Fertility transitions in Africa at the sub-national level

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Fertility decline has spread to most of sub-Saharan African countries over the last two decades (Kirk and Pillet, 1998; Shapiro, 2007; Tabutin and Schoumaker, 2004). While in the mid 1980s only a few countries had experienced a significant decrease of its fertility, by the early 2000s, fertility had started to decline in approximately three countries out of four (Tabutin and Schoumaker, 2004). Studies have shown that the pace of fertility declines vary greatly from one country to another (Garenne and Joseph, 2002; Tabutin and Schoumaker, 2004). More recently, several studies have documented, the stalling of the transition in some countries like Kenya and Ghana (Bongaarts, 2005; Westoff and Cross, 2005; Shapiro 2007).

Most analyses of fertility transition in sub-Saharan Africa have focused on cross-country comparisons for several sub-Saharan African countries (Kirk and Pillet, 1998; Tabutin, 1997; Tabutin and Schoumaker, 2004). Some studies have also included urban-rural differentials in a comparative perspective (Shapiro and Tambashe, 2003; Shapiro and Gebreselassie, 2007), but very few research has been done at the regional level (Tabutin and Schoumaker, 2001). Yet, a regional perspective on fertility levels and trends has several advantages over cross-country comparisons. First, the number of units of analyses is significantly higher in a regional approach: in their 2001 study on a regional analysis of fertility in Africa, Tabutin and Schoumaker (2001) used data on 172 regions from 32 countries. As a consequence of this greater number of units, the diversity of situations is also much greater in a regional approach than in cross-country comparisons. In the most recent DHS surveys, fertility is as low as 1.4 children per woman in the Addis Abeba region (2005 DHS), and as high as 8.7 children in the Maradi region in Niger (1998 DHS). The diversity in terms of fertility trends is also much greater at the regional level than at the national level. While some areas – especially the regions including capital cities – have experienced very rapid fertility declines over the last 15 years, many regions (but not many countries…) experience stagnating or increasing levels of fertility. Another interest of a regional approach is to allow the identification of spatially homogeneous areas in terms of fertility levels and trends that cross country boundaries.

Objectives

With this in mind, the objective of this paper will be to describe and try explaining fertility levels and trends at the regional (sub-national) level in sub-Saharan Africa, using all the available demographic and health surveys data collected since the mid 1980s. This paper will extend the previous work on this topic by the same authors (Tabutin and Schoumaker, 2001), in three respects: (1) the study will be based on more recent surveys with more varied experiences of fertility transitions, and will also include a larger number of countries with several DHS surveys; (2) The role of proximate determinants in fertility levels and trends at the regional level will be analyzed through the Bongaarts model; (3) explanatory models of fertility levels and trends will use Poisson regression and take into account both individual and aggregate level variables.

The first part of the paper will be descriptive and will consist in describing levels and trends of general fertility and its main proximate determinants (age at first union, contraception, post-partum insusceptibility) at the regional level. This part will notably be used to identify regions with exceptionally high and/or stable fertility levels, as well as regions with stalled fertility transitions. In the second part of the paper, we will analyze the relationships between fertility levels and trends and the main proximate determinants of fertility using the Bongaarts model. Through this approach, it will be possible to identify the major “bottlenecks” of fertility transitions in the regions with stagnating fertility. The third and last section will be devoted to the analysis of the influence of socio-economic

and demographic factors (education, standard of living, child mortality…) on fertility levels and trends at the regional level. Special attention will be given to the identification of factors linked to the stalling fertility transitions. Previous works have suggested that faltering of economic development may be the cause of the stalling of fertility decline (Bongaarts, 2005), but there is a lack of conclusive evidence in Africa (Shapiro and Gebreselassie, 2007). The innovative part of this section, in addition to the use of regions as units of analysis, will be to include both individual and regional level factors in explanatory models.

Data

All the demographic and health surveys available as of 2007 will be used for this paper. Overall, they cover about 35 countries and almost 200 regions. The most recent surveys will be used for the description and analyses of determinants of fertility levels. Fertility trends will be analyzed at the regional level for countries with several DHS surveys with comparable definitions of regions in the successive surveys. Overall, comparable data at several points in time is available on more than 70 regions in Sub-Saharan Africa.

Although levels of fertility and proximate determinants are often published in DHS reports, individual data files will be used for two major reasons. First, aggregate data on important socio-economic factors – like the standard of living using the wealth index - are not always published for regions (especially in older surveys) and necessitate using individual data files. Secondly, and more importantly, our analyses of socio-economic determinants of fertility will use both individual as well as aggregate explanatory variables.

Methods

In the first section, standard demographic methods (computation of total fertility rates, age at marriage, contraceptive prevalence, duration of insusceptibility) and cartographic tools will be used to describe fertility levels and trends. In the second section, the Bongaarts model will provide an assessment of the impact of the proximate determinants on fertility levels and changes. Poisson regression models will be used for analyzing the socio-economic determinants of fertility levels and trends (Schoumaker, 2004). This approach provides a flexible framework for analyzing the effect of both individual and aggregate factors on fertility rates and trends.

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