

**The Effects of High Fertility on Human Capital Formation
Under Structural Adjustment in Africa**

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TERMS OF REFERENCE

The objective of this project was to assess the potential benefits of family planning programs (FPPs) on human capital formation in Africa in a context of economic crisis and structural adjustment. We addressed four specific questions.

- (a) Can FPPs improve school enrollments by reducing sibship size?**
- (b) Can FPPs improve school enrollment by averting early and unwanted pregnancies among school girls?**
- (c) To the extent that FPPs can affect educational outcomes, were these potential contributions affected by recent economic crises?**
- (d) Does the public acknowledge these benefits and how would it receive programs to avert unwanted pregnancies among school girls and the poor?**

We address these questions in the context of Cameroon. Questions a through c are examined with survey data from a national sample of 3,300 women. The questionnaire focused on the respondents' reproductive histories, and the life and schooling histories of their biological children. Responses were used to estimate how often and under what circumstances female pupils drop out of school because of a pregnancy. The same data are also used to estimate whether, how much, and under what conditions a child's schooling is hampered by having many siblings. Finally, we use focus group data to gauge public's awareness of the possible schooling benefits of FPPs and their views on initiatives to reduce unwanted fertility among school girls or the poor.

The overall project was jointly funded by grants from the Futures Group, the Rockefeller Foundation, and the Spencer Foundation. The broad objective was to monitor recent trends and –determinants of- demographic behavior. The specific objective within the Futures Group project was to re-examine possible inter-relationships between fertility and schooling outcomes. Funding from the Futures Group helped extend coverage from a regional to a national study. It also helped

support dissemination activities. This report summarizes the field activities, main findings, and dissemination activities undertaken under the Futures Group project. The next two sections provide a brief overview. The remaining sections successively cover the background to the project, the research questions, the data and the main findings.

SUMMARY OF ACTIVITIES

By and large, the project's main objectives have been achieved. We have successfully completed the data collection, data entry, and begun analyses. The main survey covered a national representative sample of about 3,300 women, for a total of 11,588 children. The core questionnaire included DHS-like modules covering reproductive preferences, behavior, and outcomes. It also included unique modules on respondents' demand for schooling, their propensity to trade high fertility for schooling, and the schooling outcomes of their children. Most important, however, was an elaborate life-history calendar that was used to reconstruct the family histories of all respondents. A copy of the core questionnaire and life history calendar is attached.

We incurred substantial delays in completing the data collection phase of the project. This was due in part to the fact that the study was upgraded from a regional, to national study. In addition, we faced severe time restrictions associated with the need to follow the academic calendar of the University students who participated in the project as interviewers. To minimize delays, a second team of interviewers was recruited –once it was decided that the project would extend to the Northern portion of the country-- and trained to collect data in the country's Northern provinces. Delays in data collection affected subsequent activities, including data entry, analysis, and results dissemination. Nonetheless, key summary tables are now available. The more complex analyses that require merging individual, household, and community information are underway. Some of the multivariate analyses presented here are based only on data from the Southern provinces that were available earlier.

The core research team included 4 researchers (relaying each other on the field) and 4 full-time staff (2 research assistants, 1 secretary, 1 data manager). Five students supervisors, 18 student-interviewers, and 9 other interviewers completed the team at

different points in time. University students were selected after a screening and test of more than 80 applicants. The candidates were short-listed on the basis of their performance in mock interviews. Short-listed candidates then underwent a 2-week training including classroom instruction and practical field exercises. All four members of the research team (Eloundou, DaVanzo, Tchala, and Yana) participated in field training activities. We also sought additional expertise from local institutions that had experience with collecting demographic, economic, and community-level data in either urban or rural settings. Some of these institutions included the Ministry of Agriculture, the “Institut de Formation et de Recherche Demographique (IFORD), the University of Dschang, and the National Census Bureau.

Following this training and field tests, 18 interviewers were finally chosen. The choice was based on merit, but also on region of origin, to help overcome language barriers when working with non-literate respondents. While the involvement of University students ultimately slowed the pace of work, most students hired did extremely well. The only exception was a team posted in the village of Santa, where the quality of interviews turned out to be sub-standard. This work was annulled and an alternate village was sampled. Involving students in data collection was part of a broad strategy to involve them later in data analysis and dissemination activities. To date, five students from the University of Dschang have written research reports based on their field experience (though not using the survey data). With support from RAND, we are training a few social science students in data analysis, again as a means to help disseminate results from this survey.

In addition to families, we also collected information on sampled communities. Data included the availability and historical information on key amenities (water, schools, roads, hospitals, clinics, electricity...) and various development projects implemented in the community. The initial plan was to focus on sampled communities only but preliminary analyses of family histories showed that many respondents had resided elsewhere for relatively long periods of time. Therefore, other communities in which many of our respondents had resided for long periods of time were also visited.

A copy of the village questionnaire is attached. We also collected focus group data at various stages in the project.

The data collected has been entered. Responses to questions in the DHS-like module of the questionnaire were entered using ISSA but were later converted under SPSS. Dr. Calves, a collaborator under the overall Cameroon project, supervised this aspect of data entry. To data from life-history calendars required special handling. We designed special data entry grids using Excel software and the data were later transferred under SPSS format. The data are now ready for analysis. A copy of the summary data file used for most analyses in this report is attached.

Also attached a copy of the video documentary that will be used to disseminate main findings from that research. The collaboration of the Cameroon Multi-Media Center -a Center with extensive experience in producing documentaries for the Cameroon National Television- has been instrumental in finalizing this document. The Center will also help air the video, once the final editing is complete. An English version will also be produced for international audiences.

SUMMARY OF FINDINGS

The secondary benefits of FPPs on human capital formation can be substantial. Unwanted pregnancies are associated with a substantial number of school dropouts among teen girls. While it is difficult to distinguish cases where pregnancies were the main cause from those where pregnancy was only a contributing factor, we estimate that unwanted pregnancies are associated with anywhere from 8 to 25% of dropout among school girls. We also find that children in larger families achieve inferior schooling outcomes. Not only do they enroll later, but their progress through the school system is slower, and they are more likely to drop out earlier. Further, even when they are enrolled, they are likely to be concentrated in lower-tuition school.

