Social and Economic factors affecting Ethnic Fertility differentials in Malawi

Introduction

Malawi is at the take-off stage of major demographic revolution. Relative to other countries in the region, Malawi has always had high fertility and mortality rates. For example, although the infant mortality rate has declined from 176s per 1000 in 1976 to 151 per 1000 in 1987 and to 135 per 1000 live births in 1998, Malawi has the highest infant mortality rate in the SADC region (Malawi Government, 1994c, 2002, 2006). Moreover, the risk of Malawian women dying due to pregnancy and related factors is very high and worsening. Maternal mortality ratio has increased from 620 per 100,000 live births to 1120 per 100000 live births (Malawi Government, 1994c, 2002, 2006). Similarly, expectation of life at birth of estimated to be 48 years in 1998 is believed to have decline to 40 years and is among the lowest in the world (Malawi Government, 1994c, 2002). The decline in expectation of life at birth is largely attributed to HID/AIDS epidemic. It is estimated that HIV/AIDS prevalence rate is 14%. Total Fertility Rate in Malawi is still high though it has declined somewhat over the past few decades. TFR has declined from 7.6 children per woman in 1977 to 7.4 children per woman in 1987 to 6.4 children per woman in 1998 (Malawi Government, 1994c, 2002, 2006). The decline in fertility could be attributed to an increase in contraceptive prevalence rate. Contraceptive prevalence rate has increased from 7 per cent in 1992 to 26% in 2000 (Malawi Government, 1994c, 2002, 2006). However, although much is known about the demography of Malawi at national level, little is known about the demographic characteristics of each individual ethnic group in the country.

There has been an increase in the number of scholars and policy makers that are interested in ethnic differences in demographic/reproductive outcomes (Dubuc, 2009; Garenne and Zwang, 2006; Zaidi and Reichenbach, 2009). A number of factors are responsible for this. First, this stems from the fact that ethnicity is a powerful factor in Africa that affects all aspects of life for the individual. Ethnicity plays a role in school participation (whether or not one will attend school and which school one attends), employment status and promotion and political participation. Ethnicity also has an influence on spouse selection and recruitment (there is a tendency to marry from the

same ethnic group), attitude towards number of children and contraception. As such, for most Africans, ethnic belonging is definitely a more powerful reference than the wider national identity.

Second, ethnicity is deeply embedded in the social structure of a society i.e. the networks or statuses or positions that people occupy in relation to each other as individuals or groups. The individual's cultural attachment and identity to the collective to which s/he belongs in a non-trivial way, determines his or her behaviour including reproduction. In societies where ethnic identities are very strong like in Africa, access to, and distribution of resources also tend to be done along ethnic considerations, implying that the socio-economic status of individuals or groups therefore tends to be closely associated with ethnicity (Brockerhoff and Hewett, 1998, 2000).

Theoretical Background

Available literature indicates that ethnic differences in demographic behaviour (fertility, mortality, migration, nuptiality) have been interpreted in terms of three hypotheses: the "characteristics hypothesis" and the "norms/cultural hypothesis" and the "minority hypothesis" (Goldscheider, 1971; Addai, 1999a; Addai and Trovato, 1999). A number of scholars have used these hypotheses to explain ethnic differences in fertility, contraceptive use, the duration of postpartum sexual abstinence, marriage patterns (Kollehlon, 1989; Addai and Trovato, 1999; Addai, 1999a; Zulu, 2001).

The first hypothesis, the characteristics hypothesis assigns ethnic differences in demographic behaviour to differing socio-economic characteristics of individual members of different ethnic groups. Inherent in this hypothesis is the assumption that people of different ethnic background become assimilated into the socio-economic structure of the larger society (within the nation) as their socio-economic status improves through increased education, urban residence and modern occupations (Addai and Trovato, 1999). Ethnic affiliation can, therefore, be treated as an indicator of socio-economic status, degree of urbanisation and social mobility of the groups in a particular society (Goldscheider, 1971:273). Marriage pattern differences among

ethnic groups that may exist at one point in time are considered temporary phenomena, representing a social or cultural lag, which is often indicative of social and economic backwardness or deprivation (Goldscheider, 1971). Thus, irrespective of their ethnic background, women who possess the same socio-economic characteristics are expected to have similar marriage patterns. Therefore, once differences in socio-economic characteristics are controlled for, ethnic variations in age at marriage, and the propensity to enter polygynous marriages and to experience a marital dissolution should disappear.

The second hypothesis, the cultural hypothesis, offers an alternative explanation of ethnic differences in demographic behaviour. It postulates that ethnic group differentials in reproductive-related behavior may be due to differences in norms, values, and attitudes toward fertility related behavior among ethnic/ groups. Distinctive aspects of cultures or norms about fertility and fertility control may produce distinct patterns of fertility outcomes among different ethnic/religious groups. Hill (1985), in his study in Mali, also noted that the very different lifestyles of different ethnic groups in many African countries may lead to different patterns of fertility behavior even though they live in comparable physical settings. This hypothesis assigns similar importance to the role of ethnicity/culture in explaining ethnic differences in marriage patterns (Addai, 1999a; Addai and Trovato, 1999). Group norms, ideals and beliefs are assumed to be important factors in determining age at marriage, propensity to enter polygyny and experience of marital dissolution.

