Economic Crisis and Fertility in Zimbabwe

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Introduction

Close to two decades ago, the economy of Zimbabwe began to deteriorate to unprecedented levels at unprecedented rates. Since then, standards of living have declined, and because of the economy's elastic response to major political events (see Figure 1), the economic environment in the country has generally been one of uncertainty (Raftopoulos 2009). Demographic theories suggest that such dramatic change in the socioeconomic context in which reproduction and reproductive decisions occur should affect fertility trends and reproductive behaviors. In addition, an environment of uncertainty – created by rapidly changing economic conditions, in and of itself, may affect reproductive behavior in ways which can be important for individual and/or national trends (Johnson-Hanks 2005; Johnson Hanks 2007; Trinitapoli and Yeatman 2011). This paper examines the relationship between short-term fluctuations in economic conditions and fertility in Zimbabwe between 1996 and 2009. Although the fertility transition in Zimbabwe is quite well-documented, its relationship to the economic crisis is not established.

Socioeconomic development features in several prominent demographic theories about fertility decline. The classic demographic transition theory suggests that economic development is a precursor of fertility decline (Notestein 1953). Empirical studies have not, however, found a strong link between the start of fertility decline and improvements in economic development (for example Knodel and van de Walle 1979; Coale and Watkins 1986; Cleland and Wilson 1987; Bongaarts and Watkins 1996; Dribe, Oris et al. 2014). The ideational theory of fertility decline suggests that the spread of norms and ideas

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about fertility control and small family size may influence fertility decline, even in places with low levels of development (Cleland and Wilson 1987; Hirschman 1994; Bongaarts and Watkins 1996). Microeconomic theories of fertility focus on how much couples have to spend and how they rank having children relative to their other needs (Becker 1960; Schultz 1973). Easterlin's (1975) theory focuses on the balance between the supply and demand of children, and the different types of costs associated with birth control.

Hypotheses about crisis-led fertility transitions (Lesthaeghe 1989; Eloundou-Enyegue, Stokes et al. 2000), where the occurrence of a crisis facilitates fertility decline, relate more directly to the situation at hand, where economic growth has downturned. This phenomenon might be precipitated by worsening educational and employment prospects - even among the educated - or high costs of raising children (Boserup 1985; Lesthaeghe 1989). Grim future employment and economic prospects may also encourage parents to postpone or limit childbearing (Boserup 1985; Lesthaeghe 1989; Gurmu and Mace 2008). In addition, reduced access to or not affording food may increase malnutrition and reduce women's fecundability, which will likely lead to a decline in fertility (Bongaarts 1982). Having children may, however, be a way for parents to ensure support in later life (Eloundou-Enyegue and Stokes 2007), or during periods of economic decline. The exposure to uncertainty may therefore be dealt with by having fewer or more children (Johnson-Hanks 2006; Trinitapoli and Yeatman 2011; Sennott and Yeatman 2012).

Economic crisis may also affect fertility by altering the timing and nature of marriage. Steep brideprice demands are likely to be an issue in Zimbabwe, as are costs of setting up a home (Palloni, Hill et al. 1996). A likely by-product of economic crisis is separation of spouses through migration for economic reasons, and it is expected to reduce coital frequency (Timæus and Graham 1989; National Research Council 2004), and consequently fertility. On the other hand, spousal separation may encourage formation of alternative unions, potentially countering the fertility-inhibiting effects of spousal separation (National Research Council 2004). Separated spouses might also make up for their separation once they reconcile (Agadjanian, Yabiku et al. 2011). Economic crisis can make it more lucrative for young women

to forgo marriage at the expense of other economically beneficial nonmarital relationships with older or married men or prostitution. Economic crisis may also affect fertility by changing the status of men and women in relationships. Men can get stripped of their statuses as family heads or breadwinners; through increased migration, reduction in wages, or if women need to seek paid employment to supplement household income (Palriwala and Risseeuw 1996; Silberschmidt 2001).

