–0.541 (–0.079)	–2.490 (–0.668)	–8.169 (–1.668)	–0.622 (–0.299)	–	–0.613 (–0.069)	0.774 (0.108)	–3.518 (–0.147)
M_INC	–58.977 (–0.773)	–105.455 (–1.545)	14.859 (0.421)	21.676 (0.342)	4.191 (0.103)	7.173 (0.320)	10.913 (0.892)	32.893 (2.047)	1.467 (0.215)	–	5.181 (0.178)	–0.568 (–0.024)	66.648 (0.851)
M_INC ²	44.183 (0.733)	67.067 (1.244)	–2.670 (–0.096)	–19.273 (–0.385)	0.486 (0.015)	–4.241 (–0.239)	–8.725 (–0.903)	–25.233 (–1.988)	–9.458E–02 (–0.018)	–	–1.528 (–0.066)	3.915 (0.211)	–53.886 (–0.871)

^a M_WEA = Mother's wealth shares; M_WEA² = Square term of M_WEA; M_INC = Mother's income shares; M_INC² = Square term of M_INC.

^b Figures in parenthesis are *t* values.

significant relationship between asset shares and preferences. The asset share term in the housing improvement expenditure preference level for fathers is weakly significant at 10% level. Thus, for the three regressions we examine below, only one term shows any significant relationship between the preference measure and the asset control measure.

These results are also consistent with what Doss (1996, 1997) and Quisumbing and Maluccio (1999) have argued in their recent analyses where they have used asset share as a more exogenous measure of conjugal power. In the following section, we build on Haddad and Hoddinott's model, and test the impact of intrahousehold preference heterogeneity and power measures (asset control) on household expenditures.

5. EXPENDITURE SHARE ECONOMETRICS AND INTRAHOUSEHOLD EFFECTS

Here, we explicitly test whether directly observed preference heterogeneity and power differences (as measured by control over assets) have significant impacts on expenditure shares on food, schooling, and housing improvement. We adapt the classic Working-Lesser model of household expenditures by adding measures of preferences and power to the model. We compare five cases of the expenditure share model and report on three of them below in Table 6. The base case is a reduced-form representation of the NHE expenditure share model, and is given by Eqn. (1).

expshare_{*i*}

$$\begin{aligned}
 &= \alpha_{1i} + \beta_{1i} \log pcexp + \beta_{2i} \log hsize \\
 &+ \beta_{3i} ba + \beta_{4i} pm + \beta_{5i} pp + \beta_{6i} tm \\
 &+ \beta_{7i} dem1ml + \beta_{8i} dem1fl + \beta_{9i} dem2ml \\
 &+ \beta_{10i} dem2fl + \beta_{11i} dem3ml + \omega_i, \quad (1)
 \end{aligned}$$

where expshare_{*i*} is the *i*th good's share of total expenditure (*i*=food, schooling or housing improvement); logpcexp is the log of total per capita cash expenditures and is a proxy for permanent income; loghsize is the log of total household size; ba, pm, pp, tm are dummy variables indicating regional location (districts) of household, ba for Bachok, pm for Pasir Mas, pp for Pasir Puteh, and tm for Tanah Merah; dem1ml is the proportion²⁰ of demographic group 1 (0–6 yrs) males in the house-

hold; dem1fl is the proportion of demographic group 1 (0–6 yrs) females in the household; dem2ml is the proportion of demographic group 2 (7–15 yrs) males in the household; dem2fl is the proportion of demographic group 2 (7–15 yrs) females in the household; dem3ml is the proportion of demographic group 3 (16+ yrs) males in the household; and, ω_i is the error term.

