Religion and Fertility Behavior of Married Men and Women: An Empirical Examination of Data from Ghana, sub-Saharan Africa.

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Abstract

Due in large part to the pervasiveness of religious institutions in Ghana, a growing body of literature has examined its role on several demographic outcomes, including contraceptive behavior and the timing of premarital sex. Surprisingly enough, few analytic studies have examined the relationship between religion and fertility behavior of both men and women. This study contributes to the discourse on religion by assessing its relationship with fertility behavior using data from 1993 and 2003 Ghana Demographic and Health Survey. Employing count data models, we argue that denominational differences in moral proscription and the pronatalist orientations of religious bodies may differentially impact on fertility behavior. Such differences, however, are hypothesized to be accentuated by what Ali Mazrui calls the "triple heritage" on the enmeshing of Islam and Christianity with Traditional African religion.

Research Context and Introduction

Gauged by the number of people who consider themselves as religious, Ghana is among the most religious nations in the world, the major religions being Christianity, Islam and Traditional. Not only are religious institutions pervasive throughout the country (Assimeng, 1986), but data from a millennium survey conducted by Gallup International (2000) which interviewed 50,000 people in 60 different countries found that the majority of Ghanaians (98%) belonged to a religious denomination, with about 82 percent reporting regular church attendance. Besides the mainstream and established Christian denominations (Protestants and Catholics), one can identify a spectrum of "other Christian" groups ranging in varying size and organizational structure including the African syncretic churches, faith healing and charismatic organizations, Evangelicals and Pentecostals (Yirenkyi, 1999; Gifford, 1994b; Nukunya, 1992; Assimeng, 1989, 1986, 1981).[1] At the congregational level, it may be true to say that these "other Christian" groups account for a sizable proportion of the 69% of Christians in the country.[2] Nukunya (1992) and Assimeng (1986) contend that the growing popularity of these "other Christian" groups may be due to the disenchantment with the monotonic worshiping style of the traditional churches and the fact that these new churches tend to employ "faith healing" and "salvation," something which appeals to the needs of a growing population who have been dissatisfied with their socioeconomic situation in recent years.

Like other countries in sub-Saharan Africa, however, the religious experience in Ghana has been significantly impacted by what Mazrui (1986) terms the "Triple Heritage." The African indigenous heritage often serves as the background against which the activities of Islam and Christianity take place, resulting in unusual accommodations. Aryee (1985) gives the example of

contraception and polygamy which a practicing Catholic in the West finds unacceptable but many Ghanaian Catholics can live with without qualms. Due in large part to the pervasiveness of religious institutions in Ghana, a growing body of literature has emerged that examines its role in the lives Ghanaians (Gyimah et al., forthcoming; Takyi, 2003; Addai, 2000; 1999, Adongo, Phillips, & Binka, 1998; Ellis and ter Haar, 1998; Kirby, 1997, 1993; Gifford, 1995; Meyer, 1995; Aboagye-Mensah, 1994; Pobee, 1991; Assimeng, 1989). Yirenkyi (2000) and Aboagye-Mensah (1994), for example, have investigated the links between religion and politics and have reported that the Christian churches in Ghana have been more politically active since the 1980s. Addai (1999, 2000) has also investigated the connections between religion, contraceptive use and premarital sex. In a more recent paper, Gyimah, Takyi and Addai (forthcoming) found significant religious variations in maternal health service utilization and argued that those differences could impact on maternal and child mortality patterns.

Given these considerations, it is reasonable for us to anticipate that religion may also be relevant to our understanding of fertility processes in Ghana, a country currently undergoing the fertility transition.[3] Such an expectation is influenced in large part by several considerations including previous work that has highlighted the relevance of religion on a wide range of social and demographic outcomes. Also, there is a considerable body of literature on the role of religio-cultural processes as important factors in sustaining the high-fertility in sub-Saharan Africa (see e.g., Dodoo & van Landewijk 1996; Dodoo, Luo & Panayotova 1997; Meekers 1994; Benefo, Tsui & de Graft Johnson 1994; National Research Council 1993; Hammel 1990; Caldwell & Caldwell 1987; Bongaarts, Frank, & Lesthaeghe 1984; Caldwell 1982). Findings from these studies indicate that deeply held religio-cultural beliefs, practices, and norms provide the

incentives for the region's relatively high fertility levels. Further, studies on social capital and social networking and how they impact on reproductive behavior indicate that religion may be instrumental in fostering social ties and networks (Agadjanian, 2001; Kohler, Behrman, & Watkins, 2001; Valente, Watkins, Jato van der Straten, & Tsitsol, 1997; Sherkat & Wilson, 1995; Coleman, 1990, 1988), attributes that are relevant for the use of contraception, a major fertility limiting behavior. Given that many Ghanaians spend a considerable amount of their time in faith and religious-based interactions where the diffusion of information on reproductive norms is more likely to occur, religion could provide the organizational context for behavioral change on fertility-related behavior. Again, several recent studies have pointed out that religion has emerged as a major dominant social force which is influencing in no small way the behavior of the people (Gifford, 1995, Takyi & Addai 2002). Another reason for our focus on religion—a cultural variable- has to do with the observation that Ghana's nascent fertility transition has occurred under conditions of limited increases in contraception use as has been reported in some parts of Africa.