Whether the expected effects of the changing economic climate on fertility outcomes in Zimbabwe are actually pro- or counter-cyclical is undoubtedly ambiguous (Palloni, Hill et al. 1996; McGinn 2000). In reality there is limited evidence that crises have had sustained effects on fertility decline. Eloundou-Enyegue, et al. (2000) find that the decline in economic conditions after 1987 in Cameroon was associated with fertility decline in the same period. A larger study including seven sub-Saharan countries had previously produced findings consistent with crisis-led fertility decline (National Research Council 1993). There is evidence that other forms of crises may have had short-term effects on reproductive patterns in sub-Saharan Africa: war in Angola (Agadjanian and Prata 2002) and Eritrea (Blanc 2004; Woldemicael 2008), and a combination of war, famine and economic crisis in Ethiopia (Lindstrom and Berhanu 1999). The response to crises may differ based on the duration of the crisis (Palloni, Hill et al. 1996). In the long term, couples may acclimatize to adverse conditions and uncertainty, resulting in small effects (National Research Council 2004).

This analysis adds to demographic literature which examines how crises relate to demographic trends. In contrast with prior studies on these phenomena in sub-Saharan Africa, this paper examines changes in reproduction in light of dramatic economic decline in a country with relatively high contraceptive use and high HIV prevalence. The findings will be useful for informing possible future trajectories for Zimbabwe and other countries in sub-Saharan Africa.

Fertility transition in Zimbabwe[2]

The population of Zimbabwe stood at around 14 million in the 2012 National Census, and it has been growing at an average of 2.81% per annum (between 2010 and 2015) (United Nations Department of Economic Social Affairs 2013). Fertility decline began in urban areas of Zimbabwe in the 1970s, and together with Botswana and Kenya, the three countries led the fertility transition in sub-Saharan Africa (Garenne and Joseph 2002; Tabutin and Schoumaker 2004). Several measures have corroborated the fertility transition; for instance, the TFR halved, declining from about 7.6 to 3.8 children per woman between the early 1970s and 2006 (Central Statistical Office 2007); birth intervals increased from around 30 to 55 months between 1970 and the early 2000s[3] (Sayi 2009); and parity progression ratios declined such that while 95 percent of women in the 1960 birth cohort progressed to their third birth by the end of their reproductive lifespan, only 75 percent of the 1975 birth cohort did so (Cohen 1993; Muhwava 2004; Sayi 2009). However, after decades of decline, the 1999 DHS showed that fertility decline had slowed down, and by the 2010/11 survey (hereafter 2011), fertility had increased to 4.1 children per woman (Central Statistical Office 2012).

There have been changes in both wanted and unwanted fertility. Wanted fertility fell from 4.4 in 1988 to 3.3 in 2006, but increased to 3.5 in 2011. Between 2006 and 2011, there has been a decrease in proportions of women who want one or two children and an increase in women who prefer 4 children. Among men, there was an increase in proportions that are undecided and unsure when they want to have more children which was less apparent among women. Unwanted fertility was almost halved, falling from one child per woman in 1988 to 0.6 in 2011, only slightly increasing since 2006. The combination of steadily increasing birth intervals and increasing or stagnating fertility, suggests lower age at first birth and/or higher fertility at older ages among Zimbabwean women. The median age at first birth has, however, been more or less constant, around age 20, suggesting that changes in childbearing at older ages may be a more important factor. Fertility has increased between ages 20 and 40 in recent surveys.

[2] Unless cited otherwise, the statistics used here were computed with or extracted from DHS data and reports.
[3] For women who have completed childbearing.

Changes in marriage patterns have been less pronounced than those in fertility. Median age at first marriage has changed slightly, and it has consistently lied between 19 and 20 years. First sex occurs about a year before marriage, and the age at sexual debut has been fairly constant over time. Proportions ever married were constant at about 73 percent between 1988 and 2006, increasing to 76 percent by 2011. A recent decomposition of fertility change in successive surveys in Zimbabwe indeed finds that compositional changes in proportions ever married had much smaller contributions to fertility change (about half) compared with changes in fertility rates of married women (Sayi 2014).

Family planning in Zimbabwe

Among countries in sub-Saharan Africa, Zimbabwe has one of the highest contraceptive use rates. Contraceptives are mainly provided by the Zimbabwe National Family Planning Council (ZNFPC) program, which was formed in 1985. 60 percent of married women were using contraceptives in 2011, compared with 40 percent in 1984 (Central Statistical Office 2012). While the contraceptive prevalence rate (CPR) has increased between these time points, it has plateaued around 60 percent since 2005. The pill is the main method used by women in Zimbabwe, and it has increased in prevalence over time to 41 percent among married women.