The other four variations include an inferential approach using mother's asset power as an additional term and then three direct approaches using information on preferences combined with three alternative measures of conjugal power (share of total household income, share of non-labor income such as remittances, and asset shares) to examine whether these additional intrahousehold terms made a difference in the estimation outcomes. The standard inferential approach adds one term to Eqn. (1), specifically $\beta_{12} m_asset$, to capture the potential role of female power (*m_asset*) in shaping expenditure patterns. Insofar as there are systematic preference differences across men and women in the sample, then this additional asset share term identifies whether the relative power of women matters to the expenditure share outcomes.

The variations used in the direct approach require more elaboration to explain how preference information is added to the estimation procedure. Specifically, we are interested in how the weighted value of preferences and power of mothers and fathers may alter the expenditure shares of major items. To capture these effects, we add a term for each decision-making agent, which is the product of their preference ranking revealed in the expenditure game described above (e.g., *m_food* = mother's preference ranking for food; *f_food* = father's preference ranking for food) and their power measure (asset control measure). Thus, instead of adding $\beta_{12} m_asset$ to Eqn. (1), we add $\beta_{12} m_food*m_asset$ and $\beta_{13} f_food*f_asset$ to capture the potential impacts of each conjugal partner's preference and power on expenditure outcomes. Because across the sample fathers generally dominate most decision-making on financial matters, we would expect the notable differences to occur when mothers have higher preferences and power combinations.

The direct approach estimations include one additional term, which is meant to capture the fact that some households may have a higher than predicted preference ranking for a specific expenditure item. We create this term (e.g.,

food_resd) by taking the difference between the simple average of the mothers' and fathers' preferences and the predicted average (based on a regression that includes the terms used in the expenditure estimation model). Thus, for households with a higher than predicted preference for the item, we would anticipate a higher expenditure share.

The econometric results of three of the cases (the base case, the inferential approach, and the direct approach using asset power and preferences) are presented in Tables 6–8 for three expenditure items, food, schooling, and housing improvement. Regressions were run for several other expenditure items as well, but the reported are the major expenditure share items with the least censoring and most significant results. For brevity sake, the results for the other two direct approaches using total income

share and nonlabor income share are briefly discussed but not presented in the tables.

(a) *Expenditure share regression results*

Tables 6–8 presents the regression results of the three expenditure items: food, schooling and housing improvement.

(i) *Food*

The coefficient on the per capita expenditure term (*log*) is negative and significant. This is consistent with conventional Engels curve findings, in that a marginal increase in permanent income results in a marginal decrease in the share of food expenditures. Household size (*log*) is also negatively significant on the food expenditures, perhaps because of economies of scale.²¹ The regional dummy variables do not

Table 6. *Regression results of household expenditure shares: food (share of total expenditure): OLS*

	Base case	Inferential approach (asset power)	Direct approach (asset power * prefs)
(Constant)	2.2028*** (0.2236)	2.3072*** (0.2403)	2.2918*** (0.2396)
Logpcexp	-0.2198*** (0.0269)	-0.2304*** (0.0283)	-0.2290*** (0.0281)
Loghsize	-0.0949** (0.0409)	-0.0903** (0.0439)	-0.0955** (0.0444)
ba	0.0514 (0.0356)	0.0358 (0.0372)	0.0248 (0.0386)
pm	-0.0358 (0.0374)	-0.0458 (0.0407)	-0.0620 (0.0421)
pp	0.0133 (0.0370)	0.0035 (0.0384)	-0.0055 (0.0401)
tm	-0.0259 (0.0362)	-0.0277 (0.0390)	-0.0474 (0.0403)
dem1ml	0.0396 (0.1683)	-0.0224 (0.1814)	-0.0271 (0.1830)
dem1fl	-0.0836 (0.1680)	-0.0793 (0.1820)	-0.1263 (0.1820)
dem2ml	-0.0755 (0.1100)	-0.0976 (0.1135)	-0.1101 (0.1148)
dem2fl	-0.1010 (0.1161)	-0.1449 (0.1222)	-0.0984 (0.1220)
dem3ml	0.0029 (0.1132)	-0.0290 (0.1179)	0.0192 (0.1187)
m_asset		-0.0365 (0.0275)	
m_food*m_asset			-0.0007 (0.0005)
f_food*f_asset			-0.0006 (0.0005)
food_resd			0.0006 (0.0006)
Adj R ²	0.350	0.383	0.364

