

Poverty and Fertility: Panel Data Evidence from Jamaica

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Abstract

The determinants of fertility and poverty have been the focus of research both by economists and demographers. Jamaica is a middle income country with low rates of infant mortality and total fertility. Children account for 39 per cent of Jamaica's population of 2.6 million. Although the overall poverty rate declined from 26 per cent in 1996 to 16.9 per cent in 1999, children account for 43 per cent of all poor, most of whom are in rural areas (UNICEF, 2005). Using a panel of households constructed from the Jamaican Survey of Living Conditions (JSCL), we examine the link between fertility and poverty in Jamaica.

Key Words: Fertility, Poverty, Jamaica

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INTRODUCTION

The small Caribbean island nation of Jamaica with a land area of 11,000 km² forms part of the Latin America and Caribbean region. The country's population at the end of 2004 was estimated to be about 2.64 million (Table 1). Based on the World Bank's methodology for classifying countries, Jamaica is classified as a Lower Middle Income country with a Gross National Income of US \$2, 820. Notwithstanding its low rate of economic growth for much of the last decade, Jamaica has experienced high and rising social indicators and was ranked 78th based on a recent Human Development Index of the UNDP.

A look at the demographic characteristics over the period 1990-2004, reveal a shift in the population structure as a result of improved mortality and declining fertility. In the case of the former, better health practices that started in the 1920s is the main contributing factor, while in terms of the latter it is the family planning policies of the 1960s and 1970s. However, notwithstanding the declining/constant fertility rate, Jamaica's adolescent fertility rate (births per 1000 for women 15-19) figure for 2003 is relatively high at 81 (World Development Indicators, 2005).

The above factors (i.e. improved mortality and declining fertility) have led to Jamaica having an aging population with an increase in the proportion of persons 65 years and over since 1970 (5.4 per cent to 9.2 per cent in 2002) and in the proportion of working age population- 49.8 per cent to 58.2 per cent in 2002. Moreover, data from Household Expenditure Surveys (HES) combined with those from the Jamaica Survey of Living Conditions (JSLC) and Population Censuses show that between the decades of the 1970s and 2001, the share of the population in the 0-14 age group was some 12 percentage points less; the share of the 15-64 age group (the working age population) about 11.0 percentage points higher, and the share of the 65 plus age group a little over 3.0 percentage points more (JSLC, 2002).

The national age dependency ratio (ADR) has declined from 101 in 1975 to 72 in 2002. This however contrasts with the steady increase in the ADR for the 65 + age group since the 1970s. In terms of regions, the working age population in the Rural Areas generally bears a higher burden of caring for children and the elderly compared

to their counterparts in the Kingston Metropolitan Area (KMA) and Other Towns. The Rural Areas have the highest percentage of persons in the 0-14 age group and the lowest percentage of persons in the working age population (15-64). Additionally, the highest percentage of persons 65 years and over resides in the Rural Areas. Thus with the exception of 2000 and 2001, when Other Towns had a higher ADR, the ADR has been the highest in the Rural Areas (JSLC, 2002).

Table 1: Selected Socio-Economic and Demographic Indicators, Jamaica

	1990	1995	2000	2001	2002	2003	2004	2005
GNI per capita (US \$)			2940	2940	2940	3090	3300	
Real GDP Per Capita (Constant US \$)	4123.4	3808.1	3691.9					
Real GDP Growth (%)	3.8		0.8	1.5	1.1	2.1	1.2	1.4
Total Population (Mns.)	2.41	2.5	2.59	2.60	2.62	2.63	2.64	
Population Growth (annual)			0.6	0.6	0.5	0.6	0.5	
Rural Population (% of total)								
Total Fertility Rate (TFR)	2.7	2.7	2.5	..	2.8	2.4	2.4	
Life Expectancy at birth (years)	71.5	71.6	71.03	70.7	70.69	70.76	70.83	
Child labour (% of 0-14 age group)								

Sources: Medium Term Social and Economic Policy Framework 2004-2007; Millennium Development Goals: Jamaica (2004); World Development Indicators, 2005 and 2006.