The third hypothesis, the minority-group status hypothesis, admits the relevance of socioeconomic and demographic factors in explaining differences in reproductive-related outcomes between the majority and minority groups, but asserts that minority-group status exerts an independent influence on fertility behavior. This hypothesis states that the fertility of the minority group will be lower (or the use of contraceptives will be higher) than that of the majority group if certain conditions are met. These conditions include: the minority group must have similar socioeconomic and demographic attributes as the majority group; the group must not have pronatalist norms, instead desiring to acculturate the values of the majority group; and the minority group must have aspirations for upward mobility with no feelings of

insecurity and marginality. When these conditions are not met, the minority group will have higher fertility (or lower contraceptive use) than the majority group.

One of the important ethnic differences is that of matrilineal and patrilineal systems of descent. Since late marriage is associated with greater independence for women, which is more likely to be found in a matrilineal system than in a patrilineal one (Kaufman and Meekers, 1998), age at marriage is expected to be later among matrilineal ethnic groups than among the patrilineal ones (McDonald, 1985; Lesthaeghe et al., 1989; Kaufman and Meekers, 1998). Matrilineal societies are also expected to have lower prevalence of polygyny than the patrilineal societies because the matrilocal or uxorilocal residence of spouses that characterises the former societies makes it difficult for a man to bring a new wife home to his first wife's kin unless the two women are related (Lesthaeghe et al., 1989; Lesthaeghe et al., 1994; Kaufman and Meekers, 1998). Divorce is believed to be lower among patrilineal societies than in matrilineal ones (Burch, 1983; Gluckman, 1950). A patrilineal marriage involves permanent incorporation of a woman in her husband's lineage and complete transfer of her reproductive power to her husband's family through payment of bridewealth. Under such circumstances, divorce is more difficult because the bride-wealth would have to be returned and the woman would be separated from her children. In contrast, in a matrilineal marriage, the rights of the woman's reproductive abilities remain with her lineage so that the duration of the marriage depends on the couple's individual attributes (Brandon, 1990:151).

In trying to explain the ethnic differences in fertility in Malawi, these three schools of thought have been put into consideration but with greater emphasis the first school of thought. If this is the case, then controlling for socioeconomic determinants should render insignificant any differences in fertility.

Data and Methods

The study is based on the analysis of data obtained from the 2000 and 2004 Malawi Demographic and Health surveys (Malawi Government, 2002, 2006). Both surveys are nationally representative and have been implemented to allow analysis for Malawi as a whole and separately by rural-urban areas.

The MDHSs involved the use of three basic questionnaires. First, a household questionnaire that was used to list all of the usual members and visitors in the selected households. Basic information on each person listed was collected, including age, sex, education, and relationship to the head of the household. In addition, the household questionnaire collected information about such characteristics of the household as the source of water, type of toilet facilities, materials used to construct the household's dwelling, and ownership of various consumer goods as well as data on child labour practises, use of bednets (mosquito nets), and nutritional status of children and women. The main purpose of the Household Questionnaire was to identify all of the eligible women (age 15-49) and men (age 15-54) for individual interviews. Second, a questionnaire on individual women that recorded detailed information on eligible women who were identified from the household questionnaires. The 2000 MDHS collected data for 13220 women aged 15-49 whereas the 2004 DHS collected data for 11698 women of in the same age range. The questionnaires on individuals collected information on the background characteristics of the respondents (age, education, religion, etc.), reproductive history, knowledge and use of family planning methods, antenatal and delivery care, infant feeding practices, including patterns of breastfeeding, childhood vaccinations, recent episodes of childhood illness and responses to illness, especially recent fevers, marriage and sexual activity, fertility preferences, woman's status and decision making, mortality of adults, including maternal mortality, AIDS-related knowledge, attitudes, and behaviour, as well as on her husband's background characteristics. Third, a questionnaire for individual men aged 15-54 was administered and a total of 3092 and 3261 men were interviewed in 2000 and 2004 respectively. The male questionnaire was similar to that of the individual women questionnaire but excluded the detailed reproductive history and sections dealing with maternal and child health and adult and maternal mortality. The analyses in this paper will use data from the individual women questionnaire only.

One of the objectives of the surveys (though by no means the only one) has been to obtain data from which levels and trends of fertility can be obtained. In both surveys information on the birth histories of women aged between 15 and 49 years at the survey date was collected. In particular, each woman was asked for the history of her births, including birth dates, the sex of each child, the survival status of each birth,

and so on. This information was used to estimate various measures of fertility for each ethnic group.