Despite the possibility that religion may be relevant to fertility-related decisions in Ghana, very little of recent studies have looked at this link. This neglect is quite unfortunate given the overwhelming influence of religion on the Ghanaian social fabric. In a recent BBC World Service survey, for example, three-quarters of those questioned in Africa identified religious leaders as the most trusted group, compared to only a third worldwide (BBC News, 2005). Asked who had had the most influence on their decision-making over the past year, a significantly higher proportion of respondents in Africa indicated religious leaders. Indeed, the figure for Africa was about three times greater than the global average. These suggest that

religion plays a meaningful role in life of Africans and may impact significantly on behavior formation.

Against this backdrop, this paper contributes to recent scholarship on the role of religion by assessing its links with fertility behavior. In particular, we use data from the 1993 and 2003 Demographic and Health Surveys to examine the influence of religion as measured by congregational affiliation on the fertility behavior of married men and women in Ghana. Our focus on married men and women is unique in that we know of any studies to date that has considered the religious context of married men and women in looking at their fertility behavior in Ghana. In exploring the possible links between religion and fertility behavior, we compare ever married men and women from the five main religious groupings found in that country: (1) Protestants, (2) Catholics, (3) other Christians, (4) Muslims, (5) believers of African traditional religions (ATR). Such an examination is expected to provide insight into the role of religion on fertility. Most importantly, the comparative analysis of both men women will allow us to examine whether the effect of religion is consistent or manifest differentially, an issue that has not been given a serious attention in previous work.

Background

Many developing countries have witnessed a remarkable demographic transition since the mid 1950s, with many reporting unprecedented declines in mortality and fertility levels. In the case of sub-Saharan Africa, on the other hand, while mortality levels continued to decline, the same did not occur with regard to fertility, which remained relatively high during the same period. As a result, the region's population grew rapidly, leading many policy makers and

scholars to call attention to the socioeconomic implications of such a development. Evidence from more recent studies, however, indicates that the long awaited fertility transition may be underway in this region as well.

Although the nascent fertility transition has not occurred in all countries in the region, some significant gains have been reported in a number of African countries. For example, Dudley & Pillet (1998), Cohen (1998), and Robinson (1992) have all reported that African women who averaged about six or more children between the 1960s and 1980s are now having less than five children. More recent data indicate the average number of births to be 5.6 children. Such an observation appears inconsistent with the long held view for most of the past four decades that religio-cultural and institutional supports in Africa worked to reduce the motivation for smaller families (Bongaarts et al. 1984; Caldwell & Caldwell 1987; Lesthaeghe 1989). Not surprisingly, some earlier studies had predicted that the sub-Saharan African region was not ripe for a transition until the middle of this century (Frank & McNicoll 1987, Mott & Mott 1980).

Consistent with the emphasis given by previous scholars on the role of institutional or cultural processes in African fertility research, researchers have examined several indicators or dimensions of "culture" and their influence on fertility behavior, including polygamy (Agadjanian & Ezeh 2000; Garenne & van de Walle 1989), postpartum sexual abstinence (Benefo 1995), the role of men (Greene & Biddlecom, 2000; Dodoo 1998; Dodoo & Seal 1994; Ezeh 1993; Oheneba-Sakyi & Takyi 1997), religion and contraceptive behavior (Agadjanian, 2001; Addai 1999a), and the links between ethnicity and reproductive-related fertility behavior (Takyi & Addai 2002; Addai 1999b; Addai & Trovato 1999). Missing from these recent studies is

research that examines the influence of religion on the fertility behavior of married men and women during this period of fertility transition.

The lack of empirically based studies on religion and the fertility behavior of men and women in sub-Saharan Africa, and in particular Ghana, is problematic for several reasons. First, previous researchers have indicated that children are viewed in many parts of Africa as God's gift, or yet, as a way to pacify ancestors (Caldwell & Caldwell 1990a; Ebin 1982). Moreover, ethnographic studies from the region have reported that in Africa, childbearing and childcare activities tend to take place within the context of wider religious and lineage relationships. For example, in many traditional Ghanaian societies, women were expected to marry and have more children, an expectation fueled in most cases by traditional religious beliefs that place a high premium on childbearing and equate barrenness and infecundity with a divine curse (Ebin 1982; Caldwell 1982). As Fortes (1978) has observed in West Africa, a 'woman' is only recognized as such if only she is able to bear children.

We argue that in environments where childbearing decisions are framed within the context of religious expectations, it is less likely that women would behave in a way that would challenge the existing status quo. Second, in a society such as Ghana where the people interpret their actions within a religious milieu (see for example, Takyi, 2003) the lack of studies on the intersection between religion and childbearing issues clouds our comprehension of recent fertility behavior. In their study of the influence of traditional religion on reproductive preferences of Kassena-Nankana lineage heads in northern Ghana, Adongo, Philips and Binka (1998) found that fertility decisions were dictated in large part by expectations of ancestral spirits in the area. Given their observation to the effect that spiritual consultations were non-dogmatic, they did not think

that family planning efforts in the Kassena-Nankana area would be opposed on the basis of religion. Third, Agadjanian (2001) and many scholars have also pointed out that changes in reproductive behavior do not always take place in isolation. According to these scholars, the spread of information and new ideas about reproductive behavior is often influenced by several factors, including for instance, one's social networks (Valente, Watkins, Jato, van der Straten & Tsitol 1997). The ties that religious congregations provide could in turn provide the stimulus for behavioral changes and the diffusion of small fertility norms.

