Bargaining, Gender and the Intra Household Allocation of Healthcare Resources

Grace Lordan, SE UQ
Richard Brown, SE UQ
Eliana Jimenez Soto, SPH UQ
William H. Greene, SSB, NYU

We are grateful to the ADB and comments received at AHES 2009 and HESG 2010, as well as those received from AHE.

The 2010 IRDES WORKSHOP on Applied Health Economics and Policy Evaluation
24-25 June 2010 - Paris - Franc
www.irdes.fr/Workshop2010

Background

- Economists readily accept it is human capital that enables individuals to succeed
- Health of household members is the key.
- Health investment is arguably most important in developing countries

Background

- The factors intra-household that impact on the distribution of health resources and the effects of bargaining power is relatively ignored in the literature
- In addition, even if the unitary framework is apt, gender bias with respect to health resource allocation to children is also largely ignored.

Bargaining and The Female Head

- Bargaining Power Matters - evidence suggests that females who earn their own income (Anderson and Eswaren JDE (2009) and are educated (Sudhanshu, EDCC (1996)) are more autonomous within the household and therefore have more influence on decisions concerning resource allocation.
- Preferences - make decisions that benefit the health (Basu EJ, 2006) of their children more.

Some Previous Work –Child Health Outcomes

- Maitra JHE (2004) examines the relationship between the status of women in the household, the use of health care and child mortality in India
- Handa OBES (1996) considers height and weight for age as the health outcome of interest. Parental education is the only proxy for bargaining power considered by the author.

Some Previous Work –Health & Pro Boy Bias

- Asfaw et al, 2009 HE examine discrimination in healthcare financing strategies in the case of severe illnesses of sons versus daughter.
- Das Gupta, 1987 PDR, presents simple ratios that suggest that boys between 0 and 1 year do nearly twice as well with respect to these health expenditures as girls in the same age.
- Recent evidence also suggests that increases in public investment in healthcare leads to increasing access for boys first, generating inequality (Oster 2009, JDE) and that boys are more likely to have better access to healthcare (Borooah, 2004; Pande, 2003 and Gage et al.; and Sommerfelt and Piani, 1997).

Policy Relevance

- Growing trend of poverty alleviation programs, such as cash transfers, targeting female heads of households
- Growing trend of providing free preventative care for lower income groups
- Growing trend of providing free preventative care for children

Intra Household Resource Allocation

- Unitary Model
- Non Unitary Model

Theoretical Framework

The household head and their partners utility functions are given by:

$$U^j = U^j(q, c_0, c_h, c_p, l_h, l_p)$$

Outside the marriage each spouse's utility is given by:

$$u_0^j = U_0^j(q_j, c_{0j}, c_j, l_j)$$

The individual budget constraint is :

$$I_j + w_j(T - l_j - t_j) = \frac{q_j}{q}\sum_{i=1}^{k} P_{ei} e_i + P_c(c_{oj} + c_j)$$

Theoretical Framework (2)

- Main thrust of model is that an individual's bargaining power is increasing with their opportunities external to the partnership.
- It is these opportunities that derive the threat point in Nash household bargaining.
- Shift factors that influence the value of outside opportunities, can in turn influence the bargaining power of each spouse- Even without the dissolution of the partnership.
- The more 'bargaining chips' the partner has the more power they have when bargaining given the shift factors.

Theoretical Framework (3)

- Our Bargainers:

→Household Head/Household Head Partner

→Budget Holder/Budget Holder Partner

- Our Bargaining Chips:

→Education

→Employment Status

→Gender of Household Head

→Age Gap Between Spouses

Theoretical Framework(4)

Given the shift factors each spouse's threat point is given in the value function:

$$V_0^j = V_0^j(b_j, p', h', k | \tilde{\alpha}_m, \alpha_p)$$

assume that the household head and their partner allocate resources within the household so as to maximize the product of their utility gains.

$$h^*_{cki} = f(B_{ckj}, BF_{ckj,} Q_{cki}, M_{cki}, MC_{cki}, MCF_{cki,} H_{ck}, C_c)$$

As the shift factors move in favor of one partner, the household will increase its demand for resources for those household members that this partner prefers.