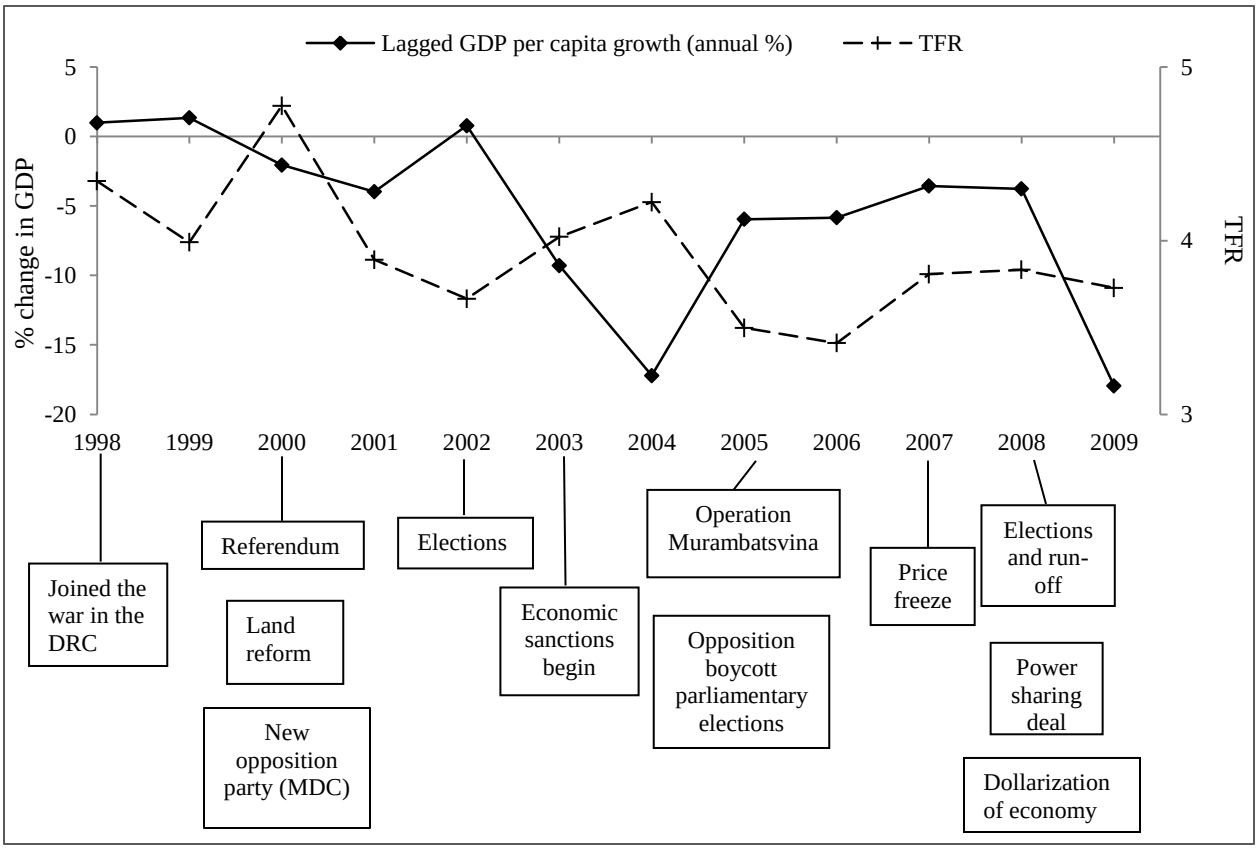
While the CPR has been going up, so have contraceptive discontinuation rates. The overall 12-month contraceptive discontinuation rate among new users was 19 percent in 1994, and by 2011, it had risen to 24 percent. In addition to desiring a pregnancy, women mainly discontinued contraception because of side effects. Discontinuation rates were highest among condom users (37 percent in 2010/11) for fertility-related reasons (infrequent sex, spousal separation, menopausal), than among pill (21 percent) and injection (33 percent) users. Many Zimbabwean women – ranging between 60-80 percent over time – obtain contraceptives from the public sector. The majority of public sector sources are government-sponsored facilities. There has, however, been a steady increase in women obtaining contraceptives from the private sector. Overall unmet need for contraceptives has declined from 15 percent in 1988 to 13 percent in subsequent surveys. Unmet need for limiting had been fairly constant between 8.2 and 8.5

percent before 2011, but in 2011, it declined to 5.9 percent. Unmet need for spacing declined from 10.6 percent in 1994 to 7.2 percent in 2006, then increased to 8.7 percent in 2011. The contribution of unmet need for limiting to total unmet need has therefore begun to decline in the most recent years. In addition, the proportion of women who were using contraceptives to space births increased over time, while the proportion using to limit decreased in recent years.

