Socio-Economic Determinates of Population Growth:

A Case Study of Pakistan

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Abstract

Pakistan is 6th populated country of population 177 million. With compare to other developing countries Pakistan has high growth rate. Pakistan is faced with its ever-largest youth population. Literacy, poor economic growth, health facilities, education and birth control are affected by population growth. Growth rate is major factor that determines the burden on economy with respect to basic needs of people, job opportunities and infrastructure. The objective of study is to provide knowledge and understanding of the prevailing situation by creating awareness among the population matters, social and economic phenomena. Also find out the causes of population growth and impact of social and economic indicator in Pakistan by applying Co integration approach for the period 1972-2012. This study shows that domestic saving and literacy have the long run relationship with population except FDI unemployment the model shows that population and literacy has positive effect when population increases literacy is also increases.

1. Introduction

Pakistan being 6th most heavily populated country in the world. Pakistan's population is 177 million, fertility rate is 3.5 per women and population growth is 2.05 percent (Economic survey 2010-2011). Determinants of population growth are low literacy rate, high infant mortality, and low economic growth poor health facilities, poor educational facilities, lack of birth control, lack of awareness, and migration from other countries, inadequate government policy to control growth of population, poor family planning program, early marriage of females, cultural and religious factor. A natural population increase occurs when the birth rate is higher than the death rate. While a country's population growth rate depends on the natural increase and on migration, world population growth is determined exclusively by the natural increase. Since the 1960s birth rate have also been declining rapidly in most developing countries except those in Sub-Saharan Africa and the Middle East. This trend in birth rates in the developing world is comparable to what took place in Europe and the United States in the 19th century.

Population growth rate has decreased from over 3 percent in earlier decades. (Economic Survey) Pakistan still has high growth rate with compare to rest of developing nations. Therefore main concern of government of Pakistan is to decreasing the growth rate from current level. Current level of population growth is 1.5 per annum by year 2012 (Economic survey).Pakistan is facing with largest youth population because of the high rate of fertility over the few previous decades and recent decline in fertility. It constitutes population in future force that the serious concern of government is to facilitate the population with schooling, health services and basic needs of life for coming years.

Planning for food supply is major task .Food supply means availability of adequate food supply for total population. Employment is major problem now-a-days. Unemployment and under development is fast growing not only in the economically to the rear countries but also

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in more developed countries. Therefore employment planning requires information about population growth. Education is most important factor that leads any country toward development. Every nation is concerned with providing education to children, however the number of children increasing day by day.

According to a World Bank report 2012 population growth of Pakistan was 1.80 in 2011.Currunt Population growth rate is 1.551%. Growth rate is factor that determines how the great burden would impose on government by the changing the needs of people country (e.g., water, food, health).Rapid population growth can be seen as frightening by neighboring countries. This study has three fold objectives: first is to provide knowledge and understanding of the prevailing situation of population growth, second is to create awareness among the population matters, social and economic phenomena and third is to find out the causes of population growth and impact of social and economic indicator on it by developing countries like Pakistan and make social and economic model.

2. Population Growth

GDP growth has been predictable at 3.7% in (2011-12) and 3.0 % in previous year (2010-11) (Economic Survey 2011-12) According to the Pakistan social and living standard measurement, education survey 2010-11) and previous PSML 2008-09 the literacy rate (10 years or above) for the population is 57% and 58% during 2010-11.Literacy rate is higher in urban areas as compared the rural areas and more privileged for men then for women. Province wise data suggest that Punjab leads with 60% literacy, Sindh with 59%, Khyber-Pakhtunkhwa with 50%, and Baluchistan with 41 %. (Economic Survey 2011-12) Health at current there is 972 hospitals, basic health units 4,842 dispensaries, and 909 maternity and child health centers in Pakistan. (Economic Survey 2011-12)

3. Literature review

According to Smith (2003) fertility and mortality are the main factor that can control population size of word. This study explores that population of word once characterized by high mortality and fertility. Link between population, poverty and environment and gives the empirical facts in developing word (e.g., Pakistan). (Khan) By using the field survey it future explore the relationship between environment and poverty works in both positive and negative directions. Increase in poverty may brunt negatively on environment and decline in environment lead to increased suffering. Demographics change from fertility transition affect the educational activities of school age population in next couple of years.(Mahmood, 2011) It find out that there is expectations high growth of population drive the current fertility decline would affect school age population in next two decades. Therefore there will be burden on education system.

