Proximate Determinants of Fertility in Ghana: An Analysis of Method of Estimation

Edmund Essah Ameyaw*, Margaret Delali Badasu**, Samuel N.A. Codjoe**

**Department of Mathematics, Howard University, Washington, DC 20059, USA*
***Regional Institute for Population Studies, University of Ghana*

ABSTRACT

While studies have indicated the onset of fertility transition in Ghana, in most Sub-Saharan countries, no systematic attempt has been made to identify the factors responsible for this trend. Accordingly the present study was based on the Bongaarts framework and its reformulation by John Stover to examine the proximate determinants of fertility over three sets of surveys in Ghana.-1998, 2003 and 2008 Ghana Demographic and Health Survey (GDHS). The proximate determinant of fertility frameworks holds that all demographic, socioeconomic, cultural, institutional, psychological, health and environmental factors (background variables) operate through the proximate or intermediate variables to affect fertility. The methodology of the three GDHS is not too different from each other. They are nationally representative cross-sectional survey of women aged 15 to 49 years in 1998, 2003 and 2008. In all 4843 female respondents aged 15-49 years were interviewed in 1998, 5691 in 2003 and 4916 in 2008. In the Bongaarts model, the index of postpartum infecundability had the highest inhibition effect at all three survey years. In Stovers reformulation, on the other hand, it was the second highest inhibitor which is at variance with results from the Bongaarts model, The index of sterility for Bongaarts model for all three survey years was 1.00 whereas for the Stover's reformulation the indices were 0.85, 0.89 and 0.92. For 1998, 2003 and 2008 respectively. The difference in the index of sterility in the two models may be attributable to the use of all forms of sterility by John Stovers whiles Bongaarts model uses only pathological sterility. The use of sexual activity rather than marriage is also a better measurement of inhibiting factor associated with pregnancy risk since non-marital sex has been high in Ghana.

KEYWORDS: sexual activity, contraception, post-partum infecundability, fertility decline, proximate determinants, Ghana

INTRODUCTION

Methods of estimating demographic phenomenon have been a critical aspect of population studies. Fertility – the number of live births women have – is a major component of population dynamics and, therefore, its estimation has sometimes been more fluid than static. A number of methods have been proposed and used in estimating the determinants of fertility (Bongaarts et al 1984; Bongaarts 1986; Stover 1998). In this paper, drawing on Tutu's (2011) neo-residual method of estimating induced abortion, I apply Bongaarts model and Stover's 1998 reformulation method to the Ghana Demographic and Health Survey data (1998, 2003, and

2008) in order to assess the differences in their formulations in estimating the determinants of fertility.

METHODOLOGY

Bongaarts model of the analysis of proximate determinates of fertility was used to estimate the fertility inhibiting effects of the proximate determinants of fertility. The fertility-inhibition effects of the proximate determinants are determined by the following indices: marriage (Cm), postpartum infecundability (Ci), contraceptive use (Cc), and induced abortion (Ca).

The indices can be expressed in a form in which fertility is reduced as a result of the corresponding inhibiting effects as follows.

$$TFR = C_m \times C_c \times C_a \times C_i \times C_p \times TF$$

$$TMFR = C_c \times C_a \times C_i \times C_p \times TF$$

$$TNMF = C_i \times C_p \times TF$$

Stover's (1998) formulations will be used to estimate the proximate determinants indices to assess their inhibiting effect on fertility. as stated below:

$$TFR = C_x \times C_c \times C_a \times C_i \times C_f \times PF$$

$$C_x = s$$

$$C_i = \frac{20}{18.5 + i}$$

$$C_a = \frac{TFR}{TFR + 0.4 \times (1 + u \times e) \times TAR}$$

$$C_f = 1 - f$$

$$C_u = 1 - u \times e$$

where s = proportion of women aged 15-49 who are sexually active (where sexually active means active in the last month or pregnant or abstaining postpartum); i = the mean duration (in months) of postpartum insusceptibility; u = the proportion of sexually active, fecund women using contraceptives that does not overlap with that experiencing postpartum amenorrhea; e = the average effectiveness of contraception; TAR = the total abortion rate; f = the proportion of sexually active women who are infecund; and PF = the index of potential fertility.

John Stover in 1998 did some modification in the Bongaarts model. This paper compares the Bongaarts model with the Stovers reformulation.