*** Significant at the 99% confidence level.

** Significant at the 95% confidence level.

Table 7. Regression results of household expenditure shares: schooling (share of total expenditure): OLS

	Base case	Inferential approach (asset power)	Direct approach (asset power * prefs)
(Constant)	-0.1509 (0.1413)	-0.2203 (0.1519)	-0.1630 (0.1325)
Logpcexp	0.0219 (0.0170)	0.0307* (0.0179)	0.0220 (0.0159)
Loghsize	0.0416 (0.0258)	0.0374 (0.0278)	0.0452* (0.0246)
ba	0.0042 (0.0225)	0.0069 (0.0235)	0.0100 (0.0213)
pm	-0.0291 (0.0236)	-0.0283 (0.0257)	-0.0254 (0.0228)
pp	-0.0437* (0.0234)	-0.0440* (0.0243)	-0.0386* (0.0221)
tm	-0.0259 (0.0229)	-0.0396 (0.0246)	-0.0193 (0.0219)
dem1ml	0.1774* (0.1063)	0.2172* (0.1147)	0.2015** (0.1001)
dem1fl	-0.0272 (0.1061)	-0.0584 (0.1151)	-0.0202 (0.0989)
dem2ml	0.1803** (0.0695)	0.2072*** (0.0718)	0.1687** (0.0674)
dem2fl	0.1656** (0.0733)	0.2140*** (0.0773)	0.1543** (0.0689)
dem3ml	0.0414 (0.0715)	0.0616 (0.0746)	0.0402 (0.0667)
m_asset		0.0117 (0.0174)	
m_school*m_asset			0.0014*** (0.0005)
f_school*f_asset			0.0005 (0.0004)
School_resd			0.0018*** (0.0006)
Adj R ²	0.199	0.221	0.331

* Significant at the 90% confidence level.

** Significant at the 95% confidence level.

*** Significant at the 99% confidence level.

have any significant effect on the share of food expenditures. Household demographic structure also appears not to have any significant impact on food expenditures, suggesting at least no gender bias in household food expenditure decisions related to children.

The econometric results for food expenditures that include the mother's asset are shown in the second column of Table 6. There are no major changes in the results in the inferential approach. Mother's asset share (m_asset) has no effect on the share of food in total expenditures. The last column of Table 6 shows the econometric results of the asset power and individual preferences model. We replace m_asset with the two terms that capture the preferences and power of the mother and

father, and add the household preference residual term. In this case, as well, we find no changes in the regression outcome.

(ii) *Schooling*

The coefficients on the per capita expenditure item and household size are not significant. Some of the coefficients on regional dummies and demographic variables are significant. Most intriguing is that in the schooling regression, the estimated coefficients on three of the four demographic terms for children are positive and statistically significant. The one child demographic term that is not statistically different from zero is the proportion of girls under seven, which seems to suggest the potential for some bias toward higher school