Together, these findings suggest that voluntary programs to reduce unwanted fertility among school girls and the generation population would contribute to increase enrollments and reduce schooling inequalities by gender and class.

- In the short-term, well-designed programs to reduce unwanted pregnancies among school girls would boost secondary enrollments and reduce gender inequalities in schooling. At least 8% and as many as 25% of all school dropouts among teen girls are associated with pregnancies. About 1/5 of these pregnancies occur before girls turn 15 and one third of them occur before they enter high school. Such data indicate that the potential number of added years of schooling is large. While the incidence of these pregnancy-related dropouts has declined from levels observed in the late 1980s, this decline seems to have stalled in recent years.
- In the medium-term, reduced sibship size will increase enrollments in the next generation of children. Data show that children in large families enroll later in school. The mean age at enrollment in families with 7+ children is 5.8 and the median age 6 versus a mean of 5.4 and a median of 5 in families with fewer than 4 children. Children in large families also progress more slowly through school. Among all children from large families, about ¾ are behind (or far behind)

schedule when compared to the expected grade for a normal child who enrolls at age 6 and progresses through school without repeating any grade. The corresponding proportion among smaller families is about ½. Data also indicate that the risks of dropping out of school increase with family size and that children in large families are more likely to dropout because of “lack of money.” Finally, children in large families are concentrated in lower-tuition schools. In primary school, 95% of children from large families are enrolled in the lower tuition schools, versus 76% of children from smaller families. In secondary school, the percentages are 75% and 60%, respectively.

- Reduced fertility among the current generation of parents would also have long-run –but harder-to-estimate— benefits through reduced population momentum and the intergenerational transfer of human capital. Today’s gains in averting unwanted fertility will have cumulative effects in reducing the absolute size of future school-age cohorts, as well as their relative size vis-à-vis the adult population. In turn, this will relieve the pressure on educational systems and increase expenditures per pupil, other things equal. Also, the more today’s teen girls advance in school, the more they are likely to invest in their own children’s education. Data show for instance that children whose mothers have completed primary school are 40% less likely to drop out of secondary school than children whose mothers have lower levels of schooling.

In addition to raising overall enrollments, FPPs could also reduce schooling inequalities, especially those based on gender, socioeconomic status, or family size.

- Pregnancy-related dropouts are important in part because they are unique to girls. Data show that, if these pregnancy-related dropouts were eliminated, the causes of school dropout would be quite similar between teen boys and girls (with the exception of job-related dropouts). Gender gaps are narrowing in many African countries and reduction in pregnancies among school girls would further narrow this gap.

- FPPs would also reduce school enrollment inequalities by socioeconomic status. Large income inequalities in the study population are compounded by the often-higher fertility among the poor. Children's schooling suffer most when families are both large and poor, and when the costs of schooling are higher (eg., secondary school). Class inequalities in school participation will be reduced by fertility declines among the poor, especially if these are coupled with subsidies and incentives for the poor to invest in their children's education.

Yet, FPPs are not a panacea or even the most effective policy to improve enrollments or reduce schooling inequalities.

- The leading cause of school dropout (up until 1998) remained the "lack of money," which accounted for over a third of all school exits among teens and even a higher percentage among all children. The government has since instituted free tuition for public primary schools. This decree is quite recent, and its effects on primary enrollments remain to be seen.
- Even among girls, pregnancies are not the leading cause of dropout. Further, even when pregnancy is reported as a cause of dropout, it may not have been the only factor, or even the root cause. We find an inordinate concentration of pregnancies within terminal grades (6th or 10th grade notably) that are sanctioned by a national examination. This would suggest that early pregnancies themselves may be a response to the fact that girls are not encouraged to value and pursue education beyond a certain level of schooling. Substantial gender bias persists in rural areas and a number of rural families confess that they would selectively divest from female children if confronted with severe economic hardship. Non-supportive school environments and doubts about the benefits of schooling for girls may also contribute to turn girls away from school.
- Socioeconomic inequalities in school participation could also be directly addressed with public or private subsidies to educate children from poorer families. Some rural communities have successfully enlisted the support of

urban elites to create and support rural schools, but these efforts remain confined to a few regions.

- Still, family planning programs would complement other efforts to raise enrollments and reduce inequalities. At the level of individual couples, FPPs would help meet the already-existing demand for smaller and better-educated families. Among school girls, a greater access to contraception and sex education would complement other efforts to make school environments more supportive for girls. Likewise, efforts to meet the demand for smaller families among the poor would complement recent measures by the Cameroon government to make public education free at the primary level.
- Recent demographic data show that fertility has begun to decline in Cameroon and that a substantial number of women wish to delay or stop childbearing but do not have access to effective means of contraception. The increasing demand for smaller families has been fueled by many factors, including recent declines in family incomes and persistent demand for education. Despite the high rates of graduate unemployment, the demand for education remains strong. In fact, the competition for better education may have been intensified (at least among middle classes) by the limited employment opportunities. As these families deepen investment in education, they raise standards of school investment for everyone, but also end up having fewer resources to assist poorer relatives. Families increasingly acknowledge the difficulty to educate large progenies and the salience of the tradeoff between high fertility and education. When faced with this tradeoff, many would still prefer large families, but the younger generation of parents is more likely to invest in smaller families. By meeting the existing demand for contraception, FPPs would ultimately help these families achieve the better educational outcomes associated with smaller progenies.
- The current socioeconomic context favors the integration of FPPs and education policy. Limited public resources warrant greater policy coordination and cost-effectiveness. FPPs already contribute to improve maternal and child health. If

programs need only minor changes to increase their relevance for education, then they would become more cost-effective, since they will now achieve multiple goals. In addition, the fact that young couples now want fewer children and acknowledge the tradeoff between high fertility and education makes FPP efforts more relevant to education.