Another reason why religion may be relevant for women's fertility behavior in Africa derives from research on European societies at the early stages of their fertility transition. For example, according to findings from the European Fertility Project, the changes that occurred in Western Europe took place following cultural and religious lines. Given such an observation, in Africa where religion permeates all aspects of life, and where the reproductive behavior of the people is often intertwined with religious beliefs and values (Caldwell & Caldwell 1990b; Caldwell & Caldwell 1987; Bongaarts, Frank & Lesthaeghe 1984), it is more likely that religion may be relevant in our understanding of recent fertility behavior in the region as well.

One obvious mechanism through which religion could influence fertility decisions relates to the use of contraceptives, an important determinant of overall fertility (Bongaarts & Bruce 1995). Regarding contraceptive use, previous studies have shown that the proportion of women who use modern contraceptives is strongly and negatively correlated with total fertility rates (Pritchett 1994). Similarly, Cohen (1998) has linked the declining fertility rate in Africa to increased use of contraceptives. It is in this area that religion could either have a negative or positive impact on contraceptive use. Because the religious and traditional belief systems are

primarily anti-family planning, the use of contraceptives in traditional African societies tends to be de-emphasized. It is therefore no surprise that a number of studies finds the various religious groups to differ in terms of their contraceptive use behavior in Ghana (see for example, Addai 1999b).

Some researchers have also argued that the religious context in which individuals are socialized impacts their family values, attitudes and practices about sexual behavior and thus their fertility. According to this thesis, denominational differences in teachings and sanctions against proscribed behavior such as the use of contraceptives and premarital sex may influence the timing of marriage and fertility levels (Thornton & Camburn 1989). More important, while the mainstream religious groups preach against behavior deemed as "deviant" (e.g., premarital sex), their attitude towards compliance varies. For example, the liberal Church groups (e.g., Protestants) are less likely to impose stiff sanctions against individuals who go against established norms than conservative groups (Catholics).

Our conceptual framework derives from two theoretical orientations that provide hypotheses about the links between religion and fertility. The first hypothesis is based on the idea that the philosophical ideals, norms and values of the various religious groups by themselves may influence fertility behavior. Unlike the first thesis, the second theory is based on what some researchers call the "characteristics" hypothesis (Rocco, 1979). This thesis assumes that any variations in observed fertility behavior between religious groups reflect differential access to social and human capital (e.g., education) rather than religion per se. Thus, a debate continues as to whether differences in fertility behavior are due primarily to religious processes or the interplay of socioeconomic forces. We tested ideas from these competing theories by estimating a

series of multivariate regression models that consider the independent effect of religion, and others that include appropriate controls on fertility behavior of men and women.

Hypotheses

Research elsewhere has noted the more pronatalist orientations of certain religions, notably Catholic and Islam. Among Catholics in particular, a source of such differences may lie in the restrictive use of contraception. In the African context, however, such doctrines have been significantly impacted by what Mazrui (1986) terms the "Triple Heritage" giving rise to unique religious experiences. The African indigenous heritage often serves as the background against which the activities of Islam and Christian cultures take place and there is often a clash between cultures resulting in unusual accommodations. Aryee (1985) gives the example of contraception and polygamy which a practicing Catholic in the West finds unacceptable but many Ghanaian Catholics can live with without qualms. Thus, while we expect significant religious differences in fertility, the hypothesized effects are open to empirical verification.

Data, Measures and Methods

We investigated the relationship between religion and fertility behavior by analyzing data from the 1993 and 2003 Ghana Demographic and Health Surveys. The 1993 and 2003 data represent the second and fourth in the series of surveys that began in the 1980s. The DHS survey used standardized questionnaire instruments to collect detailed information on standard socio-demographic measures such as age, education, and work history as well as measures on fertility,

contraception, and child mortality. Each of the surveys conducted in Ghana was based on a representative sample.

Measures

Fertility behavior, our dependent variable employs the number of children ever born (CEB) which was derived by summing up all births to women and men sampled. Although there is the possibility of misreporting and incorrect dating of births, previous analysis of the DHS data have found the measures on births to be reliable (Rutsein & Bicego 1990). The main independent variable is religion. In studies on religion and social behavior, religion has often been measured in several ways including the frequency of church attendance (religiosity), subjective views about God (Krause, 1993), and denominational affiliation (Goldscheider & Mosher, 1988). We are constrained in our analysis by the lack of multiple measures of religion in the dataset used in this study. Given that the only question used to capture religion in Ghana asked about affiliation, we define religion to mean denominational affiliation. As Lehrer (2004) has pointed out, however, religious affiliation on its own makes a difference in the discussion of a host of economic and demographic behavior since it has an impact on the perceived costs and benefits of several decisions that people make over their life time. Thus, while we acknowledge the limits that come with the use of one dimensional variable to capture a concept that has several meanings, we also contend that religious affiliation alone provides a window to assess men and women's fertility behavior in the context of Ghana. This is based on the assumption that denominational differences in moral proscriptions and normative expectations are vital to behavior formation