Jamaica's aging population is reflected in three distinct characteristics of the population aspects. First, the country has a declining 0-14 age group. Second, there is an increasing working age group, particularly among persons 30-59 years, and third, an increasingly elderly (60+) population (ESSJ, 2004).

Since the mid 1990s, there has been a general decline in the incidence of poverty; the rate falling from 27.5% in 1995 to 19.7% in 2002. However, the figure for 2002 represented an increase from 16.9 per cent in 2001. In fact, in that year the incidence returned to the 1997 level, indicating an upward trend since 1999. The increase in

incidence occurred for all regions, with the largest increase in Other Towns (from 13.3 – 18.7 per cent).

In terms of regions, poverty is mainly concentrated in the rural areas with rural residents consistently experiencing higher incidence of poverty compared to other areas (see Table 2) while in terms of age groups, children (0-18 years), is the group most adversely affected. For example in 2002, children accounted for 47.8% of persons living in poverty although they represented 38.9% of the population.

Table 2: Incidence of Poverty by Region (1992- 2002)
(%)

Region	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
KMA	18.8	16.7	13.8	15.0	17.2	9.3	8.6	10.6	9.9	7.6	10.4
Other Towns	29.9	22.9	20.0	22.8	22.0	14.8	13.4	12.1	16.6	13.3	18.7
Rural Areas	42.2	29.6	28.8	37.0	32.8	27.4	19.5	22.0	25.1	24.1	25.1
Jamaica	33.9	24.4	22.8	27.5	26.1	19.9	15.9	16.9	18.7	16.9	19.7

In the face of a constant or declining fertility rate, the mean household size has been steadily falling. In 2002, it stood at 3.5 (down from 3.9 in 1992 and 4.2 in 1970). The Rural Areas were in a more vulnerable position compared to the Kingston Metropolitan Area (KMA) and Other Towns in that they had the highest mean household size, the highest absolute household size, and the highest mean number of children. Of the total amount of households surveyed, 45.5 per cent were headed by females. This represented a 3.5 percentage point increase over 2000. Additionally, female-headed households had a larger mean household size (3.75 persons) than male-headed households (3.23 persons). Moreover, they are likely to have more children and be in the lowest consumption quintile. According to the JSLC 2001, 72.0 per cent of households headed by women have no spouse, compared to those headed by men, which had spouses in 70.0 per cent of the cases. Finally, households in the poorer quintiles were larger than those in the wealthier quintiles.

According to the document detailing Jamaica's current status in relation to meeting the Millennium Development Goals of the eradication of extreme poverty and hunger, concerns remain over chronic public and private poverty in the rural areas as well as chronic public poverty in some marginalized urban communities.

REVIEW OF THE LITERATURE

The link between population growth and economic wellbeing is one of the most disputed research areas among economists and demographers (Birdsall et al. 2001). The general empirical observation that poorer countries tend to have higher population growth rates and that larger households tend to be poorer, underlies the presumption of a positive causal relation between poverty and fertility at the national and household levels respectively. The macro level argument on this issue relies on the neo-classical paradigm that a higher population growth rate depresses capital accumulation and wages. Poverty in turn is considered as a key factor in driving high fertility and therefore high rates of population growth. Consequently it is seen as a crucial element in delaying the demographic transition. However, as stressed in McNicoll (1997) these theoretical assertions are not sufficient: time-lags, feedback mechanisms, nonlinearities and reverse causation enter the picture. Moreover, the link between poverty and fertility is likely to be an institutionally contingent relationship. Consequently any generalisation that neglects those institutional settings is likely to fail.

