Determinants of Fertility in Uganda
Microeconomic Evidence

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Outline

- "Low growth – high fertility" equilibrium in Sub-Saharan Africa
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- Design of primary research in Ugandan rural areas
- Statistical analysis
  - Desired fertility and fear of diseases
  - Desired fertility and clan linkage
  - Desired fertility and sex
  - Desired fertility and help of children
  - Education and desired fertility determinants
  - Econometric results
- Conclusions

"Low Growth – High Fertility" Equilibrium in Sub-Saharan Africa

- In the second half of 20th century, fertility rates in LDCs declined on average from 6.2 to 3.1 children per woman, in Latin America and Asia from 5.9 to 2.6 children per woman (UNFPA, 1999).
- Fertility transition has not taken place in Sub-Saharan Africa, which is now the region with fastest population growth (5.2 children per woman – WDI, 2004).
- Despite high mortality levels caused by AIDS pandemics, the region's population more than doubled between 1975 and 2005 to 751 million (UNFPA, 2006).
- Sub-Saharan Africa is the world's poorest region and the only developing region which between 1980 – 2000 achieved decline in per capita income (WDI, 2004).

⇨ **Low growth – high fertility equilibrium**

Causes of High Desired Fertility: Review

Two approaches

- Unmet need: high fertility due to lack of contraceptives (Robey, Rutstein and Morris, 1993; Westoff and Bankole, 2000)
- Desired fertility: people want to have so many children (Easterlin, 1975; Pritchet, 1994; Becker, 1990)

Determinants of desired fertility

- Children as net economic asset: children provide household labour and substitute missing social security system (Gille,1985; Merrick, 2002; Becker, 1991).
- Poor health environment: parents compensate the child's mortality risk in actuarial sense (Sachs, 2004; Gille, 1985).
- Existence of community institutions in Sub-Saharan Africa that favour childbearing (Caldwell and Caldwell, 1987; Makinwa-Adebusoye, 2001).
- Unequal position of women: Men are primer decision-makers about number of children, but do not bear the full costs of rearing the children (Mason and Taj, 1987).

Education and Desired Fertility: Review

- **Country level evidence** based on WFS and DHS shows strong correlation between fertility and education (Gille 1985, Weinberger, 1987)
- **Summary of theoretical pathways** between education and desired fertility (Kravdal 2002, Weinberger 1987)
  - People with higher level of education don't rely on economic contributions of their children in their old age.
  - Lower need (through lower infant and child mortality rates) to have additional children as insurance against children mortality.
  - Women want to have less children and education enhances their autonomy.
- However, micro-level evidence on specific pathways through which education reduces fertility is largely missing for sub-Saharan Africa.

- **Aim of empirical study from Ugandan villages**
  - Micro-level assessment of the relevance of above-suggested determinants of desired fertility perceived by individuals.
  - Suggest community institutions as additional pathway between education and desired fertility.
  - Examine if and through which pathways education influences desired fertility.

Design of the Research

- The research was prepared in cooperation with Uganda Czech Development Trust and Institute of Economic Studies, Charles University
- Type of research: Questionnaire survey
- Location: Mukono District, Uganda
- Date of research: November 2005
- Focus: Family decision-making, time preference, motivation to cooperation, prevention against diseases
- Number of respondents: 910
- Local instructors involved: 32
- Profession of respondents: farmers, students, housewives, drivers, teachers, etc.
- Number of men: 496
- Number of women: 414
- Average age of respondents: 26
- Language of questionnaires: English and Luganda

Variables and Hypotheses

Dependent variable

- Desired number of children

Explanatory variables

Clan linkage	proxy for community institutions that favour childbearing
Sex	proxy for unequal position of women
Fear of diseases	proxy for poor health environment
Help of the children	proxy for children as net economic asset

Hypotheses

- H1: Ugandans with stronger clan linkage want to have more children.
- H2: Women want to have less children than men.
- H3: Ugandans perceiving mortality risks more strongly want to have more children.
- H4: Ugandans for whom economic help of children is important want to have more children.
- H5: Education reduces the importance of clan linkage, health risks and economic contributions of children.

