

Population Growth and Economic Development in Jordan

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Abstract

Population growth has a substantial impact on economic development. There are two schools of thought regarding this issue. Some researchers maintain that population has a negative impact on economic development while others are convinced that the effect is positive. In this article, I examine Jordan's case of population growth and economic development. To cover the period of the study (2000-2011), relevant statistics were obtained from Central Bank of Jordan (CBJ) and Department of Statistics (DOS). The results demonstrate that population growth is a real problem in Jordan because it contributes to lower investment growth and diminishes the saving rate. Policy makers can address these serious economic consequences of rapid population growth by investing in family planning services. Development of new programs by the government will also help by encouraging a smaller family size ideal.

Keywords: population growth, economic development, economic variables, Jordan.

Introduction

The population growth rate affects both the consumption and the productivity of a country's economy. One more person can increase not only pair of hands of labor but also one mouth for consumption. Especially in Asian developing countries, where the population growth is developing more and more drastically, the economic growth therefore also changes critically over periods. Up to now, the debates about whether population growth is beneficial or detrimental to economic growth still have been discussed. As a result, it is significant to take into account the effects of population growth on economic growth in these countries, which focus on per-capita term specifically. Population is the resource of labor force. The larger the size of population, the larger will be the labor force. Higher the rate of increase in population, the larger will be the potential labor force. Labor alone cannot produce anything. If other resources required for production are also available in sufficient quantity then a large labor force is a productive asset for a country. If other resources are not available in sufficient quantities then large labor force can become an obstruction to faster economic growth [1].

All countries at any time have some people living there. This number constitutes the size of population of that country at that time. This number however is continuously changing through births, death and immigration. Increase in the number of people in a country during a period of time is called the growth of population. This growth is mainly due to the excess of births over deaths as immigration in the present day world is an insignificant contributor to the increase in population in a country [2]. The rate of growth of population during a period is measured as the ratio of increase in population during a period to the total population at the beginning of the period. The rate of growth of population primarily depends upon the birth rate (measured as births / total population x 1000). The difference between birth rate and death rate during a year is called the rate of growth of population in that year per 1000[3].

Objectives of the study

The main objective of this study is to analyze and test the empirical relationship between population growth and economic development in Jordan. To achieve this objective the study first reviews the

theoretical and empirical literature on the impact of population growth on the economic development and presents some recommendations. The empirical analysis uses annual data for the period 2000 – 2011.

Source of data

The basic data needed to estimate the above mentioned model were gathered from different sources. This research is based on the survey and analysis of secondary data, the data was gathered from published studies and reports available in English and Arabic. Relevant statistics were obtained from Central Bank of Jordan (CBJ) and Department of Statistics (DOS) the period of the study is from 2000 to 2011.

Research Method

This paper bases on both theoretical and numerical data concerning population growth and economic development. The researcher basically first search and review all the literature then collect the necessary data from different sources. In this paper, the researcher also use Microsoft Excel do the Multiple Regression test from 2000 to 2011 so that we can find out whether higher population growth can bring benefit or detriment to the economy in Jordan.

The following simple models were used to express the relationship between real GDP growth a proxy for economic growth and important macroeconomic variables. It is presume that the economic growth is greatly influenced by the population growth; export; domestic and foreign investment, and market size represented by the private consumption expenditure as percentage of GDP. The test is based on the following model.

$$Y_g = \beta_0 + \beta_1 \text{Pop}_g + \beta_2 \text{Inv}_g + \beta_3 \text{FDI}_g + \beta_4 \text{EX}_g + \beta_5 \text{Ca}_g + \mu$$

Where

Y_g : Real GDP growth

Pop_g : Population growth

Inv_g : Real gross domestic investment growth

FDI_g : Foreign direct investment growth

EX_g : Export growth

Ca_g : Private consumption as percentage of GDP

μ : White noise error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \text{ and } \beta_5$: Parameters

Review of literature

There were many studies in the literature about the relationship between population growth and economic development in both developed and developing countries. Therefore, many empirical studies have been conducted to assess the impact of population growth on economic growth. One of these studies was by Nazeem (2011) which he focuses on the recent trends in population growth rates in Jordan [4]. The exponential equation used computing the population growth. The results showed that the population growth rates were high because of high fertility levels and migration.