Brisk population growth is result of high fertility. It creates many social and economic problems (khan, 2007).By field survey this study explores relation between fertility and education and tries to understand the behavior of population toward fertility according to their education and literacy.

The researcher finds out the relation between population growth and economic growth in Pakistan. According to Hieu there is negative relationship between population and economic growth. Increase in population growth rate direct to decline in economic growth. Capital intensity, stander of living and age structure are the main reason of negative effect (Hieu, 2011).

The study measure the relationship between macroeconomic variables and poverty is by using multiple regression technique on time series data. The researcher use poverty, inflation, GDP growth, population growth, major and minor crops, live stock, per capita and income as independent variable. According to results per capita income, GDP growth rate live stock and

crops has negative impact and inflation and population growth had positive impact upon poverty (Sabir, 2012). There is relationship between saving and population growth By using non-linear multiple regressions model the author find out the impact of various economic and non-economic variables on saving. The finding of this study is population growth has positive impact on domestic savings in long period. Decline in population growth fosters the proportion of working age group. Which reflect the probable rise in saving (Younis, 2009). Finding of this study by using OLS regression model technique are population growth neither simulates per capita income nor reduce it. (Mushtaq, 2006).

Population growth stimulates unemployment positively and inflation and FDI has negative impact on unemployment. (Rafiq, 2008) The researcher used population growth inflation rate and FDI as explanatory variables.

4. Thomas Malthus Theory

Thomas R. Malthus was an English economist and abbey. He gave an argument that increase in population would finally result in social uncertainty if not regularly checked. Malthus suggested that the species (either human or animal) population would continue to increase *exponentially* and this exponential increase in population would not correlate with the food production which increases linearly and eventually a time would come when circumstances would go out of control. In short Malthus predicted a worrying vision of the future that indicated huge global hunger as a result of unchecked population growth which would finally result in human wars for food and land. Because resources such as habitual and fertile land, fresh water and air are limited. And with the advancement in fertility and reduction in death rates, this exponential growth in population would result in disaster, wars and misery.

Malthus also gave a mathematical model called the Malthusian model for population growth.

$$P_t = P_o e^{rt}$$

P_o= Initial Population
P_t=Population at time t
r=Growth Rate
This model however lacked in population prediction because it didn't included the death rate. Yet it gave an idea about the exponential growth of population.
A logistic model was afterwards proposed which gave a better model for population prediction.

5. Boserup Theory

Esther Boserup in 1965 proposed that people now have the required knowledge and technology to increase food production and supplies. In contrary to Malthus's model, she said that population growth has enabled agricultural developments to take place.With time humans have evolved certain techniques and methods to produce more and more food from same area of land to meet the increasing requirement. The nature adapts to the changes and hence Population growth promotes innovation, creation and methodologies to increase productivity of land. Boserup admitted overpopulation could lead to unsuitable farming practices which may degrade the land e.g. population pressure as one of the reasons for desertification in the Sahal region.
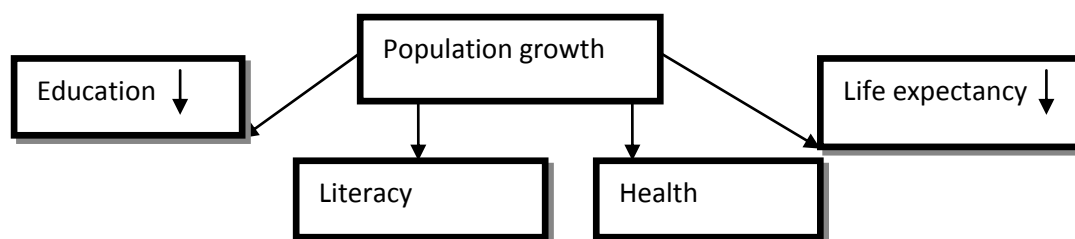
6. Theoretical link