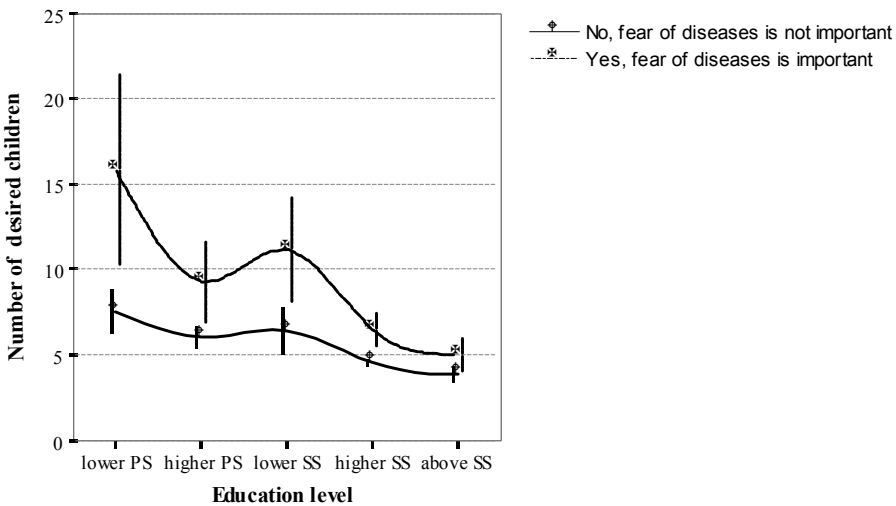
Fear of Diseases

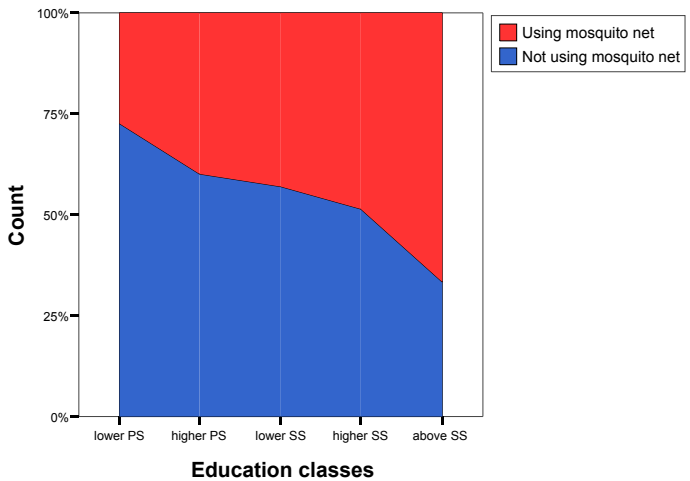
Desired number of children

- Average: 6.0
- People for whom diseases are important factor: 9.8
- People for whom diseases are not so important: 5.4
- ANOVA significant on 1% level

Implications

- High probability of dangerous diseases contributes to higher fertility level.
- Education decreases the desired fertility for both groups, with and without strong fear of diseases.
- The effect of education is further reinforced by the change in proportion of respondents fearing the diseases.
- This is partly due to better knowledge and emphasis on prevention - share of people who use mosquito nets increases for each level of education.