A similar argument applies at the micro-level. Individual level fertility behaviour adjusts to changes in perceived and actual costs and benefits of children. Economic forces, social organisations and cultural patterns in turn influence prices that determine costs and benefits of children. Not only will the poverty and fertility link be dependent on the social and institutional environment, there will also exist policy instruments that impinge on both processes. These include education, health services and family planning policies. Only a better understanding of those factors that are determinants of both processes will assist us in designing better policies in terms of breaking the negative poverty – fertility spiral (Birdsall and Griffin, 1988).

Whereas existing studies have relied on either cross sectional micro data or aggregate level data, this study revisits this long-standing issue by exploiting recent longitudinal data sets from Jamaica. The main benefit of longitudinal information is that it facilitates dynamic analysis of poverty and occurrence of life events, such as births, together with intermediate variables. Since only longitudinal surveys can provide information on the timing and duration of poverty spells implies that panels will provide much richer information on issues such as the permanent nature of the poverty, changes in poverty status of individuals over time and the events related to entry into and escape from income poverty (Muffels, 2000).

This paper presents a descriptive analysis of poverty and household demographic composition and changes thereof, for Jamaica. For many developing countries, longitudinal household surveys which include information on economics/financial situation of households, as well as demographic behaviour, is still very rare. Ultimately the aim is to exploit the longitudinal nature of the surveys to assess the causality issue associated with fertility choice and poverty. In particular we analyse correlations between levels of human capital, household size, child labour and fertility events on one hand, and poverty on the other. We also control for ethnicity, religion, and regional differences, though these aspects are given less emphasis in the present analysis.

Data, Descriptive Statistics and Preliminary Estimates

The data used in this study come from the Jamaica Survey of Living Conditions (JSLC) for the years 2002 -2004. We analyse the link between household welfare, measured by total expenditure and a number of covariates one of which is a proxy for fertility, namely household size. We use total expenditure to examine household welfare since the JSLC does not contain income data and because expenditure tends to be more reliable than income data in developing countries (see Handa, 2000). Table 3 provide descriptive statistics for the variables used in the estimations.

Table 3: Descriptive Statistics of variables used in estimation

Variable	Obs	Mean (Std. Dev.)	Min	Max
Log of Total Expenditure	31253	12.50188 (.7305656)	7.740664	15.84058
Number of members in Household	31262	1.430355 (.6299572)	0	3.135494
Number of members in Household Squared	31262	2.442749 (1.6635)	0	9.831324
Highest Exam Passed	4135	2.529867 (3.136935)	1	13
Highest Exam Passed Squared	4135	16.23821 (36.86971)	1	169
Age	31251	49.10556 (16.24624)	15	99
Age Squared	31251	2675.288 (1731.386)	225	9801
One if married or in a common law union	31262	.3675389 (.4821426)	0	1
One if have a Certificate	31262	.0140106 (.1175362)	0	1

Table 4 presents OLS estimates for household welfare. The regression explains about 37% of the variation in total expenditure and all (bar one) of the coefficients are statistically significant. Thus household size, age, the highest exam passed and being married or in a common law union are shown to positively impact on household welfare. However, with the exception of marital/union status, the relationship between these variables and household expenditure is nonlinear. Further, the results indicate that after some threshold level of household size, age and the highest exam passed has been attained, these variables have a depressing effect on household expenditure and by extension welfare.

Table 4: OLS Estimates for Welfare Equation	
Dependent variable is the log of Total Household Expenditure	
lnsize	0.648*** (10.73)
lnsizesq	-0.108*** (4.04)
highest_exam	0.128*** (9.31)
highest_examsg	-0.005*** (4.30)
age	0.019*** (3.89)
agesq	-0.000*** (4.72)
married_common	0.119*** (3.86)
certificate_yes	0.053 (1.61)
Constant	11.502*** (82.87)
Observations	4135
R-squared	0.373

Absolute value of (robust) t-statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. Coefficients for Parish dummies are not reported due to space constraints.

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