Table 8. *Housing Improvement (share of total expenditure): Tobit*

	Base case	Inferential approach (asset power)	Direct approach (asset power- * prefs)
(Constant)	-3.2820*** (0.7340)	-3.0365*** (0.7486)	-3.1720*** (0.6686)
Logpcexp	0.3419*** (0.0818)	0.3219*** (0.0836)	0.3349*** (0.0745)
Loghsize	0.2907** (0.1130)	0.2023* (0.1193)	0.2670** (0.1051)
ba	0.0066 (0.1052)	0.0033 (0.1084)	-0.0220 (0.0926)
pm	0.0713 (0.1097)	-0.0103 (0.1241)	0.0278 (0.0972)
pp	0.1024 (0.1064)	0.0875 (0.1094)	0.0619 (0.0936)
tm	0.2121** (0.1011)	0.2221** (0.1051)	0.2212* (0.0903)
dem1ml	-0.4021 (0.4801)	-0.2290 (0.5102)	-0.2301 (0.4405)
dem1fl	0.2795 (0.4296)	0.4938 (0.4695)	0.2099 (0.4355)
dem2ml	-0.0341 (0.2840)	0.0630 (0.2976)	0.0054 (0.2568)
dem2fl	0.0555 (0.3161)	0.1161 (0.3296)	0.0782 (0.2876)
dem3ml	0.5798* (0.3028)	0.6817** (0.3225)	0.6894** (0.2736)
m_asset		0.0236 (0.0693)	
m_housing*m_asset			0.0074*** (0.0027)
f_housing*f_asset			0.0002 (0.0032)
housing_resd			-0.0022 (0.0030)
Pseudo R ²	0.392	0.411	0.534

* Significant at the 90% confidence level.

** Significant at the 95% confidence level.

*** Significant at the 99% confidence level.

expenditure shares for households with more boys under seven. This may imply that households tend to send their sons to nursery schools. But, the effectively identical and positive coefficients on the demographic terms for proportion of boys and girls in the 7–15 age cohort suggest that there is not a persistent gender bias in schooling investments.

The second column of Table 7 shows the regression results of the inferential approach using mother's asset power. The coefficient on the mother's asset share is not significant to the school expenditure, and the only difference between the base case and this case is the per capita expenditure term is now weakly significant. Table 7 also shows the results of the direct

approach which replaces the mother's asset term with the three power and preferences measures. In addition to the demographic terms and regional dummy, mother's preferences and power term and household preferences are both positive and strongly significant. In other words, households with higher than predicted preferences on children's schooling are likely to allocate more financial resources for school. In addition, if the combination of the mother's conjugal power and preference for schooling are higher than average, their households are likely to spend more on children's human capital formation. Thus, the direct approach appears to capture an intrahousehold impact that the inferential approach does not.

(iii) *Housing improvement*

The housing improvement regression results are obtained by Tobit, since the housing improvement expenditure data are censored.²² The coefficient on the per capita household expenditure is positive and statistically significant; i.e., higher income households tend to spend a higher share of their expenditures on housing improvement. Household size is also positive and statistically significant. A regional dummy (tm) is positive and significant, which may reflect the fact that the housing conditions in the district of Tanah Merah have been very poor and that people in the district are therefore keen on improving their housing. The coefficient on the demographic term for adult men is positive and strongly significant.

In the second column of Table 8, mother's asset term (m_asset) is added, but its coefficient estimate is not significantly different from zero. The third column of Table 8 presents the regression results for the direct approach to measuring power and preferences. As in schooling, the mother's power and preference term (m_housing*m_asset) is positive and strongly significant. Again, the direct approach picks up the effects of intrahousehold preference and power differences on household expenditures. It is also noteworthy that in all three cases, the father's power and preference term is not significant.

(b) *Comparing the three cases*

In all cases except the food regression, the fit of the modified regressions, as measured by adjusted R^2 values and the statistical significance of other coefficient estimates, is substantially improved using the direct approach. Thus, the improved fit of the modified regressions provides evidence that incorporating measures of individual's power and preference measures into household expenditure share is an improvement in specification over the classic Working-Lesser expenditure model. The significance of the coefficient estimates on the direct approach also suggests that the direct approach is an improvement over previous adjustments made to incorporate differences in relative income control or asset power among household members.

A closer look at the regression results provides a more nuanced view of the role that preferences and power appear to play in household decisions. In the schooling and housing improvement expenditure share

regressions, although the estimated coefficients on m_school*m_asset and m_housing*m_asset are positive and statistically significant at the 99% confidence levels, the coefficients on the father's preferences and power terms are not significantly different from zero. Thus, only higher preferences for these items and/or higher power among women influence the share of expenditure on these public household goods.

