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Dynamics of Population In Relation To Gross Domestic Product With Reference To North East Region (NER)

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Abstract – The main objective of the paper is to seek the relation between population growth and change of Gross Domestic Product at Factor Cost. Population growth could be beneficial or detrimental to economic growth and economic growth could have an impact on population growth. The issue of population and economic growth is as old as economics itself. By Malthus (1789), the increase of population tends to surpass the production growth rate. That unfettered population growth in a country could plunge the economy into acute poverty. But this view has proven unfounded for developed economies and that they manage to achieve a high level of economic growth and thus both population and real gross domestic product were able to increase simultaneously. This debate between positive and negative sides of population growth is ongoing.

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INTRODUCTION

Generally population growth enlarges the available work force and thus increases economic growth. And at the same time, a large population growth also provides a greater domestic market for the disposal of finished product thereby increases the region's gross domestic product. The increase of population also encourages competition, which automatically induces innovations, technological advancement. Nevertheless, a large population growth is not only associated with food problem but also imposes constraints on the development of savings, foreign exchange and management of human resource.

The dynamics of population in a region or a country is now more concerned with the changing age structure of population rather than the overall growth rate of population. Given the condition of skills, capacity, employability and employment opportunities, there will be a favorable impact on the economic conditions if the relative size of working population is higher than the non-working population, i.e. children and older peoples. This increase of working group of population with respect to the positive impact on the economy can be termed as **'Demographic Dividend'.** For achieving certain levels of economic development, greater amounts of funds need to be injected to different channels of expenditures or investment purposes. For this, there was a need of generation or expansion of surplus incomes over consumption expenditure; which is mainstay of investment. In order to create more create more funds for this, there must be a corresponding increase of working population quantitatively as well as qualitatively. In other words, higher proportion of workers to the non-workers, the larger would be the surplus funds generated.

Data Source and Methodology:

The study is primarily based on secondary data taken from different Census of India publications, Basic Statistics of North East Region and other relevant materials. The data so obtained have been analysed through simple but meaningful statistical techniques including ratios/percentage, average exponential growth rates.

Trends of Population Growth:

Here an effort is made to highlight the comparision between physical settings with respect to the uneven distribution of population in the region. While discussing the distribution of population in different states of the region it is found that there is an extremely uneven distribution of population within the region. Table 1 shows the ever increasing of population in the North Eastern States in 1951 to 2011 census.

Table 1: Population Distribution of NER (000 Persons)

Census Year	AP	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
1951		8029	578	606	196	213	138	639	3,61,088
1961	337*	10,837	780	769	266	369	162	1,142	4,39,235
1971	468	14,625	1,073	1,012	332	516	210	1,556	5,48,160
1981	632	18,041@	1,421	1,336	494	775	316	2,053	6,83,329@
1991	865	22,414	1,837	1,775	690	1,210	406	2,757	8,46,303**
2001	1,098	26,656	2,294	2,319	889	1,990	541	3,199	10,28,737
2011	1,383	31,205	2,570	2,966	1,097	1,978	610	3,673	12,10,569
Area in Sq. Kms (land man ratio)	*83,743 (16.51)*	*78,438 (397)*	*22,327 (115)*	*22,429 (132.2)*	*22,081 (49.6)*	*16,579 (119.3)*	*7096 (85.96)*	*10,486 (350)*	

Source : Census 2011, RGI

Notes : @ The 1981 census could not be held in Assam. The population figure for 1981 for Assam has been worked out by interpolation.

** The 1991 Census could not be held in Jammu & Kashmir. The population figure for 1991 for Jammu & Kashmir has been worked out by interpolation.

Among the states of NER, Arunachal Pradesh (83743 sq kms-32% of the region's area) covers the largest geographical area in terms of square kilometres and endowed with 13.83 lakhs of population. On the other hand, the state of Assam is smaller than Arunachal Pradesh in terms of land area but Assam contains more than 3.12 crores of population in 2011 census. The land man ratio of Tripura is very large as compared to other states except Assam, it is the second smallest state in the region but it is endowed with a large population more than 36 lakhs. The other hill state like Arunachal Pradesh is having less number of population compared to the state of Assam and Tripura. The other states like Sikkim and Mizoram have land areas of 7096 sq. kms, 22081 sq. kms and contains only 6.1 lakhs and 10.9 lakhs of population (2011 census).