- Much of the public acknowledges the potential benefits of FPPs, but how well these programs are received depends on how genuinely they are perceived to focus on population welfare, rather than using development problems as a backdoor to a population agenda.
- Focus group data suggest that the public generally acknowledges the potential contributions of family planning programs. Parents are concerned about their children's -especially their daughters'- sexual activity. Parents wish to avoid unplanned pregnancies because these interfere with schooling but also add to the family's dependency burden, especially if daughters remain unmarried. The growing AIDS epidemic is an important cause for concern for all. Yet many parents still feel uneasy about discussing sex with children. Also, a minority -although often influential- will oppose sex education on religious or cultural grounds. Ultimately, the widespread acceptance of FPPs will depend on how genuinely concerned they appear to be about people's welfare as well as population. For instance, how do they address the dilemmas of the poor who see larger families as a buffer to uncertainty or the needs of rural agricultural populations who still rely on the demand for child labor? How do they address the moral dilemmas of many parents who wish to help their children avoid unwanted pregnancies or sexually-transmitted diseases but remain ambivalent or ill-equipped to discuss sex with their children? How do programs generate a policy consensus between the majority that favors, and the influential minority that opposes increased access of young girls to family planning services?

RESEARCH QUESTIONS

The general policy question in this project is to assess the potential contributions of FPPs to the continued formation of human capital in Africa. The importance of this question is best understood against the backdrop of the region's recent economic and demographic trends. Over the last 15 years, many African countries have experienced marked economic downturns that reduced governments' capacity to provide social services, including education. Families themselves have grown poorer in real terms, as a result of a growing unemployment, lower prices for export crops, salary cuts among urban workers, inflation, or currency devaluation. Together, these trends seemed to compromise the desired progress in school enrolments and in the quality of educational services to the public. They were also expected to worsen inequalities in school participation, whether by gender or class.

These new material constraints are particularly challenging since the African population in general –and the school age population in particular– continue to grow. Despite evidence of recent fertility declines in several countries, the total size of the African population is still expected to double over the next 27 to 30 years. The challenge, therefore, is to educate a growing population in a context of declining public and private resources. Many African couples increasingly opt for small families but are unable to achieve their desired family size, in part because they lack access to effective contraception. In theory, the pressure on public resources should be eased if these families were able to meet their reproductive demands. In theory also, individual families themselves should be able to better educate their children, as the average family size decline. In practice however, previous empirical studies in Africa have suggested that Africa was an exception to this theoretical expectation. Yet, these findings were obtained under a context where schooling costs were relatively lower and where extended family systems still provided support to children from large families. As schooling costs increase and family solidarity erodes in Africa, the effects of high fertility on the schooling of children should become more visible. This research is thus an opportunity to re-evaluate the effects of high fertility on child schooling at the family-level in a context of crisis and structural adjustment.

The research is also an opportunity to examine whether unwanted pregnancies among schools girls significantly contribute to lower enrollment and widen enrollment gaps between boys and girls, and whether these contributed were affected by recent economic crises. Finally, we gauge the public's awareness of the potential contribution of family planning programs in raising enrollments. In line with these various objectives, we address four research questions about (a) the incidence of pregnancy-related dropouts among school girls, (b) the effects of family size on educational outcomes, (c) whether crises magnified the effects of family size on schooling outcomes, and (d) the public's awareness of the possible contributions of FPPs to improvements in school enrollment.

DATA

We use data from a national survey that was specifically designed to address these questions in the context of Cameroon. Sampled households were randomly drawn through a three-step procedure. This involved (a) random selection of one division within each of Cameroon's provinces of Cameroon, (b) random selection of 4 to 7 in each of the sampled divisions and finally (c) random selection of 35 to 70 households within selected communities. Households were drawn from a sampling frame established after an exhaustive enumeration of all community households. Altogether, the study covered over 60 communities for a total of about 3,300 households and 11,500 children. A map of the research sites is attached.

The core questionnaire included questions on the socioeconomic and the demographic characteristics of selected households. This questionnaire also included summary data on the life and schooling outcomes on all of the respondent's biological children. Finally, it included a life-history calendar that was used to reconstruct in detail the respondents' reproductive history along with the life and schooling history of all her children. A copy of the core questionnaire and the life-history calendar is attached.

FINDINGS

1. Are pregnancies among school girls a major cause of school dropout?

In the main questionnaire, interviewers completed a family roster which summarized the number, living status, and several life outcomes for all their biological children. Questions on educational outcomes included whether (and when) children had ever been enrolled in school, and whether they were currently enrolled. For children who were still enrolled, interviewers asked about current grade, tuition, foster status, persons responsible for paying tuition and supporting the child. For those who had already dropped out, interviewers asked about the year when, the grade at which, and the main reason why the child dropped out at this level. The reasons stated by respondents were classified into eight categories, including “lack of money,” “poor grades,” “marriage,” “pregnancy,” “health”, “death,” “employment opportunities”, and “other.” The “other” category included hard-to-classify cases, and cases where parents simply were satisfied with the level of schooling attained by their child.

Table 1 describes a few characteristics of sampled children. As the table shows, the sample covered several birth cohorts, including children born in the periods before 1960 (4.2%), 1960-69 (8.8%), 1970-79 (18.6%), 1980-89 (30.8%), 1990-99 (37.6%). Because several generations of children are so represented, one can evaluate the extent of change in the incidence of pregnancies among school girls in recent years. The sample is evenly split between boys (50.9%) and girls (49.1%) and we also distinguish between first-born children (22.7%), intermediate (22.9%) and later-born second children. Of all children, about 40% were pre-schoolers or have never been enrolled in school by the time of interview, 36% were currently enrolled, and the rest (24%) had already left school. For those who had ever enrolled, the modal age at enrollment was 6 years, although about 45% of children enrolled before age 6, and about 20% after age 6. In terms of ultimate educational attainment for those who had already dropped out, the majority (61%) did not go beyond primary, and the number completing junior secondary or senior secondary were 25%, and 3.6%, respectively.