Another study was performed by Klasen and Lawson (2007) examined the relationship between population growth and economic development in Uganda [5]. They argued that empirical findings indicated a negative impact of population growth on economic growth. The researchers concluded that high population growth put a considerable break on per capita growth prospects in Uganda.

A more expanded study was made by Bucci and La Torre (2007) used a two sector endogenous growth model [6]. They pointed out that population growth may have a negative or ambiguous effect on a country's economic development. In other words, when physical capital and human capital are substitute, the population growth has a negative impact on the economic development. On the other hand, when physical capital and human capital are complementary, the effect of population growth becomes ambiguous.

A subsequent study was made by Turnemaine (2007) in order to analyze the relationship between population growth and per capita growth developed a model in which technical progress, human capital and population growth interact endogenously [7]. The researcher concluded that population growth can have either a positive or a negative impact on the economic development. The outcomes depend on the relative contribution of population and human capital to the economic development.

A study done by Furuoka and Munir (2010) chooses Malaysia as a case study to examine the relationship between population growth and standard of living [8]. The paper uses Human Development Index (HDI) value as threshold regression variable. The threshold regression analysis revealed that there was a significant negative relationship between population growth and per capita GDP only in the countries with low level of human development.

Finally; Singh (2010) had covered the period from 1991 to 2000[9]. This paper attempts to identify the demographic and socio-economic variables, which are responsible for population growth in Manipur using survival analysis. Singh pointed out that there are many demographic and socio-economic factors responsible for population growth.

Population growth in Jordan

Population settings

For many decades, the population growth in Jordan has been higher than the global average. As a result of the increase in the population growth rate, the population size doubled about twelve times between the years 1952 and 2011 jumping from 506 thousands in 1952 to 6200.0 thousands at the end of 2011. The population growth rate showed a slight decrease between the years 1979 and 1994 to reach 4.4% annually, and then sharply declined between the years 1994 and 2011 reaching 2.2% annually. The achieved decrease in the rate in Jordan was due to the sharp decline in the fertility levels on the one hand, and the retreat of the net international migration contribution on the other hand, the population growth rate stands now at 2.2% annually and is expected to continue to decline over the coming years on account of a further decline in fertility levels (expected to reach about 2 children per women in the year 2020) [10].

At the same time, the population age structure showed a noticeable change, where the ratio of young age population (less than 15 years) decreased from 50.7% to 35.2% in 2011. Mean while the ratio of population in ages 15 – 59 rose from 45.2% in 1979 to 58.2% in 2011, while the ratio of the older population (60 years and above) rose from 4.1% in 1979 to 5.4% in 2011. Changes in the age structure of population resulted in a decrease dependency ratio which declined from 1.1 person in 1979 to 0.7 person in 2011, and in an increase in the median age (the median age is the age at which half the population in older and half in younger) from 16.0 years in 1979 to 21.2 years in 2011 with a total increase of 5.2 years. According to the data available at the governorate level in 2011, Amman scored the highest medium age of 22.5 year while Tafeila scored the lowest medium age of 18.7 year.

Table 1: Population Median Age by Jordan Governorate (2011)

Governorate	Population Median Age
Amman	22.5
Balqa	20.8
Zarqa	20.5
Madaba	20.4
Irbid	20.3
Mafrq	19.5
Tarash	18.9
Ajlun	19.6
Kerak	20.9
Tafeila	18.7
Maan	19.9
Aqaba	20.7

Source: Department of statistics, Statistical Yearly Book, 2011.