Although Ghanaians are affiliated with several religious persuasions, Christians, representing various denominations account for over half of the country's population. On the basis of the notion of "theological homogeneity", most studies tend to group the various denominations, especially the Protestant groups into a homogenous unit, which is then used in their comparisons. While such comparisons provide useful information about the role of religion in reproductive behavior and outcomes, they ignore the significant theological differences between the groups as well as the increasing Evangelical and Pentecostal movement sweeping the country (Assimeng, 1981). We avoided this pitfall in our analysis by distinguishing between the following groups: Catholics, mainline Protestants (comprising Presbyterians, Methodists, and Anglicans) and non-mainline Protestant Christians. These non-mainline Protestants are coded as other Christians in the standard GDHS03 recode file and comprise a collection of evangelicals, sectarians, and Pentecostals groups in Ghana. For the non-Christian groups, we distinguished between Muslims (Moslems), Traditionalists or adherents/ believers of African traditional religions (ATR).

Control Variables

For the multivariate models, we also controlled for other theoretically relevant socio-demographic and socio-cultural variables that may mask the relationship between religion and fertility. On the basis of previous research on fertility in Ghana (e.g., Gyimah, 2003ab; Addai, 1999ab), the following variables were used as controls; current age, type of marriage (polygamy versus monogamy), a four-categorical measure of education (no schooling, some primary, secondary and higher), and ethnicity (Akan, Ga and Adangbe, Ewe, Mole-Dagbani, and all others), number of child who have died (computed from number of boys and girls who have died), binary

measures of rural-urban residence, north-south region of residence, ever used modern contraceptive, whether the respondent approves of family planning (see Appendix for detailed coding of variables used in the study).

Analytical Strategy

The analysis is carried out at two levels: first, a bivariate analysis examines the mean number of children ever born (CEB) by religion and the control variables to ascertain differences (if any) among groups. In the multivariate analysis, because children ever born (the outcome variable) is a non negative count variable, count data models are the natural choice for the regression. As Long (1997) points out, using linear regression for count outcomes can result in inefficient, inconsistent and biased estimates. While some argue that the birth function follows a Poisson distribution (Gyimah, forthcoming), others suggest a Negative Binomial distribution (e.g., Espenshade and Ye, 1994; Mayer and Riphahn, 2000). The problem one faces with standard Poisson model is that the equi-dispersion assumption which underlies its estimation approach is often violated. To make the choice between Poisson and Negative Binomial Regression Models, we tested but found no evidence of over dispersion, suggesting a preference for the Poisson model. The basic Poisson model, estimated through maximum likelihood, is specified as

$$\ln(\lambda_i) = \ln[E(\lambda_i | x_i)] = \beta x_i$$

where, $\lambda_{(i)}$ is a vector of expected values, β is the parameter vector, and x_i is a vector of explanatory variables.

Results

Descriptive Analysis

Summary data pertaining to the sample studied are reported in Table 1. For both men and women, we see a slight decline in the number of children ever born in the 10 year period between 1993 and 2003. In general, men tend to have a larger number of children than women. For the 2003 sample, for example, ever married men on average had 4.26 children compared with 3.57 for ever married women. Also, percentage with higher education has increased for both men and women within the two time periods. For instance, only 14.7 percent of the men interviewed in 1993 had secondary education compared with 49.7 percent in 2003. Similar patterns are discernible among ever married women where the percent with secondary education increased from 6.4 to 36.4 between the two time periods. In terms of religious affiliation, for both men and women we observe a remarkable decline the proportion that identify as Catholic or Protestant on one hand, and a precipitous increase the Other Christian category. The relative size of other "Other Christian" group reflects the growing influence of the new religious movements such as Pentecostal and Evangelical groups in Ghana, also throughout the whole of Christian Africa. Overall, the sample we analyzed is predominantly Christian, with the majority of both men and women identifying as Protestants, Catholics, or Other Christians.

Bivariate association on the mean number of children ever-born and religion as well as the control variables are presented in Table 2. For both men and women, mean fertility is highest for Traditionalist and least for Other Christian. This finding is consistent in both surveys. For instance, while the average fertility for women in 2003 is 3.7 children, those affiliate with traditional religion reported an average of 4.57 children. Similar differences are noticeable among men. For most

religious groups, there is only a slight change in fertility between the two time periods. We also see a significant inverse relationship between educational attainment and the fertility levels for both men and women, with those with no education having the highest number of children ever born and the above secondary category having the lowest (least). Mean fertility is also lower among urban and southern residents. Additionally, there are significant ethnic differences in fertility. Also, for both men and women the fertility of respondents in polygamous marriages is significantly higher than their monogamous counterparts. Among the 2003 sample of men, for instance, the fertility of those in polygamous marriages is 5.62 compared with 3.85 for their counterparts in monogamous marriages. Among women, the respective figures are 4.39 and 3.37.

In sum, evidence from Table 2 indicates substantial religious differences in fertility. These differences may be a function of a variety of socio-demographic and socio-cultural factors. As Table 2 also suggests, there are significant associations between fertility and the control variables. Unfortunately, in the absence of multivariate assessments, we are unable to isolate the role of religious from non-religious factors in our models. To discern the role of religious vis-à-vis non-religious factors in our understanding of fertility behavior in Ghana, we estimated two regression equations in which we assessed the direct effect of religion on children ever born, the results of which are presented in Table 3 for the ever married women and Table 4 for the men.