Table 1. Selected characteristics of sample children (N=11,588)

Variable / definition	Frequency
Birth cohort (time period when child was born)	
Before 1960	4.2
1960 – 1969	8.8
1970 – 1979	18.6
1980 – 1989	30.8
1990 – 1999	37.6
Sex (Whether child is male or female)	
Male	50.9
Female	49.1
Birth order (rank of child in birth order)	
First born	22.7
2 nd – 4 th	22.9
5 th and higher	44.4
Enrollment status	
Never enrolled	40.1
Currently enrolled	35.7
Previously enrolled but now completed school or dropped out	24.2
Age at first enrollment [FOR THOSE EVER ENROLLED]	
2-3 years	8.9
4 years	15.4
5 years	19.6
6 years	36.2
7+ years	19.9
Educational attainment (for those who had already dropped out)	
Some primary	25.5
Primary completed	35.5
Some junior secondary	14.2
Junior secondary completed	12.0
Some senior secondary	6.5
Senior secondary completed	3.6
Some post-secondary	3.3
Main reason why the child left school (as reported by parents)	
Lack of money	35.1
Poor grades	19.6
Marriage	8.2
Pregnancy	4.1
Found a job	6.1
Fell sick	3.6
Died	4.9
Other	11.9
Not specified	6.3

Table 1 also describes the main causes of school dropout. For all children, these causes rank as follows: “lack of money (35.1%), poor grades (19.6%), marriage (8.2%), pregnancy (4.1%), job opportunity (6.1%), health (3.6%), death (4.9%), and other (11.9%). If the analysis is restricted to teens only (Table 2), fairly similar percentages are obtained. Further restriction of the analyses to teen girls logically doubles the percentage of exits reportedly by pregnancy (8.2%). Clearly, this is a fairly small percentage. More detailed analyses of girls’ life histories suggested, however, that this percentage could be larger. For more than half of the girls who reportedly exited school because of marriage, the timing of school dropout closely coincided with a birth but not by any indication of marriage or co-habitation with a sex partner. This suggests that some parents simply re-labeled as “marriage” dropouts that were in fact associated with a pregnancy. Further, if one combines marriage and pregnancy-related dropouts, the total (26%) closely approaches the one found in our 1995 survey (28%) in the central province, when marriage was not given as an option. In sum, it is likely that a good number –though not all- of the marriage-labeled dropouts are in fact associated with a pregnancy. More generally, a pregnancy may contribute to (but be overlooked) to a dropout that is imputed to other causes. Conversely, there may be cases where the pregnancy itself is over-emphasized as the main cause. For instance, our data on the grade distribution of pregnancies (Table 4) show that pregnancies are not randomly distributed but are concentrated in terminal classes sanctioned by a national exam (6th and 10th grade notably). This pattern suggests that girls may be less driven or less encouraged to continue school (and avoid pregnancies) once they pass a critical educational milestone. Beyond the pregnancy itself, the general conditions that lead girls to become pregnant deserve attention.

Table 2. Causes of school dropout among teens (ages 10-19)

	GIRLS	BOYS	ALL TEENS
	(n=1055)	(n=978)	(n=2033)
Main reason why the teen dropped out			
Lack of money	34.1	40.9	37.4
Poor grades	17.8	22.9	20.3
Marriage	17.4	0.5	9.3
Pregnancy	8.2	0	4.3
Found a job	.9	8.2	4.4
Fell sick	3.3	3.8	3.5
Died	2.7	4.8	3.7
Other	10.2	13.3	11.7
Not specified	5.2	5.6	5.4
TOTAL	100.0	100.0	

Taking into consideration the number of dropouts assigned to marriage but that are not followed by any evidence of marriage, we estimate that pregnancy-related dropouts (PD) falls somewhere in between 8% and 20% nationally. Further analyses based on children life histories will examine this question more closely. In the mean time, the rest of the analyses will examine both “pregnancy” and “marriage-related” dropouts (PMD).

Analyses show that pregnancies occur at fairly early ages and fairly early in the school cycle (Tables 3 and 4). Table 3 shows that 18% of all PDs occur by the age of 15 and half have occurred by the age of 17. The proportion of PMDs occurring before age 17 is even higher (about 2/3). That PDs and PMDs occur so early implies that the number of schooling years that could be added to these dropouts is potentially large. Likewise, important gains could be made in terms of educational attainment since many PDs and PMDs occur very early in the schooling cycle. For instance, Table 4 shows that over 1/3 of PDs and nearly 2/3 of PMDs occur before high school entry.

Table 3. Age distribution of pregnancy-related and marriage-related dropouts

Age group	% of all <u>Pregnancy-related</u> dropouts (N=115)	% of all <u>Marriage-related</u> dropouts (N=231)	% of all Marriage+Pregnancy- related dropouts (N=346)
Under 12	0.9	3.0	2.3
12 – 14	17.4	27.8	24.6
15 – 17	32.1	40.2	37.6
18 – 19	26.1	11.7	16.3
20 – 24	20.1	11.1	14.5
25+	3.5	5.2	4.6

Table 4. Grade distribution of pregnancy-related and marriage-related dropouts

School grade	% of all <u>Pregnancy-related</u> dropouts (N=115)	% of all <u>Marriage-related</u> dropouts (N=231)	% of all Marriage+Pregnancy- related dropouts (N=346)
Primary school			
5 th grade or before	8.7	32.0	24.3
6 th grade (*)	27.8	40.3	36.1
Junior secondary			
7 th grade	7.8	3.0	4.6
8 th grade	9.6	3.5	5.5
9 th grade	11.3	1.7	4.9
10 th grade	26.1	9.1	14.7
Senior secondary			
11 th grade	0.9	1.3	1.2
12 th grade	6.1	4.3	4.9
13 th grade	1.7	3.0	2.6
Post-secondary			
14 th and beyond	0.0	1.7	1.2

* due to rounding, numbers may not add up to 100%

A historical comparison (Tables 5 and 6) suggests that while marriage-related dropouts are declining over time, the decline in PDs may have stalled in recent years.

The percentage of PDs initially increased from 4.5% before 1981 to 12.4% in the 1986-90 period. While it subsequently declined to 7.1% in 1991-95, this percentage has remained stable since, standing at 8.2% for the last study period.