Decadal Variation of Population:

In Table 2 Decadal variation in population and average exponential growth rate of the states in between 1971 to 2011 have been shown. The average exponential growth rates have fallen progressively during those decades.

Table 2: Decadal Variation in Population change and Average exponential growth rate of Population

States	Decadal Variation in Population (Percent)				Average Annual Exponential Growth Rate			
	1971-1981	1981-1991	1991-2001	2001-2011	1971-1981	1981-1991	1991-2001	2001-2011
Arunachal Pradesh	+35.15	+36.83	+26.21	+26.0	3.01	3.14	2.33	2.33
Assam	+23.36	+24.24	+18.85	+17.1	2.10	2.17	1.73	1.58
Manipur	+32.46	+29.29	+30.02	+18.6	2.81	2.57	2.63	1.72
Meghalaya	+32.04	+32.86	+29.94	+27.9	2.78	2.84	2.62	2.49
Mizoram	+48.55	+39.70	+29.18	+23.5	3.96	3.34	2.56	2.07
Nagaland	+50.05	+56.08	+64.41	- 0.6	4.06	4.45	4.17	-0.05
Tripura	+31.92	+34.30	+15.74	+14.8	2.77	2.95	1.46	1.17
Sikkim	NA	NA	NA	+12.9	NA	NA	2.9	1.39

Basic Statistics of NER 2015 by North Eastern Council(NEC)

Table 2 shows the gain of population NER during the decades. The North Easter Region of India, which constitutes country's 7.76 percent area and 3.77 percent population (2011 census). Among the NE states, Nagaland has accounted the most increasing during the said decades and recorded average decadal growth rate during 1971 to 2001 was stood at 56.85 percent, but she has recorded a negative decadal growth rate of - 0.6 during the period of 2001-2011. During the last decade i.e 2001 to 2011, the average decadal growth rate of population of the region was hovering at 20.02 percent, which is a very commendable success for bringing down the numbers of population as compared to the previous decades like 1971-81, 1981-1991 and 1991-2001. The average annual growth rate of the decade has been also dwindling slowly but steadily, in 1971-81 the average was stood at 3.58 percent, except Sikkim, and this rate was again slowly diminishing at a very impressive rate – 1981 to 1991, it was 3.57 percent (except Sikkim); 1991 to 2001 it was 2.91 percent; 2001 to 2011 it was 1.81 percent. During the period of 2001 – 2011, Nagaland has recorded a negative growth rate i.e. -0.05 growth of population, which is an amazing performance by the state for stabilizing the challenge of ever increasing population.

Infant Mortality Rates:

Sometimes the constant and steady increase of population was essential in order to neutralise the increasing demand of man power by the different sectors of the economy. One of the main factors attributed to growth of population is the decline in infant mortality rate and increase average life expectancy. The state wise infant mortality rates are given in Table 3 and the rates have fallen consistently.

Table 3: State-wise Infant Mortality Rates (per thousand)

States	1961	2003	2005	2007	2009	2010	2011	2012
Arunachal Pradesh	126	34	37	37	32	31	32	55
Assam	NA	67	68	66	61	48	55	33
Manipur	32	16	13	12	16	14	11	10
Meghalaya	79	57	49	56	59	55	52	49
Mizoram	69	16	20	23	36	37	34	35
Nagaland	68	NA	18	21	26	23	21	18
Tripura	111	35	31	39	31	27	29	28
Sikkim	96	33	30	34	34	30	26	24
All India					50	47	44	42

The state-wise infant mortality rates are given in Table 3 and it shows that these rates have fallen consistently. Infant mortality is the death of a child less than one year of age. It is measured as infant mortality rate (IMR), which is the number of deaths of children under one year of age per 1000 live births. The leading causes of infant mortality are birth asphyxia, pneumonia, pre-term birth complications, neonatal infection, diarrhea, malaria, measles and malnutrition. Many factors contribute to infant mortality such as the mother's level of education, environmental conditions, and political and medical infrastructure. Improving sanitation, access to clean drinking water, immunization against infectious diseases, and other public health measures could help reduce high rates of infant mortality. This rate is often used as an indicator of the level of health in a country.