Overall, the modified regression estimates presented in Tables 6–8 have major implications for intrahousehold dynamics. First, they show quite distinctly that household resource allocation decisions hinge on both preference and "control" issues. Second, they show that having distinctive measures for preferences and conjugal power improves the performance of intrahousehold models compared to just exploring the implications of differences in power. This is not surprising, since power measures will only tend to matter systematically across the population when gender differences in certain consumption items are systematic, whereas the measures developed here control for individual preferences within households. Third, and related to this, while they can confirm the systematic gender preference differences found in some previous analyses of food expenditures, the approach is also flexible enough to pick up the cases (such as schooling and housing improvement) where there are no systematic gender differences but individual power and preference measures do matter. Finally, as in previous studies, the results provide evidence against the NHE by showing that individual power and preferences shape expenditure share decisions on items, such as schooling and housing improvement, that are potentially of much importance to the well-being of children.

6. CONCLUSIONS

Over the past decade, empirical research on intrahousehold resource allocation has been hampered by the need for advances in measurement methods. This paper offers three measurement innovations, and demonstrates their value with data gathered in rural Malay from Islamic families with daughters who are or are not participating in the burgeoning markets for female labor in the country's export processing zones (EPZs).

The first innovation extends a line of inquiry regarding female perceptions of financial decision-making and market purchase responsibili-

ties as an indicator of separate responsibilities or spheres of decision-making among household members. The innovation is relatively simple, namely asking both fathers and mothers similar questions in order to identify how their perceptions of financial decision-making and market purchase responsibilities differ. Both fathers and mothers tend to see the same person responsible for market purchases. But, in terms of financial decisions, fathers' and mothers' perceptions of authority are statistically different for most of the consumption items, with mothers viewing themselves as having more financial power than men perceive.

The second innovation entails developing a way to measure individual preferences of fathers and mothers using a simple expenditure game over the main items in household budgets. The aim is not to reveal fully all preferences of individuals, which would be a huge undertaking, but to allow the development of measures of preference heterogeneity within the household, which can be used, in subsequent analysis of intrahousehold decision-making dynamics. On average, a significant degree of preference heterogeneity was revealed within rural Malay households. At the same time, systematic differences in gender preferences were evident across the samples. Combined, these results hold important implications for measuring the presence of preference heterogeneity in populations. Relying on inferential tests of preference heterogeneity that essentially attempt to identify whether certain expenditure items are "preferred" by one gender or another may understate the prevalence of preference heterogeneity if these intrahousehold differences are not systematic across gender as well.

The third measurement innovation makes use of the second by separating out the role of preferences and asset control in determining expenditure patterns for food, schooling, and housing improvement. The results of the modified Working-Lesser expenditure regression models are striking. In two of the three cases, an increase in the mother's asset power and higher preferences for the item translate into higher expenditure shares, controlling for other factors. In none of the cases, however, do father's preferences and asset power influence expenditure share. The results are contrasted with previous inferential approaches by comparing the results of these regressions with ones specified using only relative asset control measures. The fuller treatment of preferences and power provides superior econometric results.

The findings of this research are significant at three different levels of discourse: for modeling intrahousehold dynamics; for understanding changing gender roles in less-developed countries (LDCs), and for policy. In terms of intrahousehold modeling, the measurement innovations applied to the rural Malaysian context provide a rather thorough rejection of the NHE model. They reveal distinctive perceptions of mothers regarding their financial decision-making power, highly heterogeneous preferences at the household level, and significant statistical evidence that women's preferences and power influence expenditure shares for some major items. More could be done to improve the measures developed here as well as to test alternative bargaining models, with more explicit intrahousehold modeling structure than offered here.