Methods of Analyses

The study involved two major analyses. The first part of the analyses involved the estimation of fertility for each of the ethnic groups, while the second part looks at the social, economic and demographic factors that affect fertility of the ethnic groups.

Measuring Fertility

To determine the fertility estimates for each ethnic group various estimation procedures were used. The main purpose of carrying out this exercise was to determine which ethnic groups in Malawi could be categorised as exhibiting high or low fertility. The techniques that were utilised include both direct (reported current fertility and mean parities) and indirect fertility estimation procedures (Brass P/F ratio method, Gomperts Relational Model and Parity Progression Ratios).

The Brass P/F Ratio method of uses data on the number of children ever born and births during the last twelve months period prior to the date of enumeration (census or survey) by age of mother to estimate total fertility rate. This method adjusts, using the mean parities of women, the observed level of age specific fertility rates that are assumed to present the true age pattern of fertility.

The rationale of the Brass P/F Ratio methodology rests on the assumption that the reported current fertility (Fi) accurately depicts the age pattern of fertility and the reported mean parity (Pi) depicts its level. Thus, by combining information on the "level" of fertility with that on its "pattern", a true picture of the fertility schedule can

be derived. The method, furthermore, assumes that fertility has remained constant in the recent past and no serious age mis-reporting exists in the data.

One major problem of using P/F ratio as suggested by Brass is that the method assumes no decline in fertility in recent past. Given that fertility in Malawi has been declining estimates based on P/F ratio method may be deemed unreliable. In a high but declining fertility regime appropriate method to adjust TFR is Relational Gompertz Model.

Basia Zaba (1981) developed the variant (algorithm) by using the F(x)/F(x+5) to derive the summary estimate of TFR based on children ever born (CEB). Advantage of this method being that it does not assume the constant fertility (in level) and age invariant reference error. Limitation of method is that it overestimates the fertility due to recall lapses by older cohorts. The worksheet developed by UN does take care of this and by considering the adjustment based on younger ages, where recall lapses are to be relatively on reduced scales. This variant of the method tend to provide reliable estimate of TFR. For operational purposes empirical values are used to derive the values of **α** and **β** where a set of Ys values are intrinsically provided as 'standard schedules of fertility by Coale & Trussell'. Thus by imposing **α** and **β** on the standard fertility schedule the Y_x in equation (3) is obtained, which in turn is used to get the correction factor for the age specific CEB.

The level and pattern of fertility for each ethnic group in Malawi was also studied by examining Parity Progression Rations. Parity Progression Ratio (PPR) is defined as the proportion of women of a specified parity who eventually go on to have at least one more child. As such, this measure is usually applied to women at the end of childbearing period, as the ratios for younger cohort will not only represent incomplete maternity histories but also affected by the timing of births.

Parity progression ratios have the advantage of describing directly the family building process. A major purpose of the current report is to gain a better understanding of this

process as it occurs in Malawi, especially among the various ethnic groups in the country. Such an understanding is important not only for scientific reasons but also for evaluating Malawi's population policies and programmes, which tend to have goals formulated in terms of parity progression (e.g., stopping at two). Cohort Fertility Rate (CFR), which closely resembles Total Fertility Rate (TFR) can also be calculated from a set of PPRs as follows:

$$CFR = a_0 + a_0\, a_1 + a_0\, a_2\, a_2 + a_0\, a_1\, a_2\, a_3 +$$

where a_0 denotes the proportion of women who progress from zero birth to first birth, a_1 denotes the proportion who progress from firstbirth to second t birth, and a_i denotes the proportion who progress from the *i*th to the (*i*+1)th birth, *i* = 1, 2, ….

Statistical Analysis

After estimating fertility for each ethnic group the second part of the analyses involved using multiple regression analysis in order to determine the relationship between fertility and ethnicity and to determine the relationship between fertility and social, economic and demographic factors for each ethnic group in Malawi.

The first set of multiple regression analyses involved regressing fertility on selected social, demographic and economic variables for each ethnic group separately in order to determine whether the effect of the background variables on fertility differs for each ethnic group as the theoretical framework implies. For each ethnic group the following analyses were performed.

$$CEB = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 \qquad \text{(model I)}$$

Where CEB is total number of children ever born for each ethnic group, α is the constant, β_1 are the regression coefficients and X_1 are the independent variables.

The second set of regression analyses were conducted to study whether or not ethnic fertility differentials exist in Malawi, after controlling for selected socio-economic variables. The assumption for doing this exercise was that if ethnic fertility differentials exist after controlling for selected socio-economic variables then this means that there are some cultural factors that are responsible for the observed differences. In other words, this will provide some basis for accepting the cultural hypothesis. On the other hand, if ethnic fertility differentials disappear after controlling for selected socio-economic variables then this will provide some basis for accepting the characteristics hypothesis. For this set of models the following:

$$CEB = \alpha + \beta_1 X_1 \quad \text{(model II)}$$

$$CEB = \alpha + \beta_1 X_1 + \beta_2 X_2 \quad \text{(model III)}$$

$$CEB = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad \text{(model IV)}$$

$$CEB = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad \text{(model V)}$$

$$CEB = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \quad \text{(model VI)}$$

Where CEB is total number of children ever born, α is the constant, β_1 are the regression coefficients and X_1 are the independent variables. The description of variables used in models III to VII is the same as that of model II.