Simon's says that stable population growth is level additional helpful to long-standing financial growth (2003).A theory of population are an explanation of the phenomenon of
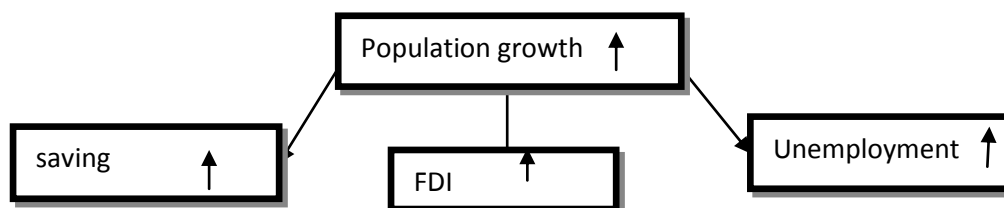
population growth. It tries to explain the rise and fall, the growth and decrease of population in different. The criteria for encouraging or discouraging were the military, political, social and economic issues. Of these the economic issue is the most important since the most important problem concerning population is to assemble the wants of the rising population.

 Since used for change the structure, it is argued that his industrial development role be supposed to rising the sum of machinery accessible by the amount of the population. Recently implemented skill must stay a purpose of manual labor supply growth, assets reserves and depreciated obtainable equipment. At last, the investments rate must not be permanent except be set endogenously as a role of the reliance ratio and the compactness of the people familiar by a supply worth aspect resulting from the moving capability of the surroundings. Further the advanced level of density of population. It is understood the better insist on capital over the baseline moving ability in addition to so the high saving rate. So the dependency ratio is higher and the higher negative impact on investment

Social model

Economic Model

7. Data and methodology

The objective of study is to provide knowledge and understanding of the prevailing situation by creating awareness among the population matters, social and economic phenomena. Also find out the causes of population growth and impact of social and economic indicator in Pakistan by applying Johensen Cointegration approach for the period 1972-2012. Time series data for last 40 years (1972-2012) is collected from World Bank and State Bank of Pakistan, HDI and Economic Survey.

$$Population\ growth = f\left(literacy,\ FDI,\ unemployment,\ domestic\ saving\right)$$

Literacy Rate

Adult literacy rate is the %age of people ages 15 and over, who can, with accepting, read and write words on short and simple statement on their daily life.

Gross Domestic saving

Gross domestic savings are calculated as GDP total consumption. Data are in stable local exchange.

Population Growth

Population growth rate for year is the exponential rate of growth of midyear population from year t-1 to t, as measured in percentage. Population means which counts all people apart from of authorized class.

Unemployment

Unemployment refers to contribute of the labor force that is with no job but accessible for and in search of job.

FDI

Foreign direct investment are the net inflows of investment to obtain a long-term organization interest (10 % or more of selection stock) in a project working in an economy other than that of the shareholder. There is the sum of equity resources, reinvestment of earning, and other long-term assets.