RESULTS

Figure 1: Bongaarts model: Indices of the Determinants of Fertility

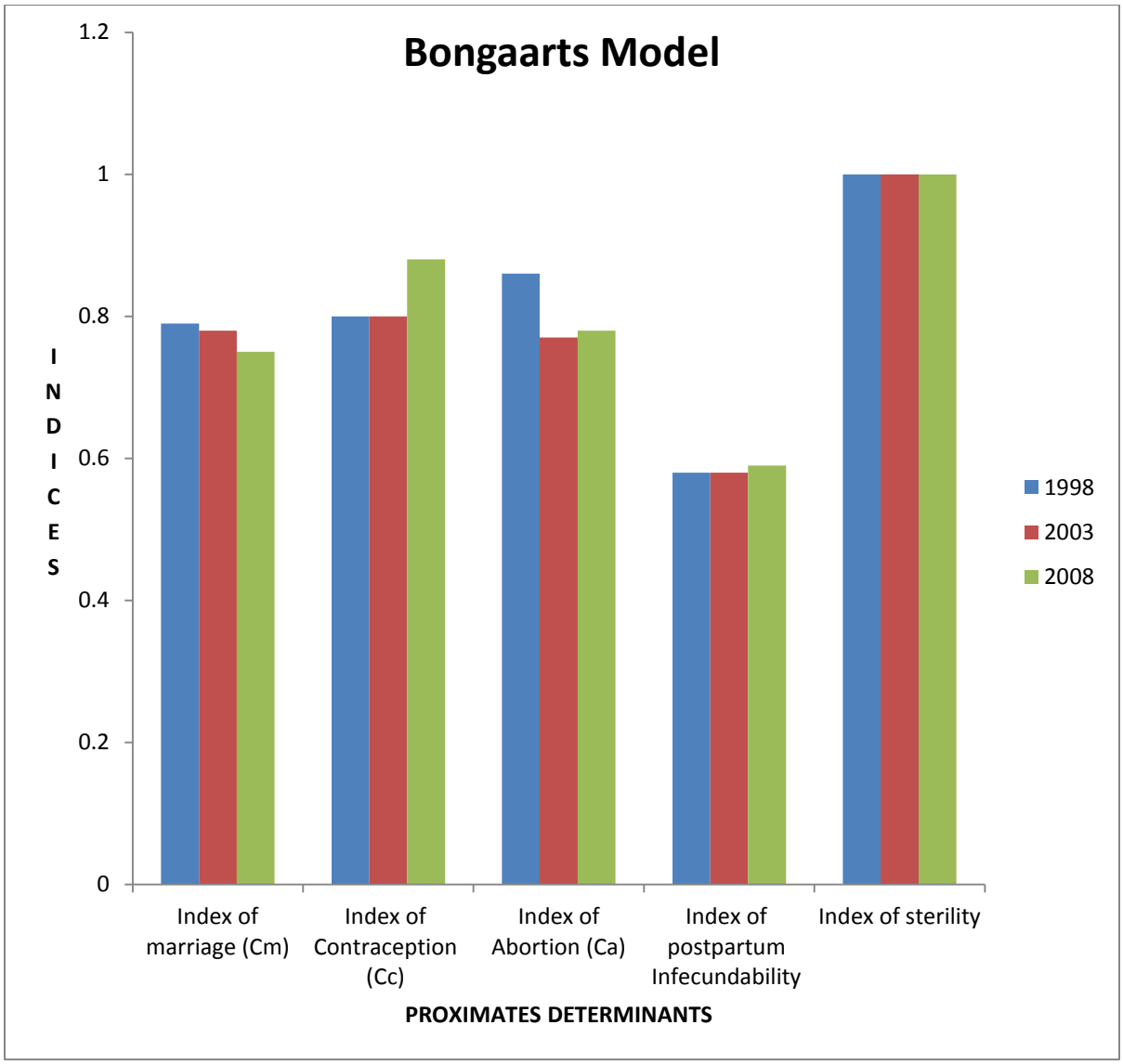
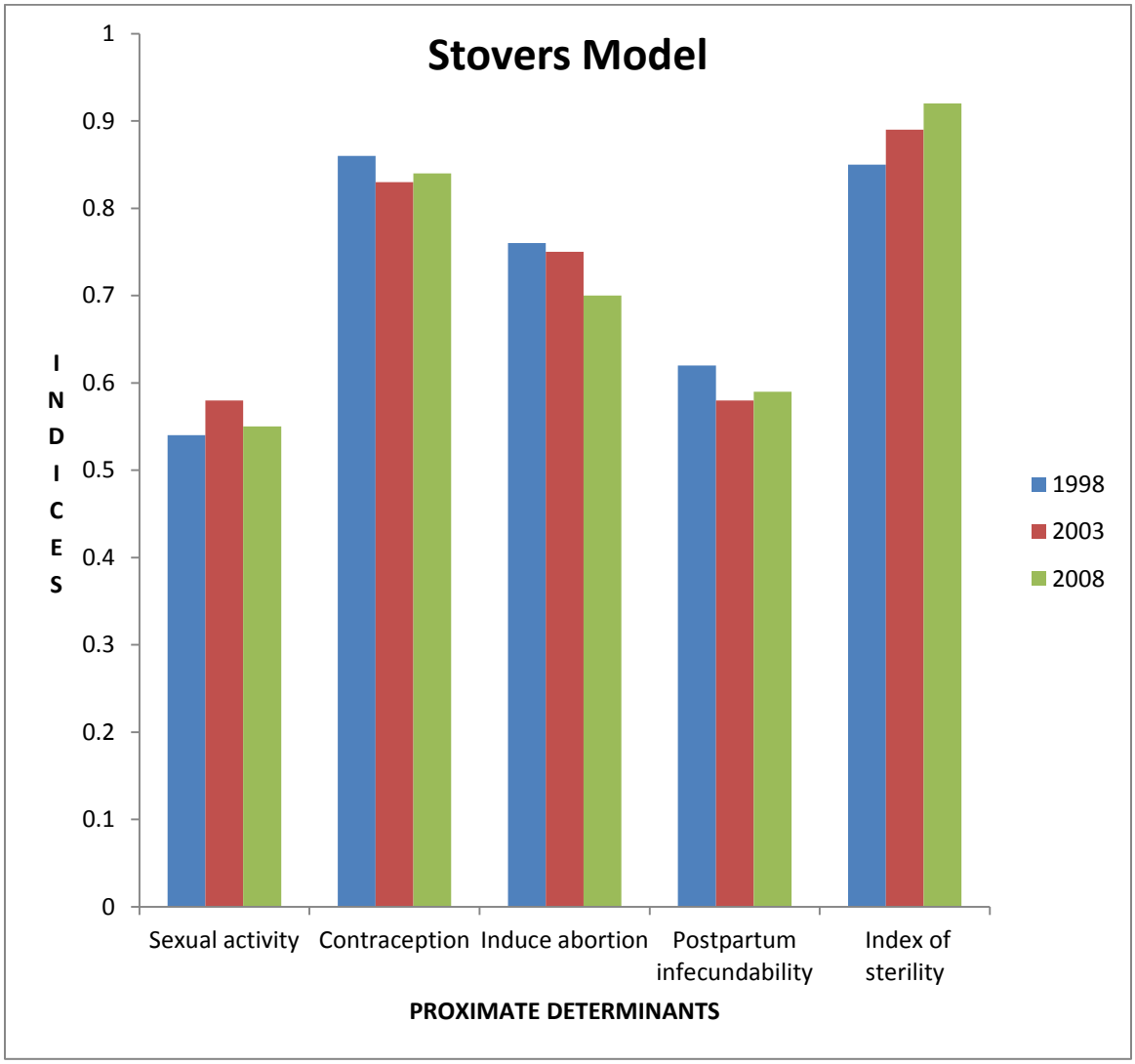