Gender Preferences

$$h^*_{cki} = f(B_{ckj}, BF_{ckj,} Q_{cki}, M_{cki}, MC_{cki}, MCF_{cki,} H_{ck}, C_c)$$

- Our approach gives several testable implications

Data Source

- Compiled by the ADB through a household survey in early 2007 in four countries
- Kyrgyzstan, Tajikistan, Armenia and Azerbaijan.
- The questionnaire consisted of 207 questions grouped into 19 sections.
- The recall period for most questions was for the calendar year 2006. Some information was also collected for the year 2005.
- A stratified two-stage random sampling procedure was used, with households divided into the three strata: the capital city; other urban areas; and, rural areas.
- Survey interviews were conducted "face-to-face" between trained interviewers and the nominated household head.
- A hierarchical dataset at three levels was compiled: individual (67,148 observations); household (14,181 observations); and community (480 observations).

A Little About the Units of Analysis

- Armenia, Azerbaijan, Kyrgyzstan and Tajikistan obtained their independence from the Soviet Union in the early 1990s.
- Health Systems
- Access Problems
- Health Status : the healthy life expectancy (HALE) at birth for females born in Armenia is 61 years in comparison to 57, 55 and 55 for Azerbaijan, Kyrgyz Republic and Tajikistan respectively. For men living in Armenia, the HALE is 59 years in comparison to 56, 53 and 52 for Azerbaijan, Kyrgyz Republic and Tajikistan respectively. With respect to maternal live births the number per 100,000 live births is 79, 82,150 and 170 for Armenia, Azerbaijan, Kyrgyz Republic and Tajikistan respectively.
- Women's Autonomy
- Previous Economic Research

Econometric Considerations

$$h^*_{ikc} = \alpha_c + \beta' B_{jkc} + \chi' BF_{jkc} + \gamma' Q_{ijc} + \eta' M_{ijc} + \vartheta' MC_{ijc} + \psi' MCF_{ijc} + + \phi H_{jc} + \varphi' C_c + v_k + \varepsilon_{ikc}$$

- i,k,c index the individual, the household and the community
- j indexes the bargaining spouses
- B is a vector of characteristics pertaining to bargaining power
- BF interacts vector B with a female head indicator
- Q is a vector that indicates whether the individual is a good investment
- M is a vector of individual household member characteristics
- MC is a vector of characteristics relating to children under the age of 16
- MCF interacts vector MC with a female head indicator
- C is a vector of community characteristic
- v is a family effect and
- e is the usual random noise.

Problem Variables

- Wealth is viewed in the literature as a better measure of the SES – health relationship as individuals 'smooth consumption'. Wealth a year prior is chosen as our measure of SES.
- A similar problem may be expected with respect to all of the variables relating to education, if the level of investment in education at an individual level is correlated with the expenditure on prevention.
- Household Size has also been established as being endogenous to family effects in the development literature.

Estimator: Hausman and Taylor

The explanatory variables are split into two sets of variables:

1) X=[X1,X2]

2) Z=[Z1,Z2]

where X_1 is $n*k_1$, X_2 is $n*k_2$, Z_1 is $n*g_1$, Z_2 is $n*g_2$ and n=N*T:

$$y_{it} = x_{1it}'\beta_1 + x_{2it}'\beta_2 + z_{1i}'\alpha_1 + z_{2i}'\alpha_2 + \varepsilon_{it} + u_i$$

Overview of HT Approach

- X_1 and Z_1 are assumed to be exogenous.
- X_2 and Z_2 are endogenous and allowed to be freely correlated with the individual household effects
- In this work the endogenous variables relates to the wealth, household size and education variables.
- The intuition behind the model involves defining instruments from within the model by utilising the group mean deviations derived from the usual fixed effects estimator.
- For identification purposes it is necessary that X1 is at least as large as Z2
- The Hausman test can be used as a test for legitimate instruments.