In terms of gender roles, our results suggest the possibility that major changes in intrahousehold dynamics may be occurring in Malaysia, as migrant daughters send remittances home to their mothers and increase their capacity to express what are often distinctive economic and noneconomic preferences. Our cross-sectional data do not allow us to document the extent of these changes, but they seem likely given the recent phenomena of female migration out of this conservative, Islamic region and the historically circumscribed labor opportunities of their mothers. As such, the migration of daughters could be conceived as an intergenerational response of women to the limitations that mothers and daughters face in rural Islamic society, a response that in effect allows mothers to increase their economic power with the help of their daughters. It would be interesting to contrast these changes with those that occur when sons migrate and with similar experiences of daughters' migration in other countries.

Finally, the Malaysian experience has policy implications. Perhaps the one most worth attention here is that EPZs and other economic reforms, which stimulate the demand for female labor, can have major impacts on gender relations throughout society. Not only is there a generation of females with more earning power and thus potential for power within households they might form, but their earnings can also give rise to positive feedback on the power and well-being of mothers and siblings. This paper also suggests that some industrial policies, particularly EPZs, that could increase women's labor participation

have potentially unintended social effects on these women and their families. Their labor participation could change gender roles and, as a result, economic and social welfare (education, health and nutrition) of women workers and their siblings/children could be improved with the growth in disposable income acquired by mothers with responsibilities for purchases of key household goods like food and school. Although issues of workers' rights, worker

safety, and bargaining power of these female migrant workers are serious concerns that need to be part of any comprehensive assessment of economic reforms which stimulate female labor participation (e.g., Malaysia has severely limited labor union formation in the electronics sector of EPZs), it seems clear the potential impacts of their participation on intrahousehold decision-making dynamics in society should also be included in future assessments.

NOTES

1. Bargaining models have more variations in their own classification of the threat points or reservation utility. Cooperative models see household decisions as the outcome of some bargaining process with the usage of cooperative game theory (Manser & Brown, 1980; McElroy & Horney, 1981), wherein individual utility functions and a joint fullincome constraint are combined with extrahousehold parameters which affect individuals' threat points. Cooperative models involve binding and enforceable agreements. By contrast, the noncooperative model does not assume that household members necessarily enter into binding and enforceable contracts with each other. Indeed, they do not even assume full pooling of household income (Carter & Katz, 1997; Woolley, 1988).
2. We adopt the terms *voice* and *exit* defined by Katz (1992). *Voice* means a family member's ability to bargain over the household resource allocation. *Exit* means the person's potential to exit the conjugal (familial) relationship.
3. Haddad *et al.* (1997) explore this issue in some detail.
4. As explained below, in Kelantan, the rural area of Malaysia where the data for this study were gathered, land assets brought into marriage by both fathers and mothers, are a major source of wealth. As such, they could be argued to provide a more exogenous measure of power than any income control measure.
5. The sample design for the data involved a comparison of migrant and nonmigrant households. It began in Penang with interviews of 138 migrant daughters (randomly chosen) from Kelantan who had come recently to work in EPZs. Then, their parents were interviewed in the home village (90 households), along with nonmigrant daughters and their parents (48 households) from the same villages. A wide range of data was collected from daughters and their parents. Migrants were asked about their individual attributes
- (age, education and marital status), the migration process and decision, migration networks, individual perspectives and expectations concerning migration, participation in domestic goods production at home (domestic goods include cooking, cleaning house, washing clothes, shopping, childcare, and elderly care), wages and expenditures, and remittance patterns. Non-migrant daughters were asked about a relevant subset of these issues (nonmigrants were asked about their perceptions on female migrant workers in urban areas). Parents were asked jointly about their household economy (income, assets—including those each brought to the marriage), household consumption, demographics, and individual attributes. Parents were asked separately about perspectives on their daughters' migration and future prospects, household decision-making processes, individual consumption preferences, and remittances received (parents were interviewed separately from their daughters and separately each other). These four areas of inquiry are the primary source of the measurement innovations discussed in this paper.
6. In Malaysia, the demographic composition by ethnicity was Malays 56%, Chinese 35%, Indian 7% and others 2% in 1995. Most of the Malaysian provinces have mixed Malays, Chinese and Indian. Therefore, each state has to pay close attention to their religious issues to harmonize its ethnically diversified population. Kelantan is very unique in the sense that Malays are dominating its politics and religion.
7. Muslim fathers could allow their female family members working outside of the household, if they face dire economic needs.
8. Indeed, the data set we have used for this exercise included the question on the year of land one purchased and we have found that very little accumulation have had occurred in the past. Thus, we think that the current asset ratio can be a good proxy of the conjugal asset position in a family (Kusago, 1996).