Figure 2: Stovers model: Indices of the Proximate Determinants of fertility.



In the Bongaarts model, the index of postpartum infecundability had the highest inhibition effect in all three survey years. The indices were 0.58, 0.58 and 0.59 in 1998, 2003 and 2008 respectively. This was in conformity with the studies of Tutu (2011), Gaisie (2005), Chucks (2002). In the Stover reformulation, the indices of postpartum infecundability were 0.62, 0.58 and 0.59 in 1998, 2003 and 2008 respectively. In this case, the postpartum infecundability index was the second highest inhibitor which is at variance with results from the Bongaarts model. However, the indices of postpartum infecundability for the two models were almost the same for all three surveys years. The index of sterility for Bongaarts model for all three survey years was 1.00 whereas for the Stover's reformulation the indices were 0.85, 0.89 and 0.92. for 1998, 2003

and 2008 respectively. The difference in the index of sterility in the two models may be attributable to the use of all forms of sterility by John Stovers whiles Bongaarts model uses only pathological sterility. The introduction of other measurements associated with sexuality as done by Stover therefore reduces the relative effects of postpartum infecundability.

CONCLUSION

It is important for demographers to use Stovers model instead of the Bongaarts since non-marital childbearing has become prevalent in African population including Ghana. Fertility can be examined not with respect to marriage but sexuality. It should be noted that young unmarried girls have contributed about 10 percent of births in Ghana over the past few decades. Any examination of fertility transition must therefore use sexual activity instead of marriage.

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