Variable Name	Armenia		Azerbaijan		Kyrgyz Republic		Tajikistan	
	HH	BH	HH	BH	HH	BH	HH	BH
HH (BH) Gender	-0.047 (0.090,0.599)	-0.055 (0.115,0.634)	-0.066 (0.134,0.622)	-0.165 (0.164,0.311)	0.142 (0.121,0.238)	0.036 (0.085,0.678)	-0.144 (0.107,0.180)	-0.012 (0.100,0.902)
HH (BH) Work	-0.002 (0.029,0.941)	0.012 (0.013,0.343)	-0.070*** (0.005,0.000)	-0.018 (0.020,0.379)	0.013 (0.025,0.622)	0.021*** (0.013,0.009)	0.007 (0.030,0.819)	0.008 (0.007,0.265)
HHP (BHP) Work	-0.010 (0.029, 0.740)	0.026* (0.015,0.086)	0.052 (0.046,0.265)	-0.006 (0.023,0.784)	-0.024 (0.028,0.394)	-0.014 (0.016,0.374)	0.172 (0.030,0.561)	0.008 (0.006,0.260)
P/HH (P/BH) Age Gap	0.098 (0.125,0.438)	0.006 (0.170,0.971)	0.062 (0.109,0.568)	0.073 (0.112,0.519)	0.064 (0.091,0.483)	0.042 (0.039,0.283)	0.023 (0.003,0.000)	0.017 (0.004,0.000)
F P/HH (P/BH) Age Gap	-0.008 (0.037, 0.829)	-0.007 (0.006,0.191)	-0.062 (0.047,0.190)	-0.007 (0.013,0.568)	-0.051 (0.102,0.611)	-0.036 (0.051,0.487)	-0.007 (0.013,0.568)	-0.042 (0.097,0.666)
P/HH (P/BH) Education Gap	0.086*** (0.017,0.000)	0.077 (0.016,0.426)	-0.155 (0.110,0.158)	-0.200*** (0.033,0.000)	0.128 (0.108,0.232)	0.031*** (0.002,0.000)	-0.114*** (0.041,0.000)	-0.011*** (0.003,0.000)
F P/HH (F P/BH) Education Gap	-0.059*** (0.005,0.000)	-0.089*** (0.027,0.000)	0.042*** (0.006,0.000)	0.062*** (0.015,0.000)	-0.037*** (0.013,0.000)	-0.087*** (0.015,0.000)	0.035*** (0.016,0.000)	0.097*** (0.005,0.000)

Variable Name	Armenia		Azerbaijan		Kyrgyz Republic		Tajikistan	
	HH	BH	HH	BH	HH	BH	HH	BH
Boy Child <=3	0.041 (0.062,0.509)	0.074 (0.065,0.259)	0.010 (0.095,0.917)	0.037 (0.097,0.704)	0.157*** (0.050,0.002)	0.139*** (0.053,0.009)	0.123*** (0.033,0.000)	0.158*** (0.034,0.000)
Child <=3	-0.008 (0.054,0.886)	-0.015 (0.054,0.280)	0.239*** (0.082,0.003)	0.238*** (0.081,0.003)	-0.143*** (0.044,0.001)	-0.145*** (0.043,0.001)	0.072*** (0.027,0.007)	0.072*** (0.026,0.006)
FH (F) Boy Child <=3	0.188* (0.106,0.076)	0.080*** (0.001,0.000)	0.141 (0.131,0.284)	-0.005 (0.120,0.966)	-0.082*** (0.017,0.000)	-0.049*** (0.014,0.000)	-0.051*** (0.010,0.000)	-0.136*** (0.045,0.002)
Boy Child 4-16***	0.043*** (0.001,0.000)	0.066** (0.032,0.042)	0.112*** (0.045,0.012)	0.110** (0.045,0.015)	0.067*** (0.025,0.007)	0.054*** (0.025,0.032)	0.015*** (0.002,0.000)	0.034*** (0.006,0.000)
Child 4-16	-0.015 (0.031,0.640)	-0.021 (0.031,0.497)	-0.065*** (0.014,0.000)	-0.062 (0.044,0.155)	-0.062*** (0.026,0.019)	-0.063*** (0.026,0.016)	0.009 (0.016,0.560)	0.008 (0.015,0.550)
FH (F) Boy Child 4-16	-0.081* (0.044,0.063)	-0.083 ** (0.037,0.026)	-0.042*** (0.005,0.000)	-0.051*** (0.016,0.000)	-0.035 (0.039,0.377)	-0.015 (0.030,0.319)	-0.047** (0.024,0.049)	-0.043** (0.195,0.050)

Sensitivity Analysis (1)

- Recall Bias is a concern given that the interviewee has been asked to recall expenditure on prevention for a 12-month period
- Re-cast dependant variable as a binary variable. H&T is not identified here so we used a mean transformation of a FE probit specification which allows elimination of the dummies

Thank You!

- Questions? Comments?