Fertility

The demographic surveys conducted by the department of statistics during the 1970's and 1980's showed an increase in fertility levels in Jordan. The Jordan fertility survey conducted in 1976 showed that the total fertility rate was 7.4 children per female in the reproduction age (15- 49). The 1983 fertility and family health survey indicated a slight decline in the rate which recorded 6.6 children per female. The rate has decline significantly since the beginning of the 1990's. The 1990 population and family Health Survey showed that the rate was 5.6 children per female with a decrease of 24.3% compared with the 1976 survey. The rate continued to decrease but of a faster pace than before, reaching 4.4 and 3.7 children according to the results of the Population and Family Health Surveys in 1997 and 2002 respectively. The rate estimated at 2.8 children per female at the end of 2011. There is a significant difference between urban and rural areas in terms of the total fertility rate as shown in the table (2).

Despite its continuous decrease, the Total Fertility Rate in Jordan is still high compared to the prevailing rates in developed countries (1.8 in France, 1.4 in Japan, 1.8 Norway, 1.6 in Canada). The decline in fertility levels in Jordan occurred among all age groups, however, the most significant decline in what has been observed among teenagers. At the same time, the age – specific fertility rate (number of live births for women in a specific age group divided by the number of women in that age group) is the highest for the 25 – 29 age group during the period 1976 – 2011[11].

Table 2: Total Fertility Rate by urban and rural for selected years

Year	Urban	Rural	Total
1990	5.2	6.9	5.6
1997	4.2	5.0	4.4
2002	3.5	4.2	3.7
2011	2.8	3.2	3.0

Source: Department of statistics, Statistical Yearly Book, 2011.

Marriage and Divorce

Marriage is common in Jordan as in many other Arab countries. Data for 2011 show that 51.2% of males and 54.2% of females were married. Socio – economic changes had significant impacts on the

attitudes of people towards early marriage in Jordan. SMAM (the mean number of years a person spends before his / her first marriage) for females has increased significantly from 21.1 years in 1979 to 24.7 years in 1994, and then to 27.2 years in 2011. It increased also for males from 26 years in 1979 to 27.9 years, then to 31.3 years in 2011. Brides aged 20 – 25 constituted the largest proportion among brides who married during 2011. The proportion of never married females is less than the corresponding proportion among males in the same age group (95.5% for males and 70.2 for females). Data on registered marriages show an increase of about 24% during the period 2000 – 2011. Amman Governorate has scored the highest number in registered marriages, while Tafela Governorate has scored the lowest number of registered marriages. Crude Marriage Rate showed a significant increase between 2000 and 2011, jumping from 9.5 per 1000 in the year 2000 to 10.2 per 1000 in the year 2011.

Divorced females constituted 12% of total females who got married during the year 2011. Meanwhile, divorced males constituted 10.5% of total males who married in the same year. The divorced rate for males was the highest in the age group 30 – 49, while it was 20 – 29 among females. Crude Divorced Rate showed a significant increase between 2000 and 2011. The rate has increased from 1.7 per 1000 in 2000 to 2.1 per 1000 in the year 2011.

Internal Migration

Migration represents the third factor among the factor affecting population growth beside fertility and mortality. Thus, measuring and analyzing migration are important for understanding the volume, nature and trends of population movements, due to the direct impacts of these dynamics on the labor force, social and cultural phenomena in both sending and receiving areas. To study internal migration in Jordan, there are two main data sources: the result of population censuses and the results of the Household Surveys. The two sources provide data that can be used to measure two types of migration. The first type is called the life time migration, which is based on data on place of birth and current place of residence, while the second is called the current migration which is based on data on places of current and previous residences. The Department of Statistics has conducted the first specialized survey on Internal and Returned migration in 1986, where the results of the mentioned survey indicated that 6.2% of the Jordanian population were considered as a life time migrants, while about 9% were considered as current migrants due to the change of their previous place of residence. The result of the Accompanying survey in 1994 census indicated that 10.4% of the total Jordanian population changed their place of birth and resided in other governorates. In addition, the survey showed that Amman and Zarqa Governorates were the most pulling in – migrants and pushing out migrants, where they pulled together about 56% of the total migration and contributed to about 50% of the total out migrants. Economic factors such as availability of job opportunities and different services represent the attracting power for the in – migrants [12].

