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India's Population - 'Bulging at its Seams?': A Learning Perspective

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Abstract

The merits and demerits of India's burgeoning population have created more than a flutter in the lives of many an economist, yet interest never seems to peter out. By the end of 2020, 'the average age of an Indian will be 29 years, compared to 37 for China and 48 for Japan'. According to the UNFPA, the window of demographic dividend opportunity in India is expected to be available for five decades from 2005-06 to 2055-56 - longer than any other country in the world. So in 2020, India seems to have entered into the 16 year period under the Demographic Dividend. While the brains of the country burn the midnight oil and grapple with the menacing pandemic – COVID 19, fact of the matter remains that, India's bulging population is indeed a blessing in disguise!. So what if half of the sub-continent is still struggling to come to terms with a two children per mother norm, and that too well into 2020?. To conclude, there's still enough light to be seen at the end of the tunnel. Ranked pretty high in GDP (especially in terms of Purchasing Power Parity) – thereby qualifying to be counted as one of the world's biggest economies, India, deals with extremes that range from delightful to excruciating. A country juxtaposed with mysteries spread over centuries, demographic dividend offers a formidable contradiction, indeed.

Keywords: People, Demographic Dividend, Dependency Ratio, Population Momentum, Population Pyramid Stages, Bulging Population, Demographic Transition Stages

Introduction

With a population of more than 1.2 billion, India is the world's largest democracy. Over the past decade, the country's integration into the global economy has been accompanied by economic growth. India has now emerged as a global player.

(https://www.worldbank.org/en/country/india/overview)

The merits and demerits of India's burgeoning population have long raised storms in tea cups and have created more than a flutter in the lives of many an economist, yet interest in the country's population never peters out.

According to the World Development Indicators (a report released by the World Bank on March 18, 2020), there is a total of 1352.60 millions Indians living in the world. Well, that makes up a cool 1.35 Billion!

Without complicating matters, let's try and figure out what these numbers portends for us.

Context Setting and Methodology

Context Setting

This sheer magnitude not only makes one in every six individuals in this planet an Indian, but also underscores the fact that India harbours more than 17.51% of the world population!

To put matters in perspective, the most populated state in the country, Uttar Pradesh's population numbers of 20 plus Crores more or less equals the whole of Brazil; while the state of Maharashtra's population numbers of 12 plus Crores is a match for a whole country like Mexico. And, even the state of Bihar whose current population numbers of 10 plus Crores is higher than the whole of Germany. The irony is in the midst of the last Census (2011), it was declared that, India's population growth rate was only 1.41%, ranking a lowly 93rd in the world. And with the next Census to follow pretty soon, there is bound to be a few pleasant surprises!

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Positives of a Bulging Population

People are a nation's biggest assets. Those who argue that a demographic decline does not necessarily lead to a social and economic implosion ought to take a re-look at the countries under the European Union, where the most vibrant sectors of the economy deal with death. Unfortunately the mortuaries and cemeteries are observed to be doing booming business, while the maternity wards and the preschools stand empty. The painful COVID 19 is a pointer too.

India, on the other hand, has more than 50% of its population below the age of 25 and more than 65% hovering below the age of 35. It is expected that by the end of 2020, the average age of an Indian will be 29 years, compared to 37 for that of China and 48 for Japan (https://en.wikipedia.org/wiki/Demographics of India).

So does this augur well for India? To find an answer, we can look at the Demographic Dividend and the Dependency Ratio.

Methodology

Objectives and Design

The overall purpose of this study is to have an overall understanding of the impact of Demographic Dividend and Demographic Transition of India in relation to the other nations. To undertake this, have looked up all available literature across various articles, compendia, seminar papers, journals, and websites in the secondary space to effectively study and analyze the same.

The Research Design adopted was Descriptive. Also since the study was an account of India in comparison with the other nations of the world, this study hinged towards being a case study based research, as well. Going forward, keeping this as a base, the researcher intends to develop this paper into an empirical one duly incorporating the concepts of Hypothesis Testing, Primary Data Collection and Analysis.

