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Window of Demographic Opportunity and Potential Demographic Dividend across States in India

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Abstract
The impact of population growth on economic development of a country has been a most debated issue in economic literature. Recently the focus of demographers has shifted from the study of impact of growth of population towards the changes in the age structure of the population (distribution of population across different age groups) which occur due to relative changes in birth rate, death rate and total fertility rate and its impact on the economic performance of the countries or 'Demographic Transition'.
Today, demographic transition is considered an important factor of rapid growth of per capita income of an economy. Several studies have reported countries with a relatively higher proportion of young or old dependents have to spend more of their resources on these groups without any immediate returns. In contrast, countries with a relatively higher share of working age population in their 'window of opportunity' save and invest more due to the reduced spending on dependents and therefore earn a 'demographic dividend' which has a positive impact on the growth rate of the economy.
The first section of this paper focuses on the concepts "demographic dividend" and "window of opportunity" that arise due to demographic transition in an economy. The second section analyses the trends in the age structure transition in India, the opening of the window of demographic opportunity and the potential demographic dividend. The third section throws light on the existing regional variations in the demographic dividend inIndia. Finally the fourth section focuses on the impact window of demographic opportunity and suggests the policy measures for changing the potential dividend into actual dividend.
Key Words – Demographic Dividend, Window of Demographic Opportunity, Demographic Transitions, Population Projections

The impact of population growth on economic development of a country has been a debated issue in economic literature. Ideas of different schools of thoughts on the issue have alternated between the 'The pessimist approach' of Malthus and Neo Malthusians which argued that population growth restricts economic growth, (Malthus, Coole and Hoover, 1958; Echrlich, 1968) and 'The Optimist approach' that population growth steps up the pace of economic development because human ingenuity is capable of creating technology to overcome any constraint to development (Boserup, Simon 1981). The debate then settled on the 'mid path' stating that population growth has only a moderate impact on economic growth. In most of these theories, the main focus has been the population size, density of population or its rate of growth.
Bloom and Williamson (1998) argued that the changes in the age structure of the population (distribution of population across different age groups) which occur due to relative changes in birth rate, death rate and total fertility rate and its impact on the economic performance of the countries or 'Demographic Transition' is a very vital dimension. During this demographic transition, all countries have a demographic "window of opportunity" due to the increase in the share of the working-age population in total population resulting in a positive relationship between the growth rate of the share of the working-age population and economic growth. Today, demographic transition is considered an important factor of rapid growth of per capita income of an economy.
India is in the midst of a demographic boom since the 1980s and projections show that it is expected to see an increase in the share of the working-age population until about 2035 to 2040. This paper outlines these projections and shows the

differences in the demographic transition across states in India. It attempts to investigate the relationship between economic growth and growth in the share of the working-age population. Using official population projections for the period 2001-2026, the paper shows the potential of "window of demographic opportunity' in developed states like Kerela where the share of working population is projected to decline during the period of 2011 – 2026 as against the northern less developed states which will continue to see an increase in the share of the working-age population 2035 to 2040.

The first section of this paper focuses on the concepts "demographic dividend" and "window of opportunity" that arise due to demographic transition in an economy and its potential impact on economic growth. The Second section analyses the "Window of opportunity" in India, demographic trends and the age structure transition in India, and the potential demographic dividend. The third section throws light on the regional variations in the demographic dividend on the basis of population trends and projections for the states of India. The fourth section focuses on the impact window of demographic opportunity, suggests the policy measures for changing the potential dividend into actual dividend and draws out the conclusions.

I. The Demographic Dividend and Window of Demographic Opportunity

The supporters of the Malthusian view, the pessimists, believed that population growth will impede economic development. According to their view, when the growth rate of population exceeds the growth rate of food production, it leads to scarcity of food resources, malnutrition, low level of subsistence and hence low productivity. This also leads to a rise in the mortality rates in the long run. Further, high population also implies low resources for investment and capital formation.

On the other hand the optimists argued population growth assisted economic growth (Simon Kuznets, 1967). According to them increase in population implies in the stock of human capital human ingenuity is capable of creating technology to overcome any constraint to development (Boserup, Simon 1981). These economists also believed that the socio economic conditions of a country also shape the impact of the population growth on it.

Bloom and Williamson (1998), Bloom et al. (2002), and Bloom and Canning (2004), argument has another important dimension that cannot be ignored—the changing age structure. They argue that population growth is accompanied with a change in the age composition, and since each age group has different economic behavior, this is vital.