In model II we examined the relationship between children ever born and ethnicity. In model III we examined this relationship while controlling for basic demographic indicators (age, age at first marriage, marital status, number of other wives). In model IV through model VI, we progressively added control variables for residential characteristics (rural-urban residence and region: model III), social and economic factors (education, Purchasing power, religion, occupation: Model IV) and behavior characteristics (knowledge of FP, Ever use of FP, Desire of children, Approval of FP, Discussion of FP).

Results

Ethnic Groups in Malawi

The 2000 and 2004 MDHS asked respondents to state their ethnic group: What is your tribe or ethnic group? In 2000 respondents were given the choice to select one of the following nine ethnic groups: Chewa, Tumbuka, Lomwe, Tonga, Yao, Sena, Nkonde, Ngoni, Amanganja/Anyanja and others. In 2004 the Amang'anja were not included among the options. Probably, the decision to exclude this ethnic group stemmed from the fact that this group is the same as the Chewa. Table 1 presents the distribution of respondents as reported in the DHSs.

Table 1: Percentage Distribution of the Study Population

	Absolute Number		%Distribution	
Ethnic Groups	**2000**	**2004**	**2000**	**2004**
Chewa	3536	3665	26.8	31.3
Tumbuka	1291	1205	9.8	10.3
Lomwe	2589	2211	19.6	18.9
Tonga	286	255	2.2	2.2
Yao	1928	1819	14.6	15.6
Sena	455	383.0	3.4	3.3
Nkonde	437	98	3.3	0.8
Ngoni	1462	1155	11.1	9.9
Amanganja/Anyanja	745		5.6	
Other	482	905	3.6	7.7
Total	**13211**	**11696**	**100.0**	**100.0**

Table 1 indicate that the majority of the respondents belonged to the Chewa ethnic group (26.8% in 2000 and 31.3% in 2004). The Chewa are followed by Lomwe (19%), then Yao (15%), Tumbuka (10%), Ngoni (10%).

Estimates of fertility for Ethic Groups in Malawi

One of the objectives of the study was to determine which ethnic group in Malawi has high fertility. Based on data from 2000 and 2004 MDHS various demographic

techniques were used to estimate fertility for each ethnic group in Malawi. The results of this exercise are presented in Table 2 below.

Table 2 Estimates of Fertility for Ethnic Groups in Malawi, 2000 and 2004

Ethnic Groups	Reported	Parity	Brass for	P/F	Gop	PPR	Average	Rank
2000								
Chewa	7.2	7.7	6.8	6.7	6.8	7.4	7.1	1
Tumbuka	6.2	7.0	5.3	5.2	6.5	6.3	6.1	6
Lomwe	6.3	6.0	5.0	5.6	5.7	6.0	5.8	9
Tonga	6.5	6.1	5.3	4.6	5.6	6.6	5.8	8
Yao	7.2	7.1	5.3	6.2	6.1	6.7	6.4	4
Sena	8.2	7.8	5.8	6.4	6.7	7.4	7.1	2
Nkonde	6.3	5.8	6.1	5.9	5.7	6.5	6.1	7
Ngoni	6.2	6.9	5.9	6.0	6.6	6.9	6.4	5
Other	6.9	7.0	6.5	6.2	6.4	5.9	6.5	3
2004								
Sena	8.2	7.8	5.8	6.4	6.7	7.4	6.8	2
Chewa	7.2	7.7	6.8	6.7	6.8	7.4	7.2	1
Ngoni	6.2	6.9	5.9	6.0	6.6	6.9	6.2	5
Yao	7.2	7.1	5.3	6.2	6.1	6.7	6.2	4
Tonga	6.5	6.1	5.3	4.6	5.6	6.6	5.5	8
Nkonde	6.3	5.8	6.1	5.9	5.7	6.5	6.4	7
Tumbuka	6.2	7.0	5.3	5.2	6.5	6.3	6.5	6
Lomwe	6.3	6.0	5.0	5.6	5.7	6.0	5.5	9
Other	6.9	7.0	6.5	6.2	6.4	5.9	6.3	3

Estimates of fertility based on various procedures of estimating fertility indicate that by Malawian standard the Chewa and Sena exhibit very high fertility (TFR in excess of 7) whereas the Mkonde, Tumbuka, Tonga and Lomwe could be categorized as having low fertility (TFR less than 5) and the rest of the ethnic groups in Malawi could be categorized as moderate (TFR between 5 and 7).

Determinants of ethnic fertility Differentials in Malawi

The relationship between fertility for each ethnic group and social, demographic and economic variables was further studied using multiple regression analyses.