Table 5. Historical changes in the causes of school dropout among all teens

	HISTORICAL PERIOD				
	Before 1981	1981-85	1986-90	1991-95	1996-99
Main reason for dropout					
Lack of money	33.4	36.3	37.4	40.0	39.2
Poor grades	21.2	20.1	19.4	20.6	20.5
Marriage	2.3	4.1	6.5	3.8	4.2
Pregnancy	8.2	12.1	11.4	10.2	4.9
Found a job	10.8	5.6	3.2	2.0	1.2
Fell sick	2.0	2.9	2.8	4.3	5.4
Died	6.8	3.8	2.2	2.3	4.4
Other	9.9	8.8	12.3	12.2	14.0
Not specified	5.4	6.2	4.9	4.5	6.3
TOTAL					

Table 6. Historical changes in the causes of school dropout among teen girls

	HISTORICAL PERIOD				
	Before 1981	1981-85	1986-90	1991-95	1996-99
Main reason for dropout					
Lack of money	34.1	30.7	36.4	34.0	34.5
Poor grades	20.5	17.0	14.0	18.7	19.5
Marriage	15.9	22.2	21.9	17.8	9.5
Pregnancy	4.5	8.0	12.4	7.1	8.2
Found a job	4.5	0	0	0.4	0
Fell sick	1.7	2.3	2.1	5.0	5.0
Died	6.3	4.5	.8	.8	2.7
Other	9.7	6.3	8.3	11.6	14.5
Not specified	2.8	9.1	4.1	4.6	5.9
TOTAL					

In sum, the above results suggest that as many as 20% of school exits among teen girls may be associated with unexpected pregnancies. Because these pregnancies occur earlier, their elimination would add multiple years of schooling years of schooling. The incidence of PDs is not likely to decline in the absence of any policy intervention. With

earlier puberty and rising educational aspirations for girls, the window of time during which pregnancies may represent a risk to school continuation is expected to grow wider.

2. Are children from large families disadvantaged?

A second argument for the relevance of family planning programs in human capital formation is that large families compromise the educational outcomes of individual children. The theory is that family resources must be divided among a large number of children and, as such, each child receives fewer educational resources. This dilution of resources is expected to be most severe among poor households or where schooling costs are high in relation to incomes. Past research on the subject in Africa has produced mixed results, partly because poorer families often foster their children into the homes of relatives. With the recent economic crisis, however, the practice of fosterage may decline. The following sections examine evidence that large family size affects schooling outcomes. Analyses focus on age of school entry, pace of school progression, rates of school dropout, and school quality.

Table 7 summarizes the results for age of school entry. Data show a higher mean age (5.8 years) and a higher median age (6 years) of school entry among children from larger families than among children from smaller families (5.4 years, and 5 years respectively). In other words, children from larger families enroll later on average than peers from small families. Further analyses (data not shown) indicated that the gap has mostly widened in recent years. While the age of school entry was declining overall, this decline has been stalled for large families in recent years, perhaps as these families were coping with the country's recent economic crisis.

Table 7. Mean and median age of school entry by family size

	FAMILY SIZE		
	Smaller families (1-3 children)	Medium-sized families (4-6 children)	Larger families (7+ children)
Age of school entry			
Mean (std)	5.39 (1.62)	5.41 (1.56)	5.84 (1.44)
Median	5	6	6
Minimum	2	2	2
Maximum	13	13	13
N	(1554)	2711	2606

Children in large families also appear to repeat grades more frequently. Using data on age and current, we evaluate how fast children who were still enrolled in the school system had progressed in comparison to a normal children who would have enrolled at age 6 and progressed through school without repeating any grade. This relative pace of progression was computed as $P = 100 * [(Go - Ge) / Ge]$, where Go was the actual grade and Ge was the expected grade ($Ge = Age - 6$). Positive P values indicated students ahead of schedule, 0 values (or values close to 0) represented students that were on pace, and negative ones represented children behind schedule. The greater the absolute value, the more the child was ahead (or behind) pace. The values obtained were reclassified into 4 ordinal categories including children who were (1) “ahead of schedule” (2) “on pace” (3) behind schedule and (4) far behind schedule. Table 8 summarizes the relationship between family size and pace of school progression. Data show that progress through the school system is slower among children from large families. About $\frac{3}{4}$ of such children are behind (or far behind) schedule, as against $\frac{1}{2}$ for children from smaller families.

Table 8. Pace in school progression (among those still enrolled) by family size

Pace of school progression	FAMILY SIZE		
	Smaller families (1-3 children)	Medium-sized families (4-6 children)	Larger families (7+ children)
Total “ahead of schedule + on pace”	44.3	36.9	24.7
Ahead of schedule	11.6	6.8	3.5
On pace	32.7	30.1	21.2
Total “behind schedule + far behind schedule”	55.7	63.1	75.3
Behind schedule	38.2	42.0	50.2
Far behind schedule	17.5	21.1	25.1
%	100.0	100.0	100.0
N	(1055)	1755	1304

The next question is whether the risks of school dropout are also higher among children in large families. Our event-history data on children’s schooling histories are well-suited to address this question. However, some editing is still needed before the whole sample data can be merged. Accordingly, the multivariate analyses in this report are based on data from the Southern provinces that were available earlier. Table 9

shows the results of a multivariate analysis for the effects of family size on the annual probability of school dropout. Results are given for each individual grade from 1st to 13th (end of senior secondary). Results show that in primary school, the annual probability of school dropout is 36 percent higher for children from large families than it is for children with fewer siblings. These effects hold true for most primary schooling years (except 1st grade) but are largest during the transitions beyond 3rd and 4th grades.

Similar findings obtain in junior secondary where children in large families are 41 percent more likely to dropout of school than peers from smaller families. The transition beyond 7th grade is particularly critical. At this critical stage, the risk of school dropout for large families are twice those of children in smaller families. That children in large families drop out in such large numbers after the first year of secondary suggests that it may only be after-the fact that some families realize the financial effort needed to maintain children in secondary school. These families are likely to get discouraged, especially if children begin to repeat grades early on.

Some effects are also found in senior secondary. These are particularly strong for the transition beyond 13th grade, which marks University entry. At that stage, the risk of dropout for large families are about 3.5 times greater than those found in smaller families. The minimum University tuition is now much more expensive (50,000 CFA) than the minimum secondary school tuition and this may explain these important differences.

Table 9a about here

Overall, therefore, the data show that a large family constitutes a sizeable handicap for the continued school enrollment of individual children. While large families had not always been a major schooling hindrance in Africa, researchers expected these effects to become more manifest as the costs of schooling increase and as families begin to nucleate. Indeed, our data show that the handicap associated with large family size has increased during crisis years (when real incomes declined), especially at the level of junior secondary, where the costs of schooling begin to

increase. Following a lag period after the onset of crisis in 1987 in Cameroon, the effects of large family size increased about 4-fold over what they were before the onset of crisis.