9. Some studies, especially in Western Africa, focus on the decisionmaking issues in production; however, Malay women usually work together on the same plots as their husbands, helping his farm business, so a focus on production spheres appeared likely to provide less insight into Malay conjugal relationship than the consumption side, especially given the relative importance of daughter's remittances to family incomes and mothers' control over this source of income.
10. We did not ask questions regarding the stages of household decision-making. Therefore, we cannot fully incorporate any details in the stage of household decision making such as suggestion, consultation, disagreement, and concession. Thus, our data based on selfreported survey responses should be understood as partial.
11. Similar results are found in Thomas, Contreras, and Frankenberg (1997) and Doss (1997).
12. ICRISAT stands for International Crops Research Institute for the SemiArid Tropics.
13. Although the data obtained by the game are not "pure" preference orders of each respondent, we observed that most respondents were highly engaged in this game and had the impression that our data reasonably reflect individual preferences on the margin for a set of items that span most of the consumer bundle.
14. While these do not cover all possible expenditures, the sum of actual household expenditures on these items in the data accounted for 91% of total cash household expenditures.
15. Pictures were used because of the high degree of illiteracy among parents in rural Malay villages.
16. The RM100 amount was used, because in the first stage of the research this was the average amount of monthly remittances sent by migrant daughters in Penang.
17. Respondents were not allowed to break RM10 bills into smaller amounts such as into two RM5s. Thus, this restriction limits the reliability of the data especially for measures such as income elasticity of demand. These data do, however, appear to provide reasonable ordinal data on each parent's preference orderings. Future efforts could do better with smaller denominations.
18. Sen (1990) has argued that women in India may not be able to conceptualize their welfare as distinct from that of the "household." This paper does not necessarily assume that people understand their own preferences. Instead, we assume that we can analyze the level of preference heterogeneity by asking each about their "instant responses" to our spending game.
19. For example, if a wife allocated all the money (RM100) to food and her husband allocated RM50 to food and the rest to schooling, their heterogeneity index score is 100 (50 from food and 50 from schooling). If a wife allocated RM100 to schooling and her husband allocated all to food, their score is 200 (100 from each from food and schooling: perfect heterogeneity). If a wife allocated RM100 to schooling and her husband did the same allocation, their score is zero (perfect homogeneity).
20. Values range from zero to one.
21. Deaton and Paxson (1998) find that economies of scale seems to hold in food expenditure regressions across a wide range of countries, from rich ones such as the United States and Britain to much poorer ones such as Pakistan and among African households in South Africa. They attempt many different estimation strategies in an attempt to eliminate various possible econometric explanations, and find that the result persists. Because they view food as a private good, they are puzzled by this outcome, especially in the poorer countries, where it appears to be even a stronger result than in richer countries.
22. The housing improvement expenditure data were household expenditures on improving residential housing (repairs, renovations and so on). They did not include any forms of housing rentals or imputed value of owned homes. In addition, the preference data on housing improvement were collected by showing a picture of a very old wooden made house, a typical rural residence in Kelantan. Thus, respondents, when they played the spending game, were encouraged to view the expenditure as an improvement on their current housing structure.

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