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The Effect of Australia's Declining Fertility Rate 1978-2016

Ejiro U. Osiobe

The Department of Economics, Applied Statistics, and International Business

New Mexico State University

MSC 3CQ P. O. BOX 30001

Las Cruces, NM 88003-8001, USA

E-mail: euosiobe@nmsu.edu or jiji@aneosiobe.ngo

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Abstract

The paper presents an analytic framework that describes how the declining fertility rate of Australia between 1978 - 2016 has affected its economy. Issues related to population have long been the subject of debate in the industrialized countries like the United States and European nations following the shift in their population structure. The awareness of the declining fertility rate in Australia remains a concern to the Australian government as the new trend will reshape the country's demographic pattern. This paper seeks to examine the fertility rate of Australia and how it has affected GDP per capita. The study uses the simple ordinary least squares (OLS) methodology to analyze this effect. Our result showed an inverse relationship between fertility rate in Australia and per capita income.

Keywords: Australia, fertility rate, declining, GDP per capita

1. Introduction

Australia is the world's smallest continent and the 6th largest country. Over the past decades, Australia's fertility rate has been declining. Becker et al. (1990) examined the maximizing utility of children with constrained resources. This study argues that the fertility rate has a direct effect on per capita income.

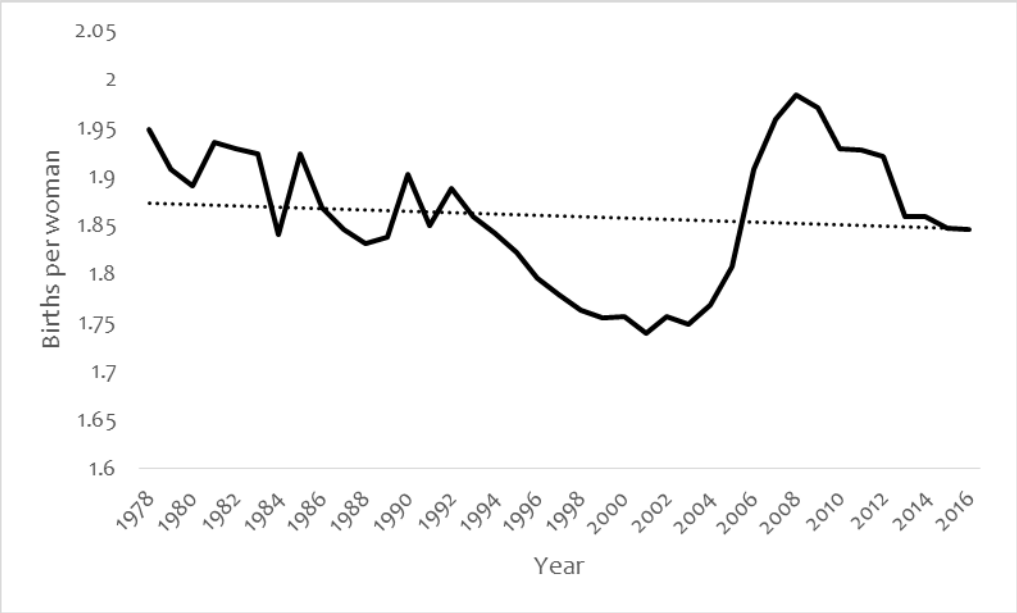

Figure 1. The Trend of Australia's Fertility Rate 1978 – 2016

Since the last century, developed nations' have seen more than a 50% decline in their fertility rate. This phenomenon is interesting as the nation of Australia saw a sharp decline between 1992 and early 2000. The history of the declining fertility rate in Australia is unique because the country never faced many of the socio-economic adjustment problems that molded the industrial ear in North America and Europe.

2. Literature Review

Becker (et al. (1960, 1990, & 1992)) overall, views the relationship between income level and the cost of raising a child while maximizing utility. His theory of fertility choice argued that an economic model(s), treats children as analogous to consumer durable goods such as cars and houses, and this could explain the reason(s) why some people have children and others do not.

He assumes societies with limited human capital choose larger families and invest little in each member while those with abundant, do the opposite. Thus, this will lead to a stable, steady-state. In his conclusion, he states that societies can maximize their capital across generations by significantly investing in each child, and in the long-run, the accumulation of physical capital will lead to economic growth and development. Becker's paper on fertility and the economy also related the demand for children to parental income and the cost of raising children, especially to the value of the time spent on childcare and public policies that change the price of children.