Table 9b about here

Not only do children from large families drop out earlier, they also seem to drop out for different reasons. Table 10a shows how reasons for dropping out differ according to family size. Overall, the lack of money is a slightly more common cause of dropout among large families than among smaller ones. Even though differences are not very large (38.6% versus 31.2%), they underscore the fact that resource limitations are more likely to constrain children's education among larger families. Multivariate analyses that adjust for SES will further clarify these differences.

Table 10a. Distribution of causes of school dropout by family size

Main reason for dropout	FAMILY SIZE		
	Smaller families (1-3 children)	Medium-sized families (4-6 children)	Larger families (7+ children)
Lack of money	31.2	32.9	38.6
Poor grades	20.0	21.9	18.1
Marriage	7.3	7.3	9.3
Pregnancy	3.3	4.4	4.1
Found a job	5.1	6.6	6.3
Fell sick	3.5	4.1	3.4
Died	9.4	5.7	2.7
Other	14.5	10.8	11.9
Not specified	5.5	6.4	5.6
Total	100.0 N=509	100.0 N=955	100.0 N=2791

Not all children in large families are equally affected. Often, families may use discriminatory strategies in which they selectively invest in children, based on gender, ability, or birth order. Discrimination on the basis of birth order is part of a family strategy that relies on the existence of chains of sibling assistance. In that strategy, families invest heavily in the first child so that s/he can find employment early on and then be able to assist younger siblings. The data in table 10, which describe differences

in causes of dropout by birth order, are consistent with such siblings-chain strategies. As the Table shows, first-born children are less likely to drop out of school because of money (32% versus 36.5% for later born children) or because of poor grades (18% versus 21% for later-born children). In other words, families strive harder to maintain these children in school. On the other hand, however, these children are more likely to stop schooling as a result of finding a job (8.5% versus 4.7%). Indeed, they are often under greater pressure to find employment and support their younger siblings.

Table 10b. Distribution of causes of school dropout by birth order

Main reason for dropout	First-born families	FAMILY SIZE	
		Intermediate (2 nd to 3 rd)	Later born (4 th or later)
Lack of money	31.9	36.3	36.5
Poor grades	18.0	19.5	21.1
Marriage	8.2	8.8	7.8
Pregnancy	4.2	4.0	4.1
Found a job	8.5	6.1	4.7
Fell sick	4.5	3.7	3.1
Died	5.5	5.0	4.6
Other	14.4	11.4	11.0
Not specified	4.9	5.1	7.1
Total	100.0 N=695	100.0 N=999	100.0 N=1097

Finally, couples with a large progeny may be forced to enroll children in lower-quality schools. Assuming that tuition reflects school quality, we classified the various schools (in which sampled students were enrolled) into low-tuition and higher-tuition schools. The cutoff values for primary and secondary schools were 10,000 FCFA and 25,000 FCFA, respectively. Table 11 summarizes the representation of different sub-populations in low versus high-quality schools. These results clearly show that children from large families are heavily concentrated in lower-quality schools. In primary, about 95% of all children from small families are found in low-tuition schools, as against 76% for children in smaller families. A similar pattern obtains in secondary, where the percentages are about 75% and 60%, respectively.

Table 11. Percentage of students enrolled in low versus higher-tuition schools, by family size.

Scholl tuition level	FAMILY SIZE		
	Smaller families (1-3 children)	Medium-sized families (4-6 children)	Larger families (7+ children)
PRIMARY SCHOOLS			
Lower tuition (< 10,000 CFA)	76.1	86.7	95.0
Higher tuition	23.9	13.3	5.0
Total Primary (N)	817	1325	846
SECONDARY SCHOOLS			
Lower tuition (< 25,000 CFA)	59.9	71.1	74.8
Higher tuition	40.1	28.9	25.2
Total secondary (N)	142	367	318

Overall therefore, our data show that large families affect children schooling outcomes. On average, children from larger families tend to enroll later, progress less rapidly through school, drop out earlier, and are under-represented in the better schools. Some of the data and field insights suggest that this association between high fertility and lower schooling is not simply the spurious result of a deliberate choice of parents who prefer larger families and are willing to accept inferior schooling outcomes. For instance, our analyses show that large families had become a greater hindrance during recent crisis years. Since these effects were presumably milder at the time most older respondents made their reproductive decisions, it is likely that at the time, many did not anticipate that large families would have drastic effects on schooling. Indeed, many older respondents acknowledged that they would have born fewer children had they faced the economic situation that prevailed at the time of the survey. Also, the fact that the effects of large families are particularly felt after the 7th grade –where schooling costs begin to increase- suggests that families initially attempt to enroll and maintain children in secondary school, but fully appreciate the costs of secondary schooling after the fact.

THE PUBLIC AWARENESS

While findings suggest that programs to reduce high or unwanted fertility could have secondary effects on school enrollment, public perceptions remain important. Does the public view large families as a hindrance to schooling? Are pregnancies among school girls perceived as an important problem? If so, are family planning programs viewed as a possible solution?

a. The tradeoff between high fertility and child schooling

Virtually all respondents are aware of the financial strain that large progenies place of family resources. Then only question is how this strain affects schooling. Many readily acknowledge large family size as a constraint.

“With many children, you have to struggle to send everyone to school, especially if you want your children to have as much as their school friends”

Others argue that limited employment opportunities have increased competition for the best educational opportunities available. This escalating competition is seen as skewed in favor of those with money and influence. According to respondents, wealthier families boost their children’s schooling by securing entry into the best schools, investing in private tutoring, and providing incentives for teachers to pay special attention to their children. Some respondents noted the [apparent] paradox of higher fertility among poorer couples. In their view, the poor cannot compete unless they begin to have fewer children. Others further indicated that, nowadays, parents’ job is not done after children graduate from school. Since the majority of graduates cannot find employment upon graduation, families are still called upon to assist children both in and during their job search. Thus, for instance, a focus group respondent (a 32-year old and relatively prosperous father of two) indicated that he would only have two children, because he planned on building a house for each child, just in case they cannot find jobs when they complete school.