The analytical statistical studies showed the existence of a relationship between unemployment rate and the Migration Effectiveness Index. These studies showed that there was a strong positive correlation (0.89) between the two variables, which means that people tend to migrate from governorates with low unemployment rates. The results of the 2011 Census revealed that 10% of the Jordanian living in Jordan changed their governorate of birth and resided in other governorates. The results showed that the Aqaba governorate has recorded the highest in – migration (26%), while the lowest in – migration rate was recorded by the Irbid Governorate (4%). The increase in the rate of in – migration for Aqaba Governorate is due to the transformation of Aqaba to a private economic zone which contributed to the creation of new work opportunities and constituted a pull factor for migrants.

Jordanian women in figures

Females currently constitute 50% of Jordan's population 2011. Specifically, females constitute 3.2 millions with 36% of them fewer than 15 years of age, and 27% being school students. Jordanian females have another low participation rate in the labor force. According to the Department of statistics reports, only 12% of Jordanian females are economically active. However, it is worth noting that 88% of inactive females are housewives and students. In addition, 54% of the female population aged between 15 – 64 years is married and only 10% of those married are economically active. Self – employed females constituted 3% of total employed females, while employer females constituted less than 2%. Over the last few decades, Jordan has witnessed a tremendous progress in the area of female education. Jordan boasts of having the lowest female illiteracy rate in the region at 12% in 2011. Gender differentials in education levels and literacy rates are rapidly disappearing and access to education of all levels has nearly achieved gender parity [13].

Table 3: Population by sex and governorate, (2011)

Governorate	Male	Female	Total No.	Total %
Amman	1244000	1175600	2419600	38.7
Balqa	217400	201200	418600	6.7
Zarqa	481800	449300	931100	14.9
Madaba	80500	75800	156300	2.5
Irbid	569600	542700	1112300	17.9
Mafraq	152200	141500	293700	4.7
Jarash	96400	91100	187500	3.0
Ajlun	73200	70500	143700	2.3
Kerak	123400	120300	243700	3.9
Tafeila	44600	42900	87500	1.4
Maan	62200	56600	118800	1.9
Aqaba	75800	60400	136200	2.2
Total	3221100	3027900	6249000	100.0

Source: Department of statistics, Statistical Yearly Book, 2011.

Table (3) shows the population by sex and governorate. The overall population density in 2011 was established at about 38 persons per square kilometer. There were wide regional variations and the rate of urbanization was high. East of Mafraq in an area encompassing almost two thirds of the country, no towns had a population of more than 15000. The bulk of Jordan's population was centered in the governorate of Amman and the smaller urban areas of Irbid, Zarqa, and Balqa. The 2011 population totals of the twelve governorates ranged from 2,419,600 in Amman to 136,100 in Aqaba. According to World Bank figures, about 70 percent of the population lived in urban areas. The nation's capital, Amman, accounted for more than one – third of the total population. Rapid urbanization appeared to be the result of high fertility rate and rural – urban migration. If urbanization continued at the high annual rate of 4 to 5 percent nearly three – fourths of the population could be living in Amman, Zarqa, Irbid and Balqa.

Empirical Results

The estimation results of equation 1 have been shown in Table (4). The coefficient for population is adversely and significantly different from zero meaning that population growth adversely affects the economic growth. This does not support the view that population growth is not a real problem. For a

country like Jordan, rapid population growth is indeed a real and important problem because Jordan has a very high fertility compare to the developed countries.