The continuous decline of average infant mortality rates at every year is an important indicator of success of the region. In the NER, the average infant mortality rate is 42.14 per thousand people while the all India's average is stood at 50 in 2009; this rate goes on decreasing i.e. 37.85 per thousand (2010); 37.14 per thousand (2011) and 36 per thousand in 2012, which were relatively low as compared to the all India level respectively.

Linkages : Population Growth and Gross Domestic Product:

Table 4: State-Wise Gross Domestic Product at factor cost (2004-05 Prices)

(Rs. In Lakhs)

States	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
AP	348,751	358,423	377,212	422,680	459,583	502,040	520,967	544,403	569,653	614,107
Assam	5,339,772	5,521,356	5,778,352	6,056,720	6,403,256	6,979,389	7,486,046	7,885,109	8,363,023	8,853,717
Manipur	513,334	545,896	556,751	589,895	628,094	671,987	668,085	733,506	762,526	Not available
Meghalaya	655,933	707,785	762,564	796,999	900,104	959,122	1,041,308	1,172,291	1,197,797	1,346,528
Mizoram	268,197	286,942	300,587	333,621	378,137	424,896	497,932	485,206	520,289	Not available
Nagaland	583,884	643,571	693,785	744,537	791,687	846,258	925,399	1,002,385	1,067,106	1,136,706
Sikkim	173,915	190,945	202,385	217,823	253,499	440,101	478,428	529,904	570,284	615,231
Tripura	890,353	942,179	1,020,245	1,098,843	1,202,492	1,330,590	1,438,667	1,563,667	1,699,667	Not available
Total GSDP	**8,774,139**	**9,197,097**	**9,691,881**	**10,261,118**	**11,016,852**	**12,154,383**	**13,056,832**	**13,916,471**	**14,750,345**	-

While analyzing the demographic composition of the NER, another interesting feature was sprung up i.e. the continuous and consistent increase of Gross Domestic Product with the increase of population. Another demographic feature which must be included in the above relation was the continuous falling of infant mortality rates (Table : 3). The fall in infant mortality rate is no doubt due to the advancement and easy availability medical and health care facilities. Meanwhile, the continuous increasing of Gross Domestic Product of the different states within the region is no doubt the economic success of different states of NER.

Gross Domestic Product simply represents the amount of money available at the hands of economy for different purposes. Continuous increase of GDP is an essential condition for driving the economy to the path of development. In some cases, the increase of GDP was neutralizing by the ever increasing population and no surpluses could be happened. The unique demographic composition of the NER was that, the increasing the numbers of population is embedded by the continuous and consistent increase of Gross Domestic Product. In table 1, the total numbers of population at 2001 census was stood at 38,986000 persons, from this data it is obvious that the numbers of population in 2004 will cross the 4 crores, but from the table 4, in 2004 the domestic product of the region was estimated at Rs. 8,774,139 lakhs. In 2011 census, the region accommodated 45482000 numbers of populations while the region's gross domestic product reaches to the amount of Rs. 13,916,471 lakhs. By comparing the table 4 and table 1, one interesting thing was coming out, i.e. change of population have a positive impact to the region's gross domestic product. This correlation between

population growth and increase of gross domestic product has been persisted in every census record.

The main reason for the increase of Region's Gross Domestic Product is presumed to be the increase of working population and the ever declining of infant mortality rates. The continuous decline of infant mortality rate and easier and better health care amenities produce youths, who were the main sources of creation of wealth; this demographic feature substancially reduce dependent population to a certain extent.

CONCLUSION:

The population dynamics and its offshoot problems are closely connected with social and economic development and no development programme could succeed which ignores population factors. Various quantitative factors concerning population such as its distribution, density pattern, migration, labour force structure are very important for planning either at macro or regional levels. Besides, other qualitative factors such as literacy, health, productivity, social justice etc are very important for studying qualitative population dynamics and for making planning of social policies.

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