Increase in population in any country, over time, is not evenly distributed by age. All economies pass through four phases of demographic transition and the age structure of the population changes significantly. Age structure change is a long term inevitable process that cannot be pre determined. This change in age structure has two effects; one is ageing of population and the second demographic dividend. In the first two phases of transition the population is disproportionately weighed towards childhood, in the middle phase the working age group dominates and at the later stage the old age dominates. In the first stage of demographic transition, high birth rate is balanced by a high death rate and therefore the population grows at a slow and steady rate. The ratio of young dependents (under 15) to the working population (15 -59) is high. The second stage of demographic transition there is a sharp rise in the growth rate of population as the death rates fall more rapidly relative to the decline in the birth rate and improvement in longevity occurs. Improvements in the health facilities reduce the death rates. However, since the birth rate is determined by socio-cultural norms and education levels in the economy, it continues to be high. The ratio of young dependants (0-14) to the total population in this phase is high. The fertility rates are high and in case population policy fails to bring a quick fall in birth rate, the countries face a population explosion as did China and India. The population age structure at first becomes young. A decline in mortality increases the chances of survival of the young, as well as their life expectancy. With children surviving longer due to decline in infant mortality and improvement in life expectancy, number of children per family declines i.e a decline in fertility rate occurs.

With the advancement of medical facilities, population control, rise in levels of education, improvement in standard of living and

urbanization, a death rates plateau is reached. Birth rate too starts declining and the gap between the birth rate and death rate decreases. Replacement rate of fertility (couples having only two children) is achieved but population continues to grow due to the large size of population in reproductive age group. When the baby boom of the second stage of transition enters into the adult age and productive population grows at a more rapid rate than the total population. This reduces the dependency ratio (sum of number of children and adolescents and elders divided by the people at working age) and the age structure transforms. Thus countries passing through this phase of demographic transition have a potential "demographic dividend" or "a window of demographic opportunity". It has been postulated that this dividend has contributed significantly to the economic growth of East Asian Countries.

This stage of transition is the phase of rise in growth rate of income, saving and investment. Decline in the dependency ratio creates an atmosphere conducive to economic growth due to various factors. There is a fall in social public investment expenditure needed to meet the health and education needs of the youngest age group. These resources are released for investment in economic development projects. Simultaneously, the ratio of productive workers to child dependents in population improves i.e. a rise in working labour force. The change in work force activity, increase in savings due to rise in working population and a further boost to savings that occurs due to increase in longevity results in a boom in the national savings rate which contributes to an economic miracle.

Increased labour supply in an economy, if sufficiently absorbed through adequate employment generation, helps in a rise in growth rate of the economy. When a large percentage of population starts producing and earning, savings rise. Savings also rise as the population start entering the age of 40's and begin to plan their future after retirement and the future of their children. This rise in savings improves the country's prospect for investment and rapid capital formation. Finally, demographic transition also has significant positive impact on human capital formation. Investment in human capital is important for reaping the benefits of demographic dividends because transforming a youthful population into a productive workforce is possible only with adequate investment in education. Further, the working-age population should be provided productive jobs or entrepreneurial opportunities. This requires suitable macro economic environment and government policies.

Thus the countries with demographic dividend have a 'window of opportunity' for exploiting the potential of the working-age populations. However increase in the working population does not automatically lead to economic growth but simply enhances the potential by giving birth to the window of demographic opportunity. Only when the favourable conditions are available can the demographic potential be actually realised. Issues like unemployment, poverty, lack of social infrastructure, regional variation in demographic dividend and resulting interstate migration of labour force causing resistance in developed regions and ethnic conflicts, population aging have to be dealt with to ensure that the demographic dividend does not turn into a demographic liability. The 'window of opportunity' is not open for long. It slowly closes when low and stable birth rate below the reproduction rate reduces the proportion of population in the reproductive age group, stops population growth and population stabilizes. The proportion of older dependants slowly rises relative to both the young dependants and the working age population and the labour force cohort ages. To exploit the demographic dividend for sustained growth policy measures are required.