Table 4: OLS Results

Dependent variable : RGDP			
Method Least Squares			
Sample : 2000-2012			
Variable	coefficient	Standard error	t – statistic
Pop_{E}	- 0.495	5.794	- 1.613
Inv_{E}	0.514	0.042	1.871
FDI_{E}	- 0.465	0.013	- 1.504
EX_{E}	0.630	0.176	1.870
Ca_{E}	0.360	0.159	1.488
R	0.859		
R^2	0.738		
Adjusted R^2	0.52		
F-statistic	3.381		
DW	3.063		

High population has become an important limiting factor for achieving the overall development goals. It is highly desirable this rampant population growth is checked to release the pressure on the existing infrastructure if the gains of growth are not eaten up by the high population growth. Jordan's situation cannot be compared with the developed countries (e.g. Australia) situations as the two are divergent. Manpower export of the population is possible because Jordan is neighbor to oil- rich Middle Easter Countries and the remittances are a significant source of foreign exchange earnings and form an important part of the current account balance. Resources that could be used for productive purposes are diverted to satisfy the consumption needs that have adversely affected the national saving rate. Jordan had to seek external financial assistance that has burdened the country with heavy debt whose service over years has become on palatable. Jordan has one of the lowest savings rate among Arab countries. Coefficients for foreign investment and exports are positive. Investment and exports promotion are more recent phenomenon in Jordan Export Promotion Policies were adopted in early 1980's and this policy has been moderately successful. Now foreign aid is not available at concessional terms after the financial crisis. That is why various governments have offered divers incentives to attract foreign investment. The coefficient for FDI is negative. FDI in Jordan has been decreased in the recent years, an investigation into the history of FDI inflows and their impact on the Jordanian economy demonstrates that these inflows have been driven by regional developments than by internal improvements. Furthermore, the size and endowments of the Jordanian economy, and the published goals and aspirations of Jordan light of the impending challenges, make the need for development of a better, more investment – friendly environment a necessity if the FDI pattern of the early 2000's is to be sustained.

Private consumption as a percentage of GDP is positive. Consumption being a positive function of income contributes positively to economic growth. Compared to Arab countries, Jordan has one of the highest dependant populations below 18 years. The young age composition of the population of Jordan is largely responsible for a very high ratio of child dependency. On the average each adult had to

support at least one child, this increase marginal propensity to consume. Saving rate is reduced that adversely affects the investment environment.

Conclusion

Population growth could be described as "destiny" that determines the course of economic development. This study attempted to provide additional empirical evidence to the on-going debate about the intricate relationship between population growth and economic development and choose Jordan as a case study. In a developing country like Jordan, there is already a shortage of capital and even the natural resources are getting scarcer with the fast increasing population. These countries are not able to utilize even their existing labor force as is evident from the large level of unemployment. Furthermore, every year there is a large addition to the labor force due to high growth rate of population.

A simple model was used to examine empirically the relationship between population growth and economic development in Jordan. Highly significant and negative coefficient of population demonstrates that population growth is a real problem in Jordan because it diversely affects the economic growth. Resources in stead of being directed to productive channels are consumed by the exploding population. Positive investment coefficient implies that investment growth will considerably contribute to economic growth which in turn depends on high saving rate. Negative FDI coefficient implies that foreign investment has to carry out cautiously and vigilantly. Without investigating in depth the positive and negative aspects of foreign investment, it is most likely that the uncritical acceptance of foreign investment may turn disagreeable like foreign aid. Export promotion are expected to have positive impact on economic growth of Jordan, however, Jordan has to adopt new policies in order to increase exports especially to the neighboring countries.

Recommendations

Following methods can be adopted in Jordan to control population growth:

- Using various means of communication to persuade people to adopt small family norms.
- Making available family planning methods through different outlets in every governorate.
- Setting up the family centers to make available the service relating to family planning methods.
- Financial assistance to the acceptors and motivators of the family planning methods.
- Promoting female education and employment.
- Control all types of immigration (economically and politically) to Jordan.
- Independent media can make the people think independently and rationally that will help encourage a smaller family size ideal.

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