Table 3: Regression of children ever born on selected background variable for ethnic groups in Malawi, 2000

	Total	Chewa	Tumbuka	Lomwe	Tonga	Yao	Sena	Nkonde	Ngoni	Amanganja	Other
Constant	-2.473	-2.541	-2.664	-3.785	-3.093	1.014	-2.250	-3.458	-1.565	-2.726	-2.613
Current age	0.211	0.239	0.203	0.189	0.170	0.210	0.221	0.193	0.216	0.202	0.198
North	-0.099	-0.235		-0.097		0.149	0.722		0.135	-0.317	
Centre			0.128	0.160	0.413	0.177	0.125	-0.205		0.517	0.438
South	-0.225	-0.201	-0.263		-0.788			-1.328	-0.082		0.428
Rural	0.265	0.281	0.352	0.301	0.371	0.360	0.012	-0.240	0.169	0.290	0.157
Urban											
No education	0.255	0.215	0.404	0.238	0.341	0.263		0.577	0.323	0.037	0.149
Primary							-0.326				
Secondary	-0.522	-0.477	-0.484	-0.592	-0.467	-0.503	-0.837	-0.378	-0.556	-0.471	-0.770
No electricity	-0.110	0.931	1.303	-1.216	-0.143	0.137	0.633	-2.434	0.259	0.194	-0.330
Has electricity	-0.143	1.050	1.310	-1.206		-0.156	0.210	-2.664	0.136		-0.637
No Radio	0.526	0.238	-0.165	0.747	0.021	0.161	-0.210	0.014	0.039	0.822	
Has radio	0.456	0.127		0.661		0.090	-0.130			0.856	0.110
No TV	-0.325	-1.046	-1.011	0.602	0.390	-0.390	-0.711	2.608	-0.245	-0.768	0.565
Has television	-0.409	-1.384	-1.051	0.436	0.788	-0.121	-1.045	2.764	-0.153	-0.850	0.992
Christian						0.073					
Muslim	0.074	0.028	0.731	0.268	0.633		0.328	-0.474	0.586	0.054	-1.312
No Religion	0.175	-0.023	-1.638	-0.039		-0.357	0.525	-1.121	0.430	0.148	-0.174
Other Religion	0.012	-0.265	-0.219	0.015	0.090	1.330		-0.662	0.617	-0.633	0.212
Doesn't know											
Knows	0.207	0.161	0.022	0.285	-0.034	0.083	0.402	0.149	0.221	0.217	0.485
Never used											
Ever used	0.517	0.407	0.371	0.670	0.661	0.543	0.724	0.358	0.468	0.651	0.408
Never Married	-0.410	-0.435	-0.150	-0.328	-0.921	-0.322	-1.084	-0.449	-0.815	-0.598	-0.517
Married	0.789	0.464	-0.219	-0.417		1.162	-0.731	0.667		0.535	
Living together	0.612	0.557	-0.166	-0.096	-0.584	0.863	-1.241	-1.335	-0.164	-0.155	-0.304
Widowed	-0.265	-0.010	-0.069	-0.009	0.472	-0.396	-0.394	-0.056	-0.831	-0.028	-1.273
Divorced	-0.260	-0.480	-0.247	-0.271	-0.367	0.048	-0.715	-0.125	-0.847	-0.177	-0.819

No other wives	-0.026	-0.075			0.082						
Other wives			-0.009	-1.091		0.098	0.096	0.231	-0.244	-0.013	-0.172
Below 20	-1.135	-1.124									
Above 20			-1.033		-1.006	-1.246	-1.223	-1.283	-1.089	-1.039	-1.383
Wants within 2 years	-1.167	-1.326	-0.788	-0.959	-0.849	-1.060	-1.067	-0.739	-1.549	-1.862	-1.389
Wants after 2 years	-0.186	-0.444	-0.219	0.127	0.702	-0.084	0.515	0.086	-0.616	-0.758	-0.502
Wants unsure time	-0.133	-0.334	-0.103	0.287	0.441	0.125	0.543	0.055	-0.671	-0.775	-0.451
Undecided	0.023	-0.217	0.525	0.746	1.187	0.460	0.859	0.588	-0.492	-0.563	-0.048
Wants no more	0.421	0.172	0.922	0.820	0.841	0.640	1.739	0.671	0.480	0.308	0.829
Sterilised	0.740	0.574	0.064	0.868	1.267	-0.070	0.395	0.082	-0.846	-0.615	-1.377
Declared in fecund	-0.203	-0.790		0.337							
Never had sex											
Husbands disapprove	-0.554	-0.377	0.293	-3.157	-0.041	0.078	0.052	0.637	0.111	-0.028	-0.014
Husband approves	-0.737	-0.504		-3.304						-0.303	
Don't know	-0.807	-0.420	-0.205	-3.514	-0.047	-0.194	-0.093	-0.022	0.015	-0.381	0.093
Never Discussed	0.065	-0.069	0.561	3.564	-0.069	-0.708	0.529	-0.158	-0.480	-0.397	0.036
Discussed Once	0.422	0.392	0.775	4.001	0.413	-0.751	0.725	0.128	-0.114	0.126	0.592
Discussed more than once	0.520	0.455	0.929	4.012	0.558	-0.579	0.622	0.269	0.088	0.204	0.490
Disapproves FP	-0.526	-0.773	-0.410	-0.320	-0.230	-3.795	0.160	-0.024	-0.184	0.138	0.305
Approves FP	-0.396	-0.519	-0.238			-3.915		0.385	-0.275	0.355	
Don’t know	-0.378	-0.332		-0.110	0.559	-4.218	0.497	0.768	-0.529	0.267	0.208
Respondent not working	-0.220	-0.259	-0.467	-0.009	-0.182	-0.295	-0.129	-0.039	-0.295	-0.022	0.113
Respondent working (sales)	-0.163	-0.197	-0.290	0.101	0.440	-0.238	-0.335	0.038	-0.293	-0.079	-0.381
Respondent working (agric)	-0.201	-0.277	-0.365	0.143	-0.054	-0.184	-0.482	0.057	-0.361	-0.144	-0.265