(Table 3 about here)

In both samples of Table 3, Model 1 indicates considerable religious differences in the number of children ever born. The results suggest a considerably higher fertility for women of all religions relative to Protestants. For the 2003, for example, the fertility of Traditional women is about 40 percent higher than women who identify as Protestants. To isolate the net effect of

religion, Model 2 controls for the observed theoretically relevant covariates. In both samples, the results suggest a significant attenuation of the religious differences. For the 2003 sample, the coefficient associated with traditional women reduces by about 19 percent once the other factors are controlled. Although some religious differences persist in Model 2, these results suggest that much of the religious differences in fertility operate through these other factors. The persistence of the effect associated with Traditional women suggests that there may be other intrinsic factors not captured by the model. The effects of the control variables are consistent with prior research. Fertility is lower among urban residents as well as women with higher education. The non linear form of the association between age and fertility is captured by the significance of both age and age-squared variables. On ethnicity, the results suggest modest differences in the earlier period although such differences seem to be disappearing in the most recent data. Additionally, there does not seem to be any significant difference between the fertility of women in monogamous and polygamous unions.

(Table 4 about here)

Our findings from Model 1 of Table 4 that looks at the men is consistent with observations made on women. For both samples, the fertility of Traditional men is consistently significantly higher than Protestants. Also, while Catholics associate with lower fertility in the earlier sample, the reverse is the case among the 2003 sample. Again, controlling for the observed covariates as Model 2 results in a significant attenuation of the effect associated with religion. With the exception of the increase in the effects associated with other religion in 2003, the other religious categories were significant in Models 1 and 2. Turning to the control variables, the effects are mostly consistent in both surveys. Comparing men and women, it is pertinent to point out the

consistency and similarities in the effects of the religious variables. For both groups, fertility tends to be highest among traditional worshippers although the effects are somewhat reduced after controlling for the observed factors. Additionally, it is pertinent to mention that while most of the control variables are consistent among both men and women, that of polygamy is not. Among the male sample, we see a significant difference in the fertility among those in polygamous and monogamous marriages. In both male samples, the fertility of polygamous men is considerably larger than their monogamous counterparts. For the most part, the effects of the demographic and socioeconomic measures on children ever born were significant. First, age at marriage has a negative effect on children ever born. Second, mortality experience has a positive effect on her overall number of children ever born. Third, contrary to what we would expect, the use of contraceptives and whether one approves of it are not associated with lower fertility.

Summary and Conclusions

The fertility behavior of men and women in Ghana, as the case is in many other African countries is changing. Not only are African men and women having fewer children than ever before, in the urban areas in particular, their fertility levels mirrors the low fertility that has been reported in some parts of the industrialized nations. In explaining the forces that have impacted recent fertility transitions in the sub-Saharan region, some scholars point to cultural processes, including religion as helping to perpetuate a regime that supported high fertility. With fertility on the decline, the question remains whether religion has something to do with these transitions. In general, there are two theoretical positions that test the possible role of religion variables on fertility

processes. The religious view contends that by providing their members with the support mechanism and the context for the diffusion of ideas, religion by itself could play an important role in shaping attitudes and behaviors about childbearing (Valente, Watkins, Jato, van der Straten, and Tsitol, 1997). In contrast are those who argue that religion has limited effect on fertility-related behavior, and that any observed results from socioeconomic changes.

We tested ideas from these two competing theses by examining variations in fertility behavior among the major religious groups in Ghana, a country where the people are quite religious and where fertility has just began to decline. In large part, our findings support the hypothesis that religion has some effect, albeit a moderate one on fertility behavior. Among the groups we investigated, we found Christian religious affiliation to be associated with reduced fertility levels. Perhaps, this finding has to do with the reported high levels of education among this population in comparison to the non-Christian groups (Takyi & Addai, 2002). It may also be that, Christians are more likely to be more "westernized" and "modern" than non-Christians, putting them at a relative advantage to absorb new ideas about low fertility norms. Unfortunately, the nature of the data available for this study did not permit the examination of such concepts.

Consistent with the socioeconomic interpretation, we also found age, urban residence, and women's education to have a strong and depressing effect on fertility levels. Indeed, in comparison to the religious measures, it appears that the effects of the socioeconomic variables are quite stronger than the cultural measures in explaining the number of children ever born in Ghana. In addition, we also found that previous child mortality experience, and the use of contraceptives all had a positive effect on CEB.

Clearly, our analysis of recent data from Ghana show that at a time of fertility decline, religion still remains a serious obstacle to these recent trends as the declines have been modest among some groups. By way of increasing the pace of the fertility transition underway in Ghana, the results from our study may have some policy implications. For example, our findings suggest that more attention should be paid to research on the role of religion in theories of fertility change in the country. If policy makers also want to reduce Ghana's fertility levels further, or at best maintain current levels, there is the need to change the behavior of specific groups, in this case non-Christians whose fertility levels tend to be relatively high. With the finding that socio-economic processes do impact on fertility behavior in Ghana, consideration also has to be given to increased female education, reductions in child mortality, and the husband's fertility preferences. Further studies employing qualitative and multiple measures of religion are needed to examine the contextual aspects, and also help in resolving the precise mechanism through which religion impacts fertility behavior. Such a study is expected to provide more insights into our understanding of the complex interrelationships between religion and fertility decisions.