The changing economic context

In a parallel realm, the socioeconomic situation was also changing. Although there had been hits to the economy of Zimbabwe since its independence in 1980, there was a series of events beginning around 1998, following which the economy was catapulted into demise. A timeline of some major events is shown in Figure 1; which also shows the TFR, and the lagged percent change in GDP per capita since 1998[4].

Figure 1: Timeline of political events, TFR, and change in GDP



Source: GDP growth: Human Development Index. TFR: ZDHS 2011.

The resulting mass exodus of foreign companies, decline in production, economic sanctions, liquidity crises, inflation and political tensions were some of the factors which affected GDP and changes in the GDP (Bond 2007; Raftopoulos 2009; Mlambo, Vambe et al. 2010). These processes resulted in shortages of, or inability to afford essentials such as water, electricity, healthcare, sanitation, and food; and a decrease in jobs and education standards (Glantz and Cullen 2003; Kapp 2007; Anonymous 2008; Raftopoulos 2009; Nyazema 2010). Intermittently, events such as elections, the dollarization of the economy, and the formation of a coalition government appeared to have positive effects on the GDP (Raftopoulos 2009; Noko 2011; Bate 2012).

Figure 1 shows that changes in the TFR may be correlated with changes in the socioeconomic context: there is congruency in the fluctuations of the TFR, the annual percent change in GDP, and occurrence of major political events. Before 2005, when the GDP growth declined, fertility increased, and when GDP growth increased, fertility decreased. Between 2005 and 2008, GDP and fertility both increased. These statistics suggest that the two processes may be related, but that the relationship is changing over time.

Data and Methods

This section describes the statistical analysis of the relationship between economic change and fertility trends. The data for the analysis come from the nationally representative 2011 Zimbabwe DHS. This survey collected retrospective birth histories from 9,171 women aged 15 to 49; 6,839 of whom had ever married. The analysis includes only ever married women or woman who had ever lived with a man. The analyses are restricted to the first four parities, where the majority of births are constituted. The empirical analysis proceeds as follows. The first set of models estimate the log odds of giving birth in each year, net of the long-term trend in fertility (National Research Council 1993; Eloundou-Enyegue, Stokes et al. 2000). In this model, the year is considered to capture the progress of economic crisis (see Figure 1). The

model is estimated for the years between 1997 and 2009, with the reference category being the time before 1997. The estimation is made using a discrete-time logistic model (Allison 1982; Yamaguchi 1991) of the form:

$$ln(\pi_{tj}/1-\pi_{tj}) = \alpha_0 + \sum \beta_l year_{tjl} + \sum \beta_k z_{tjk} + \varepsilon$$

where π_{tj} is the probability of woman j giving birth in year *t*, $year_{tjl}$ are dummy variables representing each year from 1997 to 2009; z_{tjk} are social and demographic controls. After fitting the models, the probability of giving birth in each year - net of long-term trend - is then estimated.

To fit the models, the birth history data are converted to a person-period file. Women are exposed to first birth from the time of first sex. They are exposed until they have their first child in a particular year and become censored; or until the time of survey. For exposure to higher order births, a woman enters the risk pool when she has the index child *i*, and remains exposed until she has the *i+1*th child in year *t*, at which time she becomes censored; or until the survey. From the time that a woman enters the risk pool until she has the *i+1*th child or until the time of survey, each year of exposure forms a separate observation in the person-period file. The models are fitted separately at each parity. Because women can contribute multiple episodes to the data, standard errors are clustered by woman. The models include controls for rural/urban residence, region, highest achieved education level, age at birth of the index child (and age squared, both centered at the mean), religious affiliation (Christian vs. other), whether the index child *i* was alive or dead, gender of the index child *i*, the duration in the birth interval, and the annual aggregate CPR (see Appendix I).