Section II. India and the Window of Demographic Opportunity:

India today supports about 17 percent of the world population of about 2.4 percent of the total land area of the world. Its population has increased from 236 million in 1901 to 1,170 million in 2009. The trends of growth of population since 1921 reveals that the country has passed through three phases of demographic transition -

1921-1951: Steady Growth at the rate of 1.22 percent

1951-1981: Rapid High Growth of 2.41, population explosion

1981-2001: High Growth with indications of slow down

Table I : Demographic Variables of India

Demographic Ariables	1951	1961	1971	1981	1991	2001	2008
Population (in millions)	361	439	548	683	846	1,028	1,154
Crude Birth Rate	41.7	41.2	37.2	33.9	29.5	25.4	22.8
Crude Death rate	22.8	19	15	12.5	9.2	7.4	7.4
Infant Mortality Rate		146	129	110	80	66	53
Total Fertility Rate	6	5.5	5.2	4.2	3.6	3.1	2.7
Life Expectancy at Birth			49.7	55.5	60.3	63	63.5
Average Annual growth rate of population (%)		1.98	2.24	2.23	2.16	1.97	1.64
Working Age group population (in millions)*			285	367	470	584	
Average Annual growth rate of working age group population (%)				2.58	2.48	2.26	
Share of Working Age Group population in total population (%)			52.0	53.8	55.5	57.1	

Source : Registrar General of India

- Working Age group in India – 15-59 years
- Figures for 2008 are from Economic Survey 2009-10
- Average Annual growth rate of population (%) for 2001-2009

The population projections (Table II) reveal that India became a classical case of Window of Opportunity.

Table II : Projected Population Characteristics as on 1st March :2001-2026

Indicator	2001	2006	2011	2016	2021	2026
Total Population (000')	1028610	1112187	1192507	1268961	1339741	1399838
Population Density(Sq.Km)	313	338	3363	386	408	426
Population By broad Age Groups (000')						
0-14	365482	356698	3446942	349291	336906	327004
15-59	593342	671608	747094	820572	859590	899651
60+	70686	83580	98470	118099	143244	173182
Proportion (percent)						
0-14	35.4	32.1	29.1	26.8	25.1	23.4
15-59	57.7	60.4	62.6	63.9	64.2	64.3
60+	6.9	7.5	8.3	9.3	10.7	12.4
Median Age (years)	22.51	23.88	25.47	27.37	29.33	31.39
Dependency Ratio						
Young (0-14)	614	532	464	420	392	363
Old (60+)	119	124	132	146	167	192
Total (Young and Old)	734	656	596	566	559	556

Source: Population Projection Report for India and States 2001 – 2026, Census of India, 2006

Table III: Demographic Indicators 2001 - 2025

Indicator	2001 - 05	2006 - 10	2011 - 2015	2016 - 2020	2021 - 2025
Population growth rate	1.6	1.4	1.3	1.1	0.9
Crude Birth Rate (CBR)	23.1	21.3	19.6	18.0	16.0
Crude Death Rate (CDR)	7.5	7.3	7.2	7.1	7.2
Infant Mortality Rate	61.3	54.3	49.2	44.0	40.2

(IMR)					
Total Fertility Rate (TFR)	2.9	2.6	2.3	2.2	2.0

Source : ibid.

- The population of India is expected to increase at the rate of 1.2 percent annually during the period 2001-2026.
- Between 2001 and 2026, because of the declining fertility, the proportion of population aged less than 15 years is projected to decline from 35.4 to 23.4 percent. The proportion of population in the working age-group 15-59 years is expected to rise from 57.7 percent in 2001 to 64.19 percent in 2026.
- Out of the total population increase of 372 million between 2001 and 2026, the share of the workers in the age-group 15-59 years in this total increase is 83 percent. This has implication in the productivity of labour in future.

The window of demographic opportunity opened for India around the 1980s and shall remain open till 2035. In the period of 2001 -2005 the percentage of population in the middle age group (15-59) is projected to increase from 57.7 to 64.3. However, projections show that the window will shut after 2035 with the proportion of the middle age group declining by the end of 2050. Moreover, this increase in dependency burden will be due to the aging of population as the share of the above 60 age group will increase from 6.9 per cent to 12.4 per cent. Thus, India must take advantage of its years of the window of demographic opportunity to attain higher growth. Though the economy has a strong the window of demographic opportunity, the widening of the window has not been exploited fully over the years in a positive manner. The reduction in the population growth rate from the decade of 1991-2000 to the 2001 -2010 was accompanied with the reduction in the employment growth rate. This implies that the baby boom generations entering the working age group are not finding sufficient gainful employment opportunities and the demographic window may not be fully exploited . Productive jobs and entrepreneurial opportunities are vital to prevent a rise in unemployment levels. This in turn requires high level of industrial and infrastructural investment.