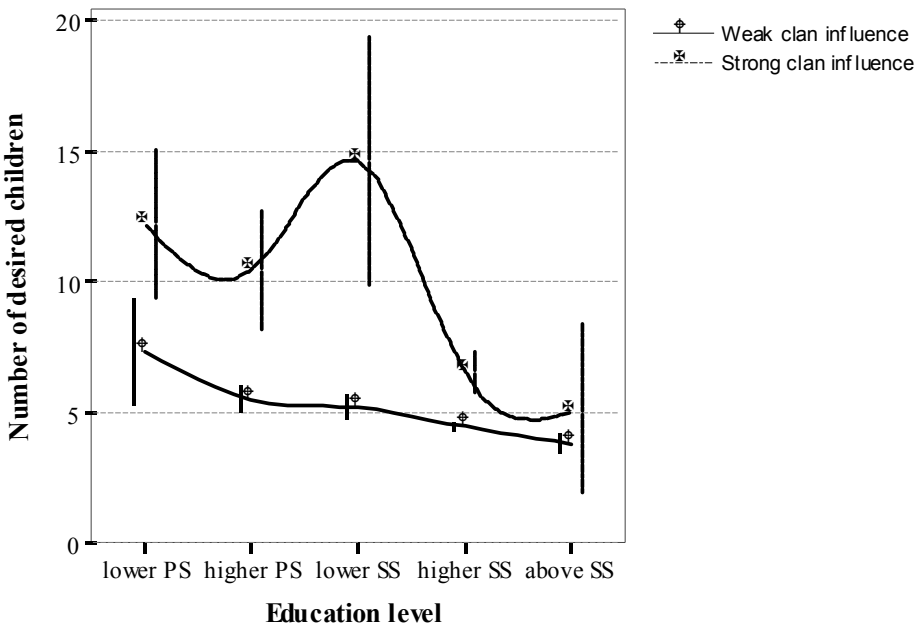
Clan Linkage

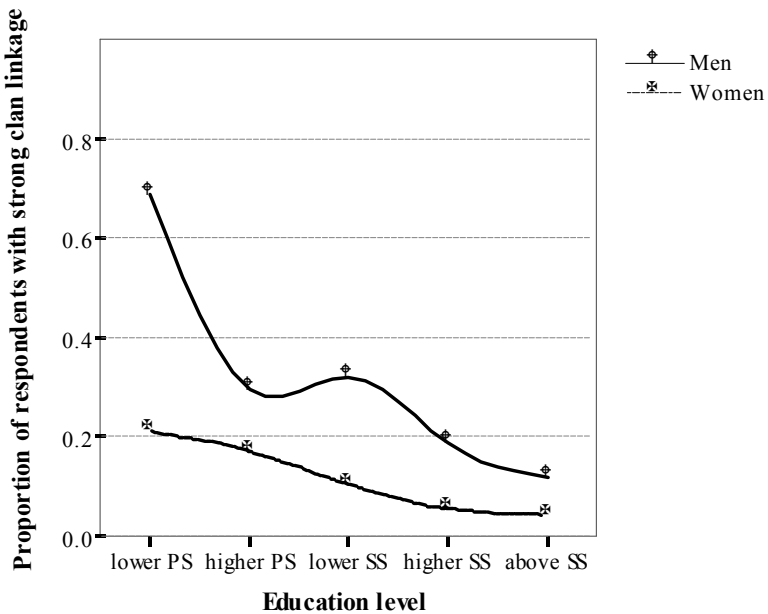
Desired number of children

- Average: 6.0
- People with strong clan linkage: 10.5
- People with weak clan linkage: 4.9
- ANOVA significant on 1% level

Implications

- Clan linkage increases number of desired children.
- For the people strongly influenced by the clan, secondary education has significant impact on their decision-making on children (from 12 to 6).
- Additionally, education decreases the influence of clan through reducing the proportion of people with strong clan linkage (especially men).