Respondents also realize that the economic crisis has increased the salience of this quantity/quality tradeoff. Whereas relatives could usually help educate one’s

children, the practice of fostering is now declining. Respondents expect individual couples will increasingly bear the full costs of educating their own children. Public sector incomes have severely declined and the costs of living in urban areas have increased. Further, material aspirations for children have escalated with the increased exposure to Western lifestyles relayed by the media. Together, these trends mean that family budgets can only accommodate a limited number of children.

Although most acknowledge this tradeoff, respondents also expressed compelling counter-arguments. Having many siblings is not always seen as an irremediable handicap but can sometimes be a bonus. Focus group discussants pointed to cases where children from both poor and large families had beaten the odds or, conversely, cases where middle-class children were either failing miserably or showing little interest in school. One participant concluded that “*whether children succeed is often a matter of chance.*” Others added that poverty can itself be a driving force. “*The more competition there is within the family, the harder individual children will strive and eventually thrive.*”

Still others emphasize the importance of innate ability. Talent is not given equally to all and one never knows which child will turn out to be particularly gifted. Therefore, one may unwittingly curtail one’s chances by having very few children. Among some ethnic groups, the last-born children are expected to be endowed with special gifts or be smarter than earlier-born older siblings. This belief is partly rooted in myths assigning compensatory virtues to the “small-underdog,” in a culture where first-born males inherit parents’ resources and have authority over younger siblings. Others argue that younger children can use the experience and resources of older siblings to achieve better levels of schooling. Whatever the reason, this belief may reduce concern about possible resource dilution.

Finally, there remain cultural prescriptions about the primacy of individual versus family goals. The notion of quantity/quality tradeoff assumes families wish to have each and every child achieve a good level of schooling. This assumption is not always justified. The rural poor, in particular, still favor a family strategy in which

parents selectively invest in boys or gifted children. The successful child is ultimately expected to assist the rest of the family. The other children are expected to specialize in activities that require little or no education. Additionally, some argue that it remains difficult to erect economic walls between one's nuclear family and needy members from extended family. Hence, it is illusory to have few children and hope to concentrate one's resources on them. Those with few children are perceived as having few financial obligations, and end up being pressured into taking care of additional dependents from extended family members.

Despite these counter-arguments, however, the majority of focus group respondents agree that couples increasingly find it difficult to educate large families. Discussions and other field observations (radio programs, journal newspapers, and local songs) suggested that the public at large had begun to be sensitized about population issues. The lyrics of a 1991 song (entitled "Explosion démographique") that was reportedly well-received by the public, are telling.

..... *C'est bien beau d'avoir beaucoup d'enfants
Mais il faut prévoir leur encadrement
C'est pas la peine d'en avoir plein quand on n'a rien
Pourquoi ne pas (se) limiter au nombre qui convient?*

TRANSLATION:

Having many children may sound fine
But one must plan for their education
It is not worth having a multitude you can't afford
Why not just have the few you can handle?

The bottom line is that much of the public has been exposed to –and acknowledges– the notion that one pays a price by having too many children. Given the current context of increased poverty, they fully realize that the more children they bear, the harder it is to educate them all.

b. Teen pregnancies and school dropout

Parents even show greater awareness and concern about the effects of teen-age pregnancy. In fact, some may even over-estimate the occurrence of pregnancy related dropouts. At the end of several focus group discussions, participants were asked to guess, based in their experience, how many out of a total of 10 high school girls would

be expected to drop out of school because of a pregnancy. Most responses fell between 3 and 5.

Worries about pregnancies are part of a mix of parental concerns about the risks of early, casual, unprotected, or non-voluntary sex. Parents do worry about unexpected pregnancies that would interrupt schooling, but also about (b) the risks of contracting AIDS and other sexually-transmitted diseases, (c) the risks of not being able to marry later, or (d) the risks associated with unsafe and clandestine abortions.

Unwanted pregnancies and early births among school are seen as a problem because they generally interrupt schooling. While a number of girls are able to resume schooling –sometimes with a greater sense purpose– after childbirth, most of the young unmarried mothers do not receive the material and emotional support necessary to raise a child while attending school. Further, parents often end up supporting both their daughter and grandchild. Pervasive unemployment during crisis years has forced many urban young males to delay marriage and many are unable to meet their financial obligations in rearing children. These children are often raised by maternal grandparents who, as a result, have a greater stake in controlling their daughters' fertility.

Parents are also concerned about the risks of sexually transmitted diseases. HIV infection rates in Cameroon approximate 6%, lower than in many other African countries, but the public concern over AIDS has dramatically risen over the last five years, with the first open interview of an AIDS patient in 1996 and increasing incidence of AIDS-related deaths. Parents also worry about unsafe and clandestine abortion, rape, and various psychological trauma associated with puberty.

There was also concern about other long-term consequences. Pre-marital pregnancies reduce the chances of subsequently getting married. Using DHS data, Calves (1996) has estimated that the chances of getting married are reduced by 57% if one has a pre-marital birth outside the context of a stable relationship. Parents also believe that, even without a pregnancy, promiscuous girls are less likely to get married.

A few male teens during focus groups concurred, saying that girls known to have dated older males during their teens as a means to gain financial support will later be shunned by partners in their age-group when they seek to get married. Other males disagreed, arguing that, nowadays, reputation or beauty matter increasingly little. What is more important is whether the prospective wife can support herself and help support her family.

Because of all these concerns, most clearly favor improved sex education in school but are unclear about content and organization. They suggest focusing early on high school girls, in a context of a nation-wide effort that would cover remote schools and communities. They advocate programs that are not simply focused on teaching young girls how to “*steal but not get caught*” i.e how to have sex but manage to avoid pregnancies and diseases. Instead, they would emphasize programs that raise awareness about the responsibilities of childbearing and on helping girls be more assertive vis-à-vis the demands of potential mates and peer pressure. Parents in focus groups also formally disapprove the “*semi-prostitution*” among school girls, although many poor families are willing to turn a blind eye on the activities of young daughters who contribute to family budgets without any known sources of income.