III. Regional Variation in Demographic Dividend:

The demographic analysis of India's present population and the projections till 2051 has revealed that demographic transition is not uniform across the states of India and therefore the potential dividend too will accrue to the states at different points of time and will be of different degree. On the basis of vital demographic statistics, the country can be broadly divided into two broad regions - north and south. The 'north' comprises of Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Rajasthan i.e the BIMARU states and newly-formed states of Uttaranchal, Jharkhand and Chhatisgarh. The 'south' comprises of Kerala, Tamil Nadu, Andhra Pradesh and Karnataka. During 1991-2001, the average population growth rate was 2.22 percent per annum in the north while it was only 1.24 percent in the south. The southern and Western States are likely to achieve the replacement level fertility rate of 2.1 by 2010 as against Uttar Pradesh who according to the projections will achieve it by 2100.

Table IV. Demographic Variables of Major States of India

States	Birth Rate (per 1000) 2008	Death Rate (per 1000) 2008	IMR 2007	Literacy Rate 2001	Life Expectancy at Birth (Years) 2002-2006
Kerala	14.6	6.6	13	74	90.9
TamilNadu	16.0	7.4	35	66.2	73.5
Andhra Pradesh	18.4	7.5	54	64.4	61.1
Karnataka	19.8	7.4	47	65.3	67.0
Punjab	17.3	7.2	43	69.4	69.9
Gujarat	22.6	6.9	52	64.1	70.0
Maharashtra	17.9	6.6	34	67.2	77.3

West Bengal	17.5	6.2	37	64.9	69.2
Haryana	23.0	6.9	55	66.2	68.6
Assam	23.9	8.6	66	58.9	64.3
Orissa	21.4	9	71	59.6	63.6
Madhya Pradesh	28.0	8.6	72	58.0	64.1
Rajasthan	27.5	6.8	65	62.0	61.0
Bihar	28.9	7.3	58	61.6	47.5
Uttar Pradesh	29.1	8.4	69	69.0	57.4
India	**22.8**	**7.4**	**55**	**3.5**	**65.4**

Source: GOI, Economic Survey 2009-10 and Census of India Series 1 – India, paper 1 of 2010

The vital demographic variables across the states in table IV reveal that Kerala had an impressive demographic transition due to the onset of decline in death rates in the early years of the twentieth century and the onset of fertility transition in 1960s. It achieved Total Fertility Rate of 2.1 in 1988. Today the state is almost twenty-five years ahead of other states in the window of Demographic transition.

Kerala, Tamila Nadu, Andhra Pradesh, West Bengal, Himanchal Pradesh, Karnataka, Maharashtra, Gujarat and Assam achieved a birth rate of less than 30 per 1000 by 1996 while it was in the range of 31-34 in BIMARU states. Thus the south – west region entered the third phase of transition much earlier.

Of the projected increase in population of 371 million in India during 2001-26,187 million is likely to occur in the seven States of Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Rajasthan, Uttar Pradesh and Uttaranchal (termed as BIMARU states, since it was so before division). Thus nearly 50 percent of India's demographic growth during this period of twenty five years, is projected to take place in these seven states. Twenty two percent of the total population increase in India of 371 million during 2001-26 is anticipated to occur in Uttar Pradesh alone. The population in these seven states together is expected to grow at 1.5 percent per annum during 2001-26.

Continuing decline in fertility and increase in the expectation of life at birth is expected to make a difference to the proportion of older population (60 years and above) between states. The State of Kerala, where lower fertility and mortality rates have been achieved earlier than the other states, the proportion of older persons aged 60 years and above is expected to increase from 11 percent in 2001 to 18 percent in 2026. Thus, almost every sixth individual in Kerala is expected to be a senior citizen by 2026. In contrast, Uttar Pradesh is expected to have an increase of the proportion of old age population from 6 percent in 2001 to 10 percent in 2026, implying that the population of Uttar Pradesh will be expected to be relatively younger compared to that of Kerala. Table VI provides an insight into the socio –economic diversity in the states and their potential dividend with Kerla having a high human development with a high unemployment rate and the BIMARU states with low average growth rate.