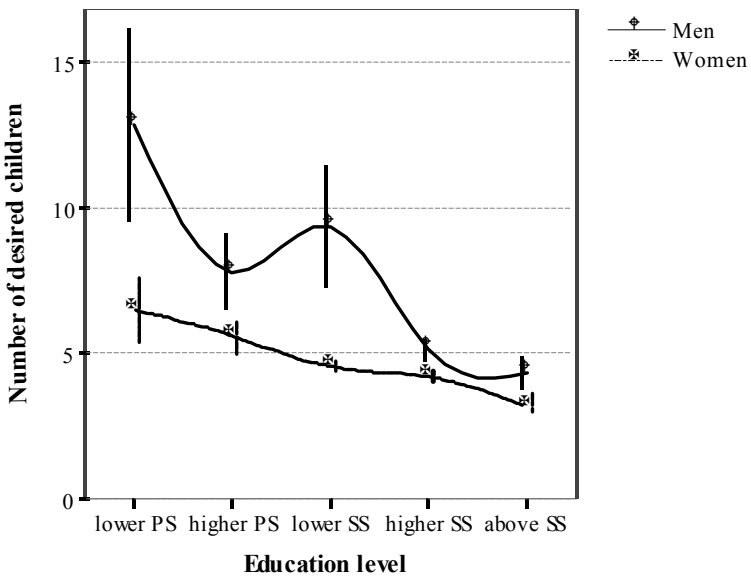




Sex (Position of Women in Society)

Desired number of children

- Average: 6.0
- Men: 7.1
- Women: 4.8
- ANOVA significant on 1% level



Implications

- Men want to have more children than women. Stronger position of men in Ugandan society thus may lead to higher number of children born.
- As education level increases, the number of desired children falls down by both men and women (in the case of men from 12 to 4.5, in the case of women from 6 to 3.5).
- For men there is particularly sharp decrease at the secondary school.
- Additionally, according to Kravdal (2002) educated women have higher authonomy in the family decision-making, which may further reinforce the impact of education.