Additional analyses not presented here will test the effects, on the coefficients of period dummies, of measures of economic performance such as GDP and employment rates. Analyses will also be stratified by rural/urban residence, because of prior indication that the transitions in the two areas have been different. There are a number of possible sources of error in these analyses. The study utilizes reports of birth histories which were collected retrospectively from women, implying that women who emigrated, or those who died will be underrepresented in the analysis. In addition, when data are collected

retrospectively, omission of dead children may occur, and dates of birth are subject to misreporting. This analysis, in addition, does not address the relationship where demographic changes may have an effect on socioeconomic variables. Another complication in the analysis of the relationship between economic change and fertility in Zimbabwe is the concurrency of the HIV epidemic with changes in economic climate. The progress of the epidemic is shown in Appendix II. Because of the endogenous relationship between HIV and fertility, and because of the complexities of quantifying the intentional and unintentional effects of HIV on the fertility of HIV+ and HIV- women (Zaba and Gregson 1998), the role of HIV is not examined in this analysis.

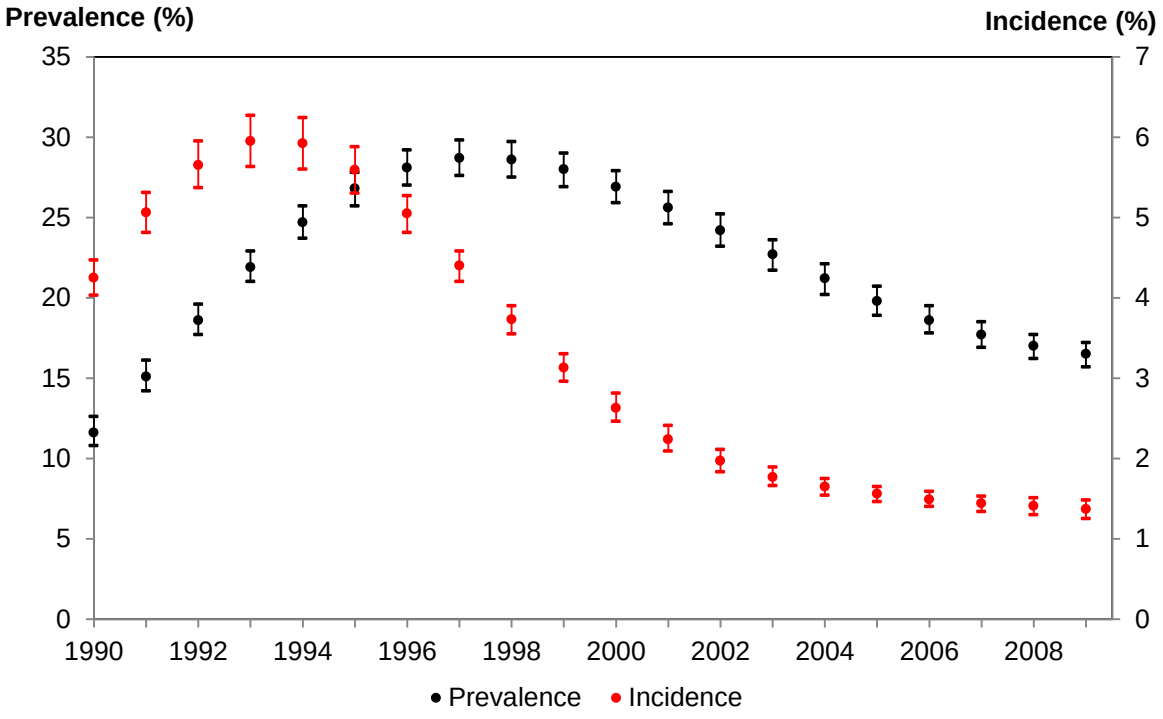
Appendices

Appendix I: Contraceptive prevalence rate by year

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Median Estimate	49.9	51.2	52.3	53.4	54.3	55.3	56.2	57.2	58	58.8	58.9	59	59.1	59.1

Source: United Nations, Department of Economic and Social Affairs, Population Division (2014). Model-based Estimates and Projections of Family Planning Indicators 2014. New York: United Nations.

Appendix II: HIV prevalence and incidence by year



Source: unaids.org

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