Descriptive analysis

Variables	Mean	Median	Maxi	Mini	Std. Dev
Pop growth	2.143889	1.995000	2.660000	1.760000	0.372387
FDI	1.443284	1.142282	3.904417	0.416484	1.035552
Unemployment	5.835000	5.725000	7.800000	4.300000	1.130155
Literacy	0.476305	0.467540	0.584189	0.380878	0.066496
Domest saving	14.76667	15.30000	17.60000	10.20000	2.240273

8. Results and discussion

Table 1

Augmented Dickey fuller Test of Unit Root

Variable	At Level				At First Difference			
	With drift t-static	P-value	With trend & drift		With drift		With trend & drift	
Literacy	2.624397	1.0000	-1.32138	0.8680	-5.525200	0.0000	-6.52795	0.0000
Dsaving	-1.708762	0.4193	-1.60119	0.7748	-7.183039	0.0000	-7.160361	0.0000
Unemployment	-1.792839	0.3786	-2.29842	0.4251	-7.689711	0.0000	-7.606313	0.0000
FDI	2.308774	0.9999	-0.73996	0.9607	-4.834445	0.0005	-6.025106	0.0001
Population	-4.394715	0.0015	0.55413	0.999	0.331155	0.9761	-0.27109	0.9880

In this empirical study first we use apply the unit root test through Augmented Dickey-fuller test to check the stationary and order of integration. We check the significance of the series on the bases of p-values. We develop a null hypotheses that there is a unit root and alternative is there is no unit root. It is found that all series are non-stationary at I (0) so the null hypotheses is rejected and series are stationary at I (1).so the order of integration is I (1) Table 1 show that all variables are stationary at 1st diff with drift at 1% level.

We check the stationary at all variables FDI, Literacy Unemployment, Domestic saving and our dependent Variable is population. All variables in I (1) with intercept and trend with intercept are stationary. But our population Variable is significant on level with none. The significance of test statistics at 1 %, 5 % and 10 % level of impact in that order against the null hypothesis of unit root.

Population	FDI	Unemployment	Domest saving	Literacy	C
1.000	3.775555	0.912807	-0.100628	-3.658918	6.795362
	(0.31421)	(0.08983)	(0.02618)	(0.02697)	
	[12.0160]	[10.1612]	[-3.84298]	[-135.657]	

The results show that domestic saving and literacy have the long run relationship with population except FDI unemployment according to the literature some studies showed the negative relation of literacy with population. But our model shows when population increases then literacy is also increases.

Trace statistics
Unrestricted Cointegration Rank Test (Trace)/Maximum Eigenvalue statistics

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value
None *	0.991792	286.9585	69.81889	0.0001	177.6995	33.87687
At most 1 *	0.721880	109.2591	47.85613	0.0000	47.34895	27.58434
At most 2 *	0.571570	61.91012	29.79707	0.0000	31.36221	21.13162
At most 3 *	0.450923	30.54791	15.49471	0.0001	22.18211	14.26460
At most 4 *	0.202364	8.365802	3.841466	0.0038	8.365802	3.841466

The portion of the output tells you whether there is Cointegration and the number of co integrated vectors. Here one cannot reject the null of four cointegrating vectors using the trace test. We saw in class the differences between the trace and maximal eigen value tests. The latter can be evaluated from the column of eigen value provided. The trace statistic reports in the first block tests the null hypothesis of r co integrated relations against the alternative of k cointegrating relations, where k is the number of endogenous variables. We can see from the second column that the first two eigen value are much higher compared to the last eigen value, which lies zero.

9. Conclusion
Pakistan has an inappropriately high rate of growth compared to other developing countries. The growth rate is a factor in determining how great a burden would be imposed on a country by the changing needs of its people for infrastructure and jobs. Pakistan by applying co-integration for the period 1972-2012. Our results shows Population is negatively relate to the literacy because mostly were converging on a number of specific reasons for low literacy rate. They included lack of awareness, Poverty, Gender discrimination, Government mismanagement (Ahmad-2011). Population is positively related to the unemployment in the Pakistan. Unemployment is imposed being without a job of wage earner who is able and willing to work but cannot find job. Population pressure lower the economic growth rate and resulting in poor or slow growth of economy in Pakistan. Increase in population contributed much in rising unemployment rate in Pakistan and if the population growth keeps on increasing with the same ratio will create more problems. (Nayab sarhandi)Population is positively related to the FDI. Using the last few years the role of FDI has become more and more important for Pakistan. Our model shows in long run relationship between variables.

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