For all ethnic groups in Malawi, respondent’s age has positive effect on fertility. The higher the age of the respondents the high fertility is expected to be. These results are similar to those found in Nigeria ().

All ethnic groups in the Central Region, with the exception of the Nkonde, all ethnic groups in the Central Region are have

All ethnic groups in the Southern Region, with exception of the Lomwe, Yao, Sena and Amang’anja,

For all ethnic groups (exception the Nkonde) indicate that residing in rural areas is positively associated with high fertility. This scenario is what is expected in view of the high literacy rates, better socio-economic conditions and the exposure and access to family planning that urban women enjoy more than their rural counterparts.

Among the Nkonde rural residence has a negative effect on fertility.

With the exception of the Sena, Table 3 indicate that women with no education are positively related to fertility. On the other hand, women with secondary and higher education have lower fertility than women who have no education and primary education.

For all ethnic having primary education is positively associated with high fertility whereas having secondary education is negatively associated with fertility. This is in line with expectation. Several studies have shown the inverse relationship between education and fertility. For instance a study by Martin (1995) using DHS data of 26 countries, (including sub-Saharan Africa), also found higher education to be consistently associated with lower fertility.

For example, educated women marry much later and have fewer children than women with no education. **However, studies done by both Cochrane (1979) and Jain (1981) showed that rudimentary education in least developed societies might initially increase fertility. This means that there is a threshold beyond which education has a negative effect on fertility. According to the United Nations (1987), this threshold is beyond primary education, that is, the level of some secondary education or seven years of education.**

With the exception of the Nkonde and other ethnic groups, being a muslim is positively associated with fertility.

For all ethnic groups knowledge of family planning and ever use of contraception are both positively associated with high fertility. This may be not be surprising given that

it is women with high fertility who have the urge to use family planning. Moreover, women with high fertility are more likely to visit a health center thereby introduced to family planning. In the early stages of family planning service provision in Malawi, family planning services were provided as part of the maternal and child health programme.

For all ethnic groups, being never married is negatively related to fertility. The same is the case with women who are divorced and widowhood (except among the Tonga). Being married is positively related to fertility with exception of Tumbuka, Lomwe and Sena. Living together is negatively related to fertility except for the Chewa and Yao.

Age at first marriage above 20 is negatively related to fertility for most ethnic groups in Malawi.

For most ethnic group being in polygamous marriage is associated with lower fertility. The only exception to this rule is the Yao, Sena and Nkonde. The effect of polygamy on fertility has to date baffled demographers and they are still divided on this issue. For instance, while some studies show that polygamy has a depressing effect on fertility (), other studies found no difference between the fertility of polygamously and monogamously married women. A few of the studies were inconclusive because of the small sample sizes and the lack of control variables in the analysis.

Several hypotheses have been advanced, notable among them is the selection bias argument. This argument posits that polygamously married women are usually less fertile than monogamously married women. Thus, a monogamously married man will take a second wife only if the first wife is childless. Another argument is that polygamously married women tend to have older husbands than monogamously married women. Furthermore, since polygamously married women share their husbands, this may result in lower frequency of coitus.

Respondents who wants to have another child (be it within 2 years, after 2 years or unsure of time) or has been declared infecund are negatively related to fertility. This

means that respondents who want to have another child tend to have lower fertility. Respondent who are undecided, wants no more children or sterilized are positively related to fertility.

All ethnic groups indicate that women who are never married is negatively related to fertility.

For all ethnic groups, not working is negatively related to fertility. Contrary to popular belief, working in agriculture sector is also negatively related to fertility (except among the Nkonde).

For all ethnic groups, having discussed family planning more than once is positively related to fertility (except for the Yao).