Of course, a number of parents oppose any form of sex education in school. This opposition is generally based on religion or tradition. One typical response is that “*sex belongs to things that children are not expected to know about before a certain age or outside marriage.*” Others fear that sex education within schools will be perceived by children as a societal license for promiscuity. Overall, there is great concern about a general moral deprecation of which sexual promiscuity is only one component. Many refer to mythical good old days when “*having a child before 21 years was extremely rare, whereas today, having a child by age 12 seems normal.*” Altogether, however, most would support some form of education. The main question is what education would be provided and by whom?

In terms of content, participants advocate basic knowledge on menstrual cycle, condom and pill usage, the possible side effects associated with the use of contraceptives. They also emphasize education on the emotional responsibilities

associated with sex, and on skills to assert fight harassment and turn down unsolicited advances. Still, they would recommend avoiding prescribing behavior but offering tools that help girls make more informed decisions and/or enforce their preferences.

Participants indicate that some progressive parents (especially mothers) already discuss these issues with children. As a general rule, however, discussions about sex between parents and children remain taboo. Parents would feel uneasy and would be preachy, and children are unlikely to be both at ease and candid. Participants were then asked whether one possible solution would be to progressively train parents in approaching this delicate subject. Few raised any major objection, but the solution did not generate overwhelming enthusiasm either. Most would simply expanding the avenues of sex education that already exist, eg.

- Improving information campaign on TV,
- Improve the content of biology classes in human reproduction in 10th and 13th grades,
- Relying on NGOs that have already begun to educate the youth about the risks of sexually-transmitted diseases
- Involving church institutions, especially in preaching abstinence,
- Relying on family planning programs

When probed, many agree that family planning programs could improve enrollment. Familiar arguments include “*families can better afford educational expenses;*” / “*parents can better follow the school work of individual children;*” / “*families would be able to afford not only tuition, but purchase books.*” Respondents also showed some awareness of the expected benefits of reducing the size of future school cohorts: “*Smaller class sizes will permit closer attention to individual students;*” / “*Schools would improve the range and quality of in-door and out-door activities.*” Finally other outlined benefits such as reducing “*juvenile delinquency*” or “*graduate unemployment*” that would have [secondary] incentives to educate children. Participants also seem aware on the effects on equalizing of schooling opportunities: “*This improves girls’ chances to keep up with boys*” or “*.. will protect both mothers and children*”, or help “*fight poverty.*”

Yet, a number argue that family planning programs are an easy escape and that the true solution of education lies elsewhere. The real solutions are in “improving classrooms and teachers’ incentives,” “raising salary levels,” and “improving the dialogue between teachers, families and students.” Governments, according to these, should take the responsibility to educate the population.

POLICY IMPLICATIONS

The overall conclusion is that data show --and the public generally acknowledges-- that family planning programs are likely to have beneficial effects on rates of school enrollment. Unplanned pregnancies account for an estimated one in every five dropouts among teen girls. The elimination of such pregnancies would not only increase overall enrollments but further narrow the gender gap in schooling, especially in urban settings. Children with many siblings are also found to be more likely to drop out of school earlier. When they remain enrolled, they are likely to be enrolled in lower-tuition [presumably lower-quality] schools.

Focus group discussions suggest that much of the public acknowledge these facts. The public's response to FPPs programs depends on how genuinely these programs are perceived to address the development problems that they purport to address, while remaining culturally sensitive. How do programs address the material concerns of the poor who see larger families as a buffer to uncertainty or the needs of rural agricultural populations who still rely on the demand for child labor? How do programs address the moral dilemmas of many parents who wish to help their children avoid unwanted pregnancies or sexually-transmitted diseases but remain ambivalent or ill-equipped to discuss sex with their children? How do programs generate a policy consensus between the majority that favors, and the influential minority that opposes increased access of young girls to family planning services?

R1. Unwanted pregnancies among school girls account for about one in every five dropouts among teen girls. Pregnancy-related dropouts are most common early in secondary school. Interventions should therefore focus on the early years of high school. Focus groups suggest that this is an acceptable age at which programs could begin to address this subject.

R2. In-depth discussions with young female dropouts indicate that in many cases, pregnancies occur quite by accident after encounters where teens were not

expecting to have sex. Although some of this education can be done by peers, formal programs to help teens recognize potentially dangerous situations can be helpful.

R3. Discussions also showed that teens often under-estimated the time/material costs of raising children and overestimated the support they would receive from either parents or partner after the birth of the child. By raising awareness of the full costs of bearing a child, one could help ambivalent teens make more informed decisions.

R4. Virtually everyone realizes that having many children will imply fewer educational resources/ per child, which will in turn compromise their secondary or post secondary schooling. Yet, some (especially among rural families and the urban poor) feel that they cannot compete with middle class families, *even if* they had only one or two children. Thus they may prefer to spread their limited resources on a larger progeny, hoping that one would somehow be able to make it. Recent decisions to offer free public education at the primary school level will greatly help children from poor and large families. Other measures should also be taken to encourage parents to deepen educational investments in children. For instance, special programs may be designed to provide financial assistance at the University level to students from poor families that have invested in a few children only.

R5. In sparsely populated rural areas, the need for agricultural labor often supersedes concerns about reducing the schooling opportunities for children. Even in these cases, however, families typically wish to educate some of their children beyond primary. This goal was usually achieved by fostering children into the homes of urban relatives. Studies suggest that the 1990s economic crisis has made urban households reluctant to accommodate foster children, thus increasing the salience of the fertility/schooling tradeoff among rural families. Yet, reducing family size remains problematic unless agricultural households can find another source of labor or raise labor productivity.

R6. Focus group participants suggested that most parents are concerned about teen pregnancies and the risk of sexually-transmitted diseases, but feel uneasy or ill-

equipped to discuss sex with their children. For them, the main problem is not whether, but how and who should talk to children about these risks. Thus, there is room for voluntary programs to train/educate parents on how to address teen issues with children. On the other hand, one can promote NGOs to educate school girls about early and unprotected sex, including the risk of school dropout. Such programs may involve young dropouts as resource-persons.

R7. Whether they target parents or teens themselves, programs to raise awareness of the effects of high and early fertility on schooling opportunities should be implemented on a voluntary basis. Even if a majority of parents welcomes such programs, [broad-scale] efforts are likely to meet the opposition of influential minorities.