Jones (1971) analyzed the history of Australia and New Zealand's fertility decline and compared it to that of Europe. His study looked at the urban-rural division of each state in Australia, excluding Tasmania. The paper addressed the urban-rural birth registration concerns and adjusted for the difference over time. Jones (1971) finds in his analysis that

there was a significant decline in the overall fertility and specifically in the fertility of married couples, dating back to the 1880s. The paper concluded that marital fertility probably hit a plateau or declined rapidly in 1860 – 1880, and that trend has become the new status quo.

3. Data Source and Empirical Model

The primary source of our data was the World Development Index and the Australian Bureau of Statistics. The paper used a time-series OLS estimation from 1978 – 2016.

$$lnGDP_{per_i} = \beta_0 + \beta_1 lnFRT_i + \beta_2 lnDRT_i + \beta_3 lnLE_i + \beta_4 lnPOP_i + \beta_5 lnFLF_i + \varepsilon_i \quad (1)$$

where $lnGDP_{per_i}$ is GDP per capita (constant LCU); $lnGDP_{per_i}$ is defined as the per capita constant, of the local currency of Australia; $lnFRT_i$ is the fertility rate (births per woman). $lnDRT_i$ is the age dependency ratio as a percentage of the working-age population in Australia. $lnLE_i$ is the life expectancy at birth; $lnPOP_i$ represents the total population of women as a percentage of Australia's total population; and $lnFLF_i$ is defined as the total number of females in the labor force per thousand.

3.1 Results

Table 1

Variables	Co-efficient (t-stat)	VIF
$lnDRT_i$	-0.0382 (-0.1743)	1.69
$lnFRT_i$	-0.260 (-2.0831) ***	4.13
$lnLE_i$	6.058 (27.919) ****	4.06
$lnPOP_i$	-11.472 (-3.250) ****	2.06
$lnFLF$	-0.007 (-0.7373)	1.69
Constant	29.670 (2.013)	
R-Squared	0.99	
Adj. R-Squared	0.98	
F-statistic	753.162	
DW-Test	0.97	
N	39	

****99.9% Confidence

***99% Confidence

Our result(s) shows a 1% increase in $lnFRT_i$ will lead to a 0.26%-point decrease in $lnGDP_{per_i}$ the relationship can be associated with the (likelihood) number of children born in a given time, which can also be linked to the quality of the child (education attainment), which translates to human capital, which is a significant factor of production. If $lnFRT_i$ doesn't translate to a high Human Development Index (HDI) point in Australia, our stated result will not be too farfetched as supported by (Ardichvili, Zavyalova, & Minina, 2012). A 1% increase in $lnLE_i$ will lead to a 6.05%-point increase in $lnGDP_{per_i}$ the relationship can be associated with the ideology that states, the more healthy people are in an economy, the higher the chances that the nation's real gross domestic product will increase. Hence, translating to an increase in the individual's per capita income as supported by (Bloom, Canning, & Sevilla, 2004) and (Fogel, 1997). A 1% increase in $lnPOP_i$ will lead to an 11.47%-point decrease in $lnGDP_{per_i}$. If the birth rate (births per thousand) in Australia increases as a result of $lnPOP_i$ increasing and the social cost of the economy's additional c_{o2} emission is accounted for *ceteris paribus*, thus the result holds to be true (Elshkaki, Voet, Holderbeke, & Timmermans, 2004).

4. Conclusion

This study has assessed the trend and pattern of Australia's fertility rate and investigated the direct effect(s) of the explanatory variables on per capita income. The study uses the OLS technique and time-series data to test the factors that drive the upward fluctuation in Australia's GDP per capita. The results of this study show as $lnFRT_i$ *and* $lnPOP_i$ Increases, the $lnGDP_{per_i}$ decreases. On the other hand, as $lnLE_i$ increases, $lnGDP_{per_i}$ increases. The policy implication of the study supports the view that demographic planners will need to take a detailed account of fertility rates as it relates to per capita income. Investment in human and physical capital has the potential to increase the nation's GDP per capita, improve technology, and promote long term economic growth and development.

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