References

Addai, I. (2000). Religious affiliation and sexual initiation among Ghanaian women. *Review of Religious Research* 41 (3): 328-343.

Addai, I. (1999a). Does religion matter in contraceptive use among Ghanaian women? *Review of Religious Research* 40 (3): 259-277.

Addai, I. (1999b). Ethnicity and contraceptive use in sub-Saharan Africa. The case of Ghana. *Journal of Biosocial Science* 31:105-120.

Addai, I. & Trovato, F. (1999). Structural assimilation and ethnic fertility in Ghana. *Journal of Comparative Family Studies* 30(3): 409-428.

Adongo, P, Phillips J., & Binka F. (1998). The influence of traditional religion on fertility regulation among the Kassena-Nankana of Northern Ghana. *Studies in Family Planning 29*: 23-40.

Agadjanian, V. (2001). Religion, social milieu, and contraceptive revolution. *Population Studies* 55: 135-148.

Assimeng, M. (1981). *Social structure of Ghana: A study in persistence and change*. Tema, Ghana: Ghana Publishing Corp.

Assimeng, Max. (1986). *Saints and social structures*. Tema, Ghana: Ghana Publishing Corporation.

BBCNews (2005). Africans trust religious leaders. Available at http://news.bbc.co.uk/1/hi/world/africa/4246754.stm Downloaded on September 14, 2005.

Bediako, K. (1995). *Christianity in Africa: Renewal of a non-Western religion*. Edinburgh: Edinburgh University Press.

Benefo, K. (1995). The determinants of the duration of postpartum sexual abstinence in West-Africa: A multilevel analysis. *Demography* 32: (2) 139-157.

Benefo, K., Tsui, A., & de Graft Johnson, J. (1994). Ethnic differentials in child-spacing ideals and practices in Ghana. *Journal of Biosocial Science* 26 (3): 311-326.

Bongaarts, J. & Bruce, J. (1995). The causes of unmet need for contraception and the social content of services. *Studies in Family Planning* 26:57-75.

Bongaarts, J., Frank, O., & Lesthaeghe, R. (1984). The proximate determinants of fertility in sub-Saharan Africa. *Population and Development Review* 10: 511-537.

Caldwell, J. & Caldwell, P. (1990a). High fertility in sub-Saharan Africa. *Scientific American* 262 (5): 118-125.

Caldwell, J. & Caldwell, P. (1990b). Cultural forces tending to sustain high fertility. In Acsadi, G, Johnson-Acsadi, G. and Bulatao, R. (edited). *Population Growth and Reproduction in sub-Saharan Africa*. Washington DC: The World Bank, pp. 199-214.

Caldwell J. & Caldwell, P. (1987). The cultural context of high fertility in sub-Saharan Africa. *Population and Development Review* 13 (3): 409-438.

Caldwell, J. (1982). *A theory of fertility decline*. London: Academic Press.

Cohen, B. (1998). The emerging fertility transition in sub-Saharan Africa. *World Development* 26 (8): 1431-1461.

Dodoo, F. (1998). Marriage type and reproductive decisions: A comparative study in sub-Saharan Africa. *Journal of Marriage and the Family* 60 (1): 232-242.

Dodoo, F., Luo Y., & Panayotova, E. (1997). Do male reproductive preferences really point to a need to refocus fertility policy? *Population Research and Policy Review* 16 (5): 447-455.

Dodoo, F. & Seal, A. (1994). Explaining spousal differences in reproductive preferences: A gender inequality approach. *Population and Environment* 15: 379-394.

Dodoo, F., & van Landewijk, P. (1996). Men, women, and the fertility question in sub-Saharan Africa: An example from Ghana. *African Studies Review* 39: 29-41.

Dudley, K & Pillet, B. (1998). Fertility levels, trends, and differentials in sub-Saharan Africa in the 1980s and 1990s. *Studies in Family Planning* 29 (1):1–22.

Ebin, V. (1982). Interpretation of infertility: The Aowin of south west Ghana. Pp. 141-159 in *Ethnography of fertility and birth*. MacCormarck, C.P. (ed.). New York: Academic Press.

Ezeh, A. (1993). The influence of spouses' over each other's contraceptive attitudes in Ghana. *Studies in Family Planning* 24: 163-174.

Frank, O. & McNicoll, G. (1987). An interpretation of fertility and population policy in Kenya. *Population and Development Review* 13 (2): 209-243.

Garenne, M. & van de Walle, E. (1989). Polygyny and fertility among the Sereer of Senegal. *Population Studies* 43: 267-283.

Ghana Statistical Service (GSS) and Macro International Inc.(MI). (2003). *Ghana Demographic and Health 2003*. Calverton, MD: GSS and MI.

Ghana Statistical Service (GSS) and Macro International Inc.(MI). (1999). *Ghana Demographic and Health 1998*. Calverton, MD: GSS and MI.

Ghana Statistical Service (GSS) and Macro International Inc.(MI). (1994). *Ghana Demographic and Health 1993*. Calverton, MD: GSS and MI.

Gifford, P. (1995). The christian churches and the democratization of Africa. *Studies of Religion in Africa*. Supplement to the Journal of Religion in Africa #12.

Greene, M. & Biddlecom, A. (2000). Absent and problematic men: demographic accounts of male reproductive roles. *Population and Development Review* 26: 81-115.