Many studies have found that women who are working experience lower fertility than their counterparts who are not working. 'Role conflict' theory is often advanced as the basis for the differences in fertility of women who are in the work force and those who are not. Working women, especially those engaged in non-domestic enterprises, have a conflict between work and reproduction. They find the care of children more difficult than those women who are not working and hence tend to have fewer children than the latter group. Even among the employed group there are substantial differentials by occupational groups. From the experience of contemporary rich nations, women engaged in agricultural pursuits tend to have higher fertility than those engaged in non-farm enterprise.

However Figure x indicate that for all ethnic groups in Malawi fertility is higher among women who are working than those who are not working. A possible reason for this is that women who are working achieved their desired fertility before they entered their current employment. It is possible that women enter into the labour force in order to assist their families/children.

Last model

The next set of multiple regression analyses were designed to establish whether or not ethnic fertility differentials exists in Malawi after controlling for social, demographic and economic variables. The basis for this set was that if ethnic fertility differentials exists after controlling for background variables that will provide support for the cultural hypothesis. However, the disappearance of ethnic fertility differentials after controlling for background variables will provide support for the characteristics hypothesis. The results of this set of multiple regression analyses are presented in Table 4 below.

Model 1 presents the relationship between fertility and ethnicity without introducing any controls. In model 1, the Chewa has been excluded from analysis. The Sena and Anyanja are positively related to fertility whereas the remaining ethnic groups are negatively related to fertility.

In model 2, the relationship between fertility and ethnicity is considered after controlling for demographic variables (age, age at first marriage, marital status, number of other wives). Contrary to model 1, for all ethnic groups, model 2 suggest that fertility and ethnicity are positively related.

As expected, current age is positively related to fertility. Age at first marriage above 20 and polygamy (other wives) is negatively related to fertility. In terms of current marital status, those who are married and those living together are positive related to fertility where as those who are never married, widowed and divorced are negatively related to fertility.

In model 3, the relationship between fertility and ethnicity is considered after controlling for demographic variables (age, age at first marriage, marital status, number of other wives) and residence (rural-urban and region). In terms of the relationship between fertility and ethnicity the results of this model are similar to those obtained in model 1 in that the Chewa has been excluded from analysis whereas the Sena and Anyanja are positively related to fertility and the remaining ethnic groups are negatively related to fertility.

Central and Northern Regions and rural dwellers are positively related to fertility.

In model 4 the relationship between fertility and ethnicity is further examined after controlling for demographic variables (age, age at first marriage, marital status, number of other wives), residence (rural-urban and region) and socio-economic variables education, place of residence, region of residence, Purchasing power, religion, occupation) and behaioural factors (knowledge of FP, Ever use of FP, Desire of children, Approval of FP, Discussion of FP).

In terms of the relationship between fertility and ethnicity the results of model 4 are similar to those obtained in models 1 and 3 in that the Chewa has been excluded from analysis whereas the Sena and Anyanja are positively related to fertility and the remaining ethnic groups are negatively related to fertility.

Model 5 represents a full model in which the relationship between fertility and ethnicity is further examined after controlling for all the variables. Model 5 reveals that there are ethnic fertility differentials in Malawi. The observed differences in fertility are similar to those in model 1 in that the Sena and Anyanja have higher fertility than other ethnic groups whereas the remaining ethnic groups in the country have lower fertility.

As expected, current age is positively related to fertility. Age at first marriage above 20 and polygamy (other wives) is negatively related to fertility. In terms of current marital status, those who are married and those living together are positive related to fertility where as those who are never married, widowed and divorced are negatively related to fertility.

Table 4: Regression of children ever born on ethnic groups in Malawi, controlling for on selected background variable, 2000

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	3.174	-3.598	-3.678	-4.904	-4.226
Chewa		0.394			
Tumbuka	-0.233	0.139	-0.188	-0.117	-0.086
Lomwe	-0.258		-0.183	-0.211	-0.147
Tonga	-0.317	0.005	-0.308	-0.228	-0.153
Yao	-0.111	0.152	-0.056	-0.064	-0.059
Sena	0.055	0.317	0.112	0.055	0.168
Nkonde	-0.242	0.122	-0.205	-0.161	-0.038
Ngoni	-0.086	0.235	-0.091	-0.085	-0.097
Anyanja	0.005	0.216	0.043	0.006	0.032
Others	-0.117	0.066	-0.287	-0.229	-0.107
Current age		0.236	0.236	0.234	0.211
Below 20					
Above 20		-1.406	-1.380	-1.298	-1.143
Never Married		-0.661	-0.623	-0.573	-0.413
Married		0.399	0.404	0.371	0.740
Living together		0.188	0.190	0.162	0.541
Widowed		-0.330	-0.295	-0.309	-0.271
Divorced		-0.223	-0.228	-0.277	-0.263
No other wives					
Other wives		-0.027	-0.071	-0.086	-0.035
North			0.196	0.143	0.145
Centre			0.280	0.248	0.188
South					
Rural			0.308	0.187	0.279
Urban					
No education				0.564	0.384
Primary				0.813	0.479
Secondary and higher				-0.685	-0.631
No electricity				0.054	-0.104
Has electricity				0.066	-0.141