Table VI: Socio – Economic Indicators of States and Demographic Dividend

States	**Rate of Unemployment (Daily Status, 1999 – 2000)**	**NSDP (Rs. Crores) 2009-10**	**Annual growth Rate of NSDP (2004-05 to 2009-10)**	**Per Capita NSDP (Rs.) 2009-10**	**Average Growth Rate**	**% of Pop. Below Poverty Line 2004-05**
Kerala	21.0	12,04,04 **	9.92	35,457 **	8.25	15.0
Tamil Nadu	11.8	20,34,86 **	8.25	30,652 **	7.48	22.5
Andhra Pradesh	8.0	23,74,33	8.45	28,384	7.29	15.5

Karnataka	4.6	15,86.32 **	9.70	27,385 **	8.40	15.0
Punjab	4.0	9,589	6.50	34,935	4.56	8.4
Gujarat	4.6	11,89,17 *	12.40	31,780 *	10.83	16.8
Maharashtra	7.2	35,74,02 *	9.40	33,302 *	7.80	30.7
West Bengal	15	21,63,16 **	7.40	24,720 **	6.27	24.7
Haryana	4.8	11,05,59	9.60	44,483	7.71	14.0
Assam	8.3	51,304	5.39	17,080	4.15	19.7
Orissa	7.3	78,766	9.02	19,806	7.90	46.4
Madhya Pradesh	4.5	90,786 *	5.07	13,299 *	3.23	38.3
Rajasthan	3.1	13,13,31	7.71	19,806	5.71	22.1
Bihar	7.3	10,13,74	11.07	10,577	9.30	41.4
Uttar Pradesh	4.1	24,00,39 **	6.57	12,481 **	4.55	32.8

* 2007-08, ** 2008-09

Source; Compiled and Computed from RBI, handbook of Statistics on Indian Economy (2004-05) for the period of 1994-94 to 2003-04; CSO, National Accounts Statistics 2009 and 2010

The BIMARU states have lowest per capita income and slowest growth rates. They also have a higher percentage of unemployment and population below poverty line. These states are caught in a vicious circle of low economic growth and low human development. The trickle down approach needs to be replaced by employment generating investment and health and education expenditures to improve labour productivity.

The combination of high population growth, low literacy and lack of employment opportunities in the poorly performing States, has resulted in an increasing rural to urban migration as well as interstate migration especially of unskilled workers. Such migrations are helpful only in the short run in overcoming economic problems associated with unemployment. However, the migrant workers and their families will face problems in securing shelter, education and health care in the long run.

India's current economic structure and government policies do not favour rapid job creation because the economy is service sector dominated followed by self employment. The service sector absorbs only skilled highly educated labour force and in an economy with only 65% literacy level and only 10% enrollment in higher education, its contribution is marginal. The agricultural sector is incapable of adding sufficient number of jobs. Labour laws are too rigid, rural urban divide and regional disparities worsen the situation. Northern states will remain poor, young and youthful in the next twenty years. The relatively older and affluent will start aging at the same point of time.

IV. Conclusion:

Demographic transition is an inevitable global phenomenon and for India the current phase of the demographic transition is both a challenge and an opportunity. The challenge is to ensure human development and optimum utilisation of human resources. The opportunity is to utilise available human resources to achieve sustained economic development. However demographic transition does not occur in isolation. It is accompanied with many transitions - economic transition, education transition, health transition and reproductive health transition. The economic planners too realize the need to tap the potential. Economic Survey 2007 -08 stated that "For actual tapping of the dividend, the eleventh plan relies upon not only ensuring proper health care but also on major emphasis on skill development and encouragement of labour intensive industries." While the East Asian Economies succeeding in tapping their potential, some Latin American countries failed. India has to learn a lesson from this and pursue policies which will fetch dividends. The precondition for ensuring that the potential dividend is actualized is assimilating the excess labour supply caused by demographic transition into productive workforce. This requires employment generation which in turn is possible only through adequate capital expenditure, investment in infrastructure and social sector.

India will be able to fully exploit its window of opportunity if the BIMARU states generate sufficient gainful employment opportunities for the expected bulge in the working-age population. However, given their low per capita income, backward social and physical infrastructure, poor investment levels how much will be achieved is a question tom ponder upon. The need of the hour is a synergy between the interlinked transitions – economic, social, educational, health – which effect economic development. The focus of the planners should be in achieving this synergy.

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