Hammel, E. (1990). A theory of culture for demography. *Population and Development Review* 16: 455-485.

Lesthaeghe, R. (1989). *Reproduction and social organization in sub-Saharan Africa*. Berkeley: University of California Press.

Meekers, D. (1994). Sexual initiation and premarital childbearing in sub-Saharan Africa. *Population Studies* 48: 47-64.

Mott, F. & Mott, S. (1980). Kenya's record population growth: A dilemma of development. *Population Bulletin* 25 (3).

National Research Council. (1993). Social dynamics of adolescent fertility in Sub-Saharan Africa. Washington D.C. National Academy Press.

Oheneba-Sakyi, Y. & Takyi, B. (1997). Effects of couples' characteristics on contraceptive use in Africa: The Ghanaian example. *Journal of Biosocial Science* 29: 33-49.

Pool, D. (1968). Conjugal patterns in Ghana. *Canadian Review of Sociology and Anthropology* 5:241-53.

Pritchett, L. (1994). Desired fertility and the impact of population policies. *Population and Development Review* 20: 1-56.

Robinson, W. (1992). Kenya enters the fertility transition. *Population Studies* 46: 445-457.

Rutsein S., & Bicego, G. (1990). Assessment of the quality of data used to ascertain eligibility and age in the demographic and health surveys. Pp 7-37 in Demographic and Health Survey Methodological Report, #1. Institute for Resource Development. Columbia, MD.

Takyi, BK. & Addai, I. (2002). Effects of ethnicity on the onset of parenthood in a developing Country: The early 1990s. *Journal of Comparative Family Studies* 33: 51-71.

Takyi, BK. (2003). Religion and women's health in Ghana: insights into HIV/AIDS preventive and protective behavior. *Social Science and Medicine* 56:1221-1234

Thornton, A. & Camburn, D. (1989). Religious participation and adolescent sexual behavior and attitudes. *Journal of Marriage and the Family* 51: 641-53.

Valente, T., Watkins, S., Jato, M., van der Straten, A. & Tsitol, L. (1997). Social Network Associations with Contraceptive Use Among Cameroonian Women in Voluntary Associations. *Social Science and Medicine* 45: 677-687.

Yirenkyi, K. (1999). Changing patterns of mainline and charismatic religiosity in Ghana. Research in the Social Scientific Study of Religion 10: 171-189. Stamford, CT: JAI Press.

Table 1: Descriptive statistics of ever married men and women, Ghana 1993-2003

	Ever married men		Ever married women	
	1993	2003	1993	2008
Religion	32.5	14.0	34.4	14.2
Prostesant	16.2	21.5	12.3	19.2
Moslem	23.0	32.5	16.8	40.2
Other Christian	9.3	16.6	18.8	11.4
Traditonal	18.4	15.4	17.5	14.9
Catholics				
SOCIAL DEMOGRAPHIC VARIABLES				
Educational attainment				
None	29.2	29.7	40.8	42.2
Secondary	14.7	49.7	6.4	36.4
Higher	6.1	6.9	1.4	1.9
Primary	50.1	13.7	51.4	19.5
Place of current residence				
Urban	33.4	33.7	33.2	35.2
Rural	66.6	66.3	66.8	64.8
Region				
Northern Ghana	21.3	29.6	21.3	29.6
Southern Ghana	78.7	70.4	78.7	70.4
Current Age (mean)	38.3	38.5	31.6	32.8
Age at first marriage (mean)	24.3	23.8	18.5	18.8
SOCIO-CULTURAL VARIABLES				
Ethnicity				
Ga-Adangbe	8.7	6.9	7.4	7.4
Ewe	14.8	12.3	14.1	11.8
Mole-Dagbani	22.3	33.3	24.3	30.0
Guan & other	6.6	7.9	43.0	9.5
Akan	44.9	39.5	48.7	41.2
Form of marriage				
Polygamous	13.2	23.2	24.2	22.3
Not currently in union	10.8	9.5	12.8	11.9
Monogamous	75.9	67.3	63.1	65.8
Number of dead children (mean)	1.1	1.1	0.7	0.7
FAMILY PLANNING VARIABLES				
Ever used modern method	45.3	43.6	32.4	43.9
Approves family planning	87.7	86.3	86.5	84.9
	4.3	4.3	3.6	3.6
Total sample size	839	3013	3672	4182

Table 2: Mean Number of Children Ever Born, Ghana 1993-2003

	Ever married men		Ever married women	
	1993	2003	1993	2008
Religion				
Prostesant	4.16	3.81	3.27	3.26
Moslem	4.46	4.32	4.05	3.53
Other Christian	3.67	3.83	3.45	3.44
Traditonal	5.55	5.47	4.00	4.57
Catholics	3.92	4.18	3.65	3.52
SOCIAL DEMOGRAPHIC VARIABLES				
Educational attainment				
None	5.29	5.44	4.29	4.22
Secondary	3.99	3.70	2.31	3.53
Higher	4.27	3.64	2.84	2.90
Primary	3.77	4.05	3.23	2.56
Place of current residence				
Urban	3.86	3.36	3.06	3.02
Rural	4.49	4.72	3.87	3.87
Region				
Northern Ghana	4.99	4.92	3.92	3.84
Southern Ghana	4.09	3.98	3.52	3.46
SOCIO-CULTURAL VARIABLES				
Ethnicity				
Ga-Adangbe	4.19	3.63	3.22	3.29
Ewe	4.17	4.32	3.51	3.49
Mole-Dagbani	4.47	4.67	3.82	3.74
Guan & other	4.75	4.20	4.03	3.59
Akan	4.10	4.02	3.52	3.53
Form of marriage				
Polygamous	7.62	5.62	4.14	4.39
Not currently in union	2.89	2.07	3.16	3.18
Monogamous	3.89	3.85	3.49	3.37
FAMILY PLANNING VARIABLES				
Ever used modern method (yes)	3.19	3.40	3.68	3.62
Never used modern method	4.53	4.92	3.57	3.54
Approves family planning	4.28	4.13	3.64	3.55
Disapprove of family planning	4.25	5.12	3.33	3.70
Overall mean	4.28	4.26	3.60	3.57