No Radio				0.406	0.464
Has radio				0.397	0.393
No TV				-0.418	-0.272
Has television				-0.480	-0.354
Christian					
Muslim				-0.062	0.071
No Religion				-0.080	0.139
Other Religion				-0.066	0.021
Respondent currently working				1.533	1.410
Respondent currently working				1.416	1.284
Respondent's occupation: agric				0.056	0.000
Respondent's occupation: sales				0.020	0.020
Doesn't know					
Knows FP					0.207
Never used FP					
Ever used FP					0.517
Have another					-0.158
Undecided					
No more					
Sterilised					
Declared in fecund					
Never had sex					
Wants within 2 years					-0.980
Wants after 2 years					
Wants unsure time					0.056
Undecided					0.053
Wants no more					0.450
Sterilised					0.763
Declared in fecund					-0.167
Never had sex					
Husbands disapprove					-0.541
Husband approves					-0.716
Don't know					-0.793

Never Discussed					0.105
Discussed Once					0.457
Discussed more than one					0.550
Disapproves FP					-0.504
Approves FP					-0.365
Don't know					-0.368
R-square	0.002	0.675	0.678	0.681	0.733

An examination of the goodness of fit of the models (R-square) presented in Table 4 indicate that belonging to a particular ethnic group has little effect on the overall fertility. In fact less than one percent of the variations are in fertility are explained by ethnicity. The introduction of demographic variables increases r-square to 68% (model 2). Adding residence (model 3) and socio-economic variables (model 4) to the model has negligible impact on fertility. Behavioral variables (model 5) increases r-square to 73%. This indicates that demographic variables followed by behavioral variables accounts for most of the explained variations in fertility in Malawi.

Discussion and Conclusion

Since the late 1980s, the overall fertility of the country has been declining. The 1984 FFS reported a TFR of 7.6 whereas the 1992 MDHS, the first survey in Malawi to suggest a decline in fertility, reported a TFR of 6.7. Since then all the subsequent sources of demographic data in the country have estimated a somewhat lower fertility. The 1998 census estimated a TFR of 6.4 whereas the 2000 and 2004 MDHSs reported a TFR of 6.3 and 6.0, respectively.

The observation that fertility is declining in Malawi raises a number of questions. First, what are the determinants of fertility decline in Malawi. Second, is fertility transition in Malawi occurring across all the three regions and among all the ethnic groups in the country? It is the later that this study endeavors to shed more light. This has been done by examining various estimates of fertility for each ethnic group and using multivariate analyses to investigate the role of social and economic factors on the nature and patterns of fertility for each ethnic group.

All the measures applied in the present study have established that there are ethnic fertility differentials in Malawi. All the ethnic groups included in this study exhibit high fertility. The Chewa, Sena, Yao and Ngoni could be said to exhibit high fertility whereas the Mkonde, Tumbuka, Tonga and Lomwe could be categorized as having low fertility. Moreover, all ethnic groups in the country appear to have experienced fertility declines.

The ethnic differences in fertility revealed in this study reflect in part the ethnic differences in socio-economic development.

Caldwell identified three conditions under which fertility is likely to decline in sub-saharan African countries: an infant mortality of not more than 70 infant deaths per 1000 live births, nearly all girls going to primary school and at least 30% of all girls attending secondary education and at least 25% of currently married women using family planning methods with 20% using modern contraception (Caldwell and et. Al 1992, Caldwell and Caldwell, 1994). Using these as a yardstick, and accepting that the results of this study suggest that different ethnic groups in Malawi, like elsewhere in Africa, respond differently to social and economic transformations underway, one would be tempted to suggest that fertility transition in Malawi would proceed differently for each ethnic group in Malawi. The Tumbuka and Tonga experiencing earlier transition than the Chewa.

The findings of this study have some policy implications. To start with the Government of Malawi should continue its efforts in investing in public health, reproductive health, education, job creation and improving the status of women.

The fertility rate in Malawi is high though it seems to be declining. If the population policy and the family planning programme continue receiving a strong support it is possible that fertility will continue to decline in future. However, despite this potential fertility decline, in the next 2-3 decades, continued rapid population growth in Malawi is inescapable because of youthful age structure of the population which is the outcome of the persistency of high fertility in the past. Beyond that point much

depends on fertility trends in the coming decades. This continued population growth may exacerbate greatly problems of underemployment, while the prognosis for future fertility decline is better , hence this fact demonstrate the appeal for provision of appropriate family planning services for this population and anticipation of increasing fertility rate in coming years in order to make suitable social, economical and population planning.

Last but not the least, from research perspective, it is important to acknowledge that the analysis adopted in this study is not rigid enough considering the issues being investigated. However this study represents a good starting point in an attempt to uncover the reasons underlying ethnic fertility differentials in Malawi. More studies of this nature are need. Future studies should attempt to study ethnic differences using qualitative approach.

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