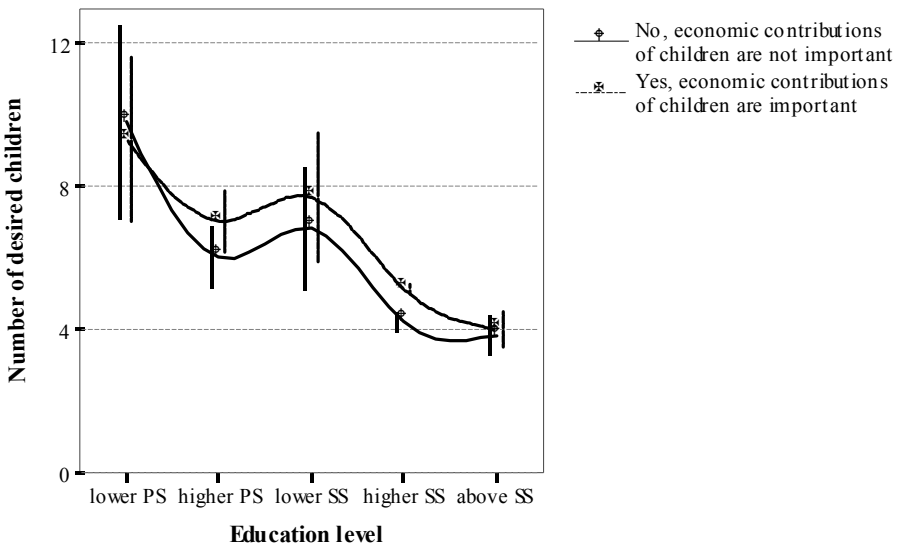
Help of Children

Desired number of children

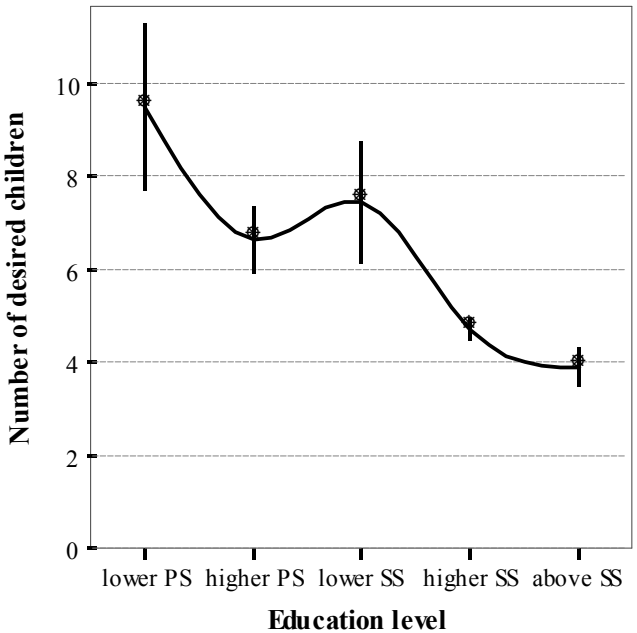
- Average: 6.0
- People for whom help of children is important factor: 6.5
- People for whom help of children is not so important: 5.4
- ANOVA insignificant on 5% level

Implications

- As in most other sub-Saharan countries the social security systems are absent in Uganda, child's economic contributions seem to be important for the majority (60%) of respondents in fertility decision-making.
- However, the importance of child economic support to parents does not create a big difference in desired fertility for each education level.



Education and Desired Fertility: Total Effect



Implications

- Education decreases desired fertility from 9.0 to 4.1 children.
- Strong total effect of education seems to be the result of four pathways. Education reduces the influence of clan, enhances the role of women, reduces the fear of diseases through better prevention and decreases the importance of children's economic help.

Factors influencing fertility level	Impact on desired fertility	Impact of education on importance of the factor	Impact of education on desired fertility
Clan linkage	+	-	-
Sex	+	-	-
Fear of diseases	+	-	-
Help of children (ANOVA insig.)	+	-	-

Econometric Results

$$F = b_0 + b_1 D + b_2 H + b_3 C + b_4 S + e$$

F = desired fertility, *D* = fear of diseases, *H* = economic help of children, *C* = clan linkage, *S* = sex, *B's* = OLS coefficients, *e* = error term

	Whole sample	
	Rsq=0,21	Adj Rsq=0.20
Intercept	5,84 ***	(9,59)
Fear of diseases (important=1)	3,03 ***	(6,03)
Child's support (important=1)	1,32 ***	(3,77)
Clan linkage (important=1)	4,71 ***	(10,37)
Sex (man=1, woman=2)	-1,36 ***	(-3,84)

Dependent variable: Desired fertility
* Indicates statistical significance at the 10% level.
** Indicates statistical significance at the 5% level.
*** Indicates statistical significance at the 1% level.

	Less educated half		**More educated half**	
	Rsq=0,22	*Adj Rsq=0,22*	*Rsq=0,18*	*Adj Rsq=0,17*
Intercept	8,21 ***	(7,23)	4,52 ***	(12,84)
Fear of diseases (important=1)	3,24 ***	(4,07)	1,55 ***	(4,29)
Child's support (important=1)	1,27 **	(1,98)	0,95 ***	(4,66)
Clan linkage (important=1)	5,54 ***	(7,48)	1,71 ***	(5,44)
Sex (man=1, woman=2)	-2,55 ***	(-4,02)	-0,56 ***	(-2,68)

Conclusions

- People in Uganda have strong preference for high number of children.
- Factors influencing desired number of children are related to high prevalence of dangerous diseases, local culture (importance of the clan, unequal position of women) and non-existence of social security systems.
- With higher education level, the importance of all these factors in the fertility decision-making process decreases. The empirical data from Uganda thus suggest that education reduces desired fertility also through pathways which have been in the context of African population explosion put forward only on theoretical level without supporting microeconomic evidence (e.g. clan linkage, fear of diseases).
- Therefore, education has very significant impact on decisions of Ugandan people about the number of children. Primary education decreases the desired number of children from 9.0 to 6.5. At secondary school this number is further lowered from 6.5 to 4.1.

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