Table 3: Poisson Regression Model of Religion and Fertility for Ever Married Women, Ghana 19

	1993		2003	
	Model 1	Model 2	Model 1	Model 2
Religion				
Prostesant	1.00	1.00	1.00	1.00
Moslem	1.23***	1.04	1.08***	1.04
Other Christian	1.05!	1.03	1.05*	1.07**
Traditonal	1.22***	1.06*	1.40***	1.13***
Catholics	1.11***	1.00	1.08*	1.04
SOCIAL DEMOGRAPHIC VARIABLES				
Educational attainment				
None		1.08**		1.06
Secondary		0.78**		0.87***
Higher		0.81**		0.75***
Primary (reference)		1.00		1.00
Place of current residence				
Urban		0.88***		0.86***
Rural (reference)		1.00		1.00
Region				
Northern Ghana		1.01		0.96
Southern Ghana (reference)		1.00		1.00
Current Age		1.27***		1.26***
Age-Squared		0.99***		0.99***
Age at first marriage		0.96***		0.96***
SOCIO-CULTURAL VARIABLES				
Ethnicity				
Ga-Adangbe		0.90**		0.96
Ewe		0.94*		0.95!
Mole-Dagbani		0.95		0.99
Guan & other		1.06		0.99
Akan (reference)		1.00		1.00
Form of marriage				
Polygamous		0.96		0.98
Not currently in union		0.80***		0.81**
Monogamous (reference)				
Number of dead children		1.12**		1.12***
FAMILY PLANNING VARIABLES				
Ever used modern method		1.09***		1.09***
Approves family planning		1.16***		1.05*
Log Likelihood	-8573	-6440	-9736	-7340
Likelihood Ratio	96	4362	149	4940
AIC	4.67	3.5	4.66	3.51

Notes: Statistical significance: ***p<0.001. **p<0.01. *p<0.05. !p<0.10.

Table 4: Poisson Regression Model of Religion and Fertility for Ever Married Men, Ghana 1993-2003

	1993		2003	
	Model 1	Model 2	Model 1	Model 2
Religion				
Prostesant (ref)	1.00	1.00	1.00	1.00
Moslem	1.00	1.06	1.13***	1.02
Other Christian	0.82***	1.01	1.00	1.11***
Traditonal	1.24***	1.08!	1.43***	1.06!
Catholics	0.87***	0.92	1.09**	1.04
SOCIAL DEMOGRAPHIC VARIABLES				
Educational attainment				
None		1.03		1.05*
Secondary		1.01		0.96
Higher		0.88!		0.85***
Primary (reference)		1.00		1.00
Place of current residence				
Urban		0.91		0.85***
Rural (reference)		1.00		1.00
Region				
Northern Ghana		1.14**		1.05
Southern Ghana (reference)		1.00		1.00
Current Age		1.24***		1.23***
Age-Squared		0.99**		0.99**
Age at first marriage		0.97***		0.97**
SOCIO-CULTURAL VARIABLES				
Ethnicity				
Ga-Adangbe		0.93		0.92*
Ewe		0.98		1.02
Mole-Dagbani		0.95		0.99
Guan & other		0.95		1.02
Akan (reference)		1.00		1.00
Form of marriage				
Polygamous		1.28**		1.32**
Not currently in union		0.73***		0.43**
Monogamous (reference)		1.00		1.00
Number of dead children		1.10***		1.10***
FAMILY PLANNING VARIABLES				
Ever used modern method		1.13**		0.99
Approves family planning		1.03		1.02
Log likelihood	-2369	-1592	-8604	-5648
Likelihood Ratio	52	1605	222	6121
AIC	5.6	3.8	5.7	3.7

Notes: Statistical significance: ***p<0.001. **p<0.01. *p<0.05. !p<0.10.

[1] Some of the well-known groups in Ghana are the Jehovah's Witnesses, the Seventh Day Adventists, the Church of Christ, the Church of Pentecost, Christ Apostolic Church, African Tabernacle Church, Musama Disco Christo Church, and the Eden Revival Church.

[2] According to data from the 2000 Ghana Census of Housing and Population, Ghana's population is distributed as follows: Christians (69%), Traditionalists (8.5%), Muslim (15.6%), others (6.9%).

[3] According to the available data, fertility levels in Ghana have declined in recent years; from 6.0 births per woman in the mid-1980s to about 4.6 births during the latter part of the 1990s (Ghana Statistical Service (GSS) and Macro International Inc., 1999).