Study of Available Literature

The United Nations Population Fund states that - India, theoretically, could have a golden period in the decade of 2020 to 2040 (and continuing later, though with decreasing results)...but it could happen only if the right policies and programmes are put in place right now (UNFPA, 2018). Thereafter, population ageing may influence the external current account balance through the saving-investment channel (Higgins, 1998; Fougère & Mérette, 1999).

It can also be noted that, the impact on growth through improvements in human capital is the most significant and the least tangible (Bloom et al., 2002). India needs to increase labour force participation by equipping workers with the right skills (Bloomberg, 2019).

Right from the mid 1980s, India has been looked upon to be in the midst of a demographic expansion and being one of the only few select countries which are expected to have an increase in the share of working-age population in decades to come. However, though the supply (labour) side looks promising, the major lookout is now the ability to provide the supply (labour) side with gainful jobs (Acharya, 2004).

The Ministry of Skill, Development & Entrepreneurship, GOI states that - India's demographic dividend began in the early 1980s and is expected to come to an end towards latter part of 2030s. India is just beyond the midpoint of its dividend, and this once in a life time opportunity is unlikely to last beyond another quarter of a century, from now. Thus, we need to increase and sustain our GDP growth, reduce poverty, and enhance human capabilities of our people. Every year lost will never return in the life of a child or youth and in the next 25 years, India will be an ageing society (Ministry of Skill, Development and Entrepreneurship GOI, 2019).

The growth of the share of working population adversely affects the growth of income which re-ignites the old debate whether India is capable or not to reap the benefits of demographic dividend (Bhattacharya & Haldar, 2015).

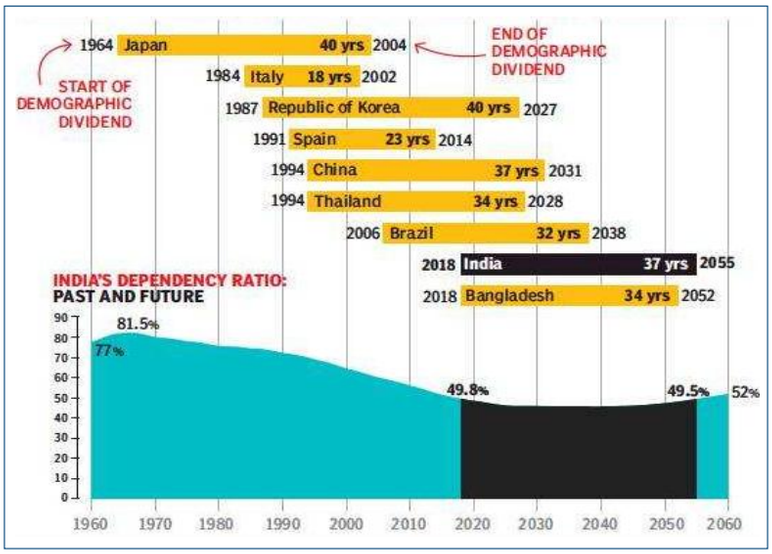
Demographic Dividend

According to UNFPA, 'Demographic Dividend' is defined as a nation's economic growth potential that can result from shifts in a population's age structure (UNFPA, 2016), mainly when the share of the working-age population (i.e. 15 to 64) is larger than the non-working-age share of the population (i.e. <=14, and >=65) .

This makes it obvious to note that, some of the Leading Asian Economies like China, Japan & Korea have only been able to ride the wave of this demographic dividend

transition. A prominent reason why this transition happens is due to the fact that the nation experiences a pleasant drop down in the total fertility rate (TFR), thereby enabling stabilization of the Average Life Expectancy of its citizens.

Interestingly the UNFPA mentions the window of demographic dividend opportunity in India to be available for five decades from 2005-06 to 2055-56, longer than any other country in the world. So in 2018, India seems to have entered a 37 year period under the Demographic Dividend, and hence its specific mention in The Economic Survey 2018-19. India's Demographic Dividend will peak around 2041 (The Economic Survey 2018-19), when the share of working-age, i.e. 20-59 years, population is expected to hit 59%. As observed in the past, such 'demographic dividend' periods are generally marked as High growth periods. The diagram below corroborates to the same.



Source: The Economic Times, July 22, 2019

Fig. 1: Dependency – India and the World

Looking up further, we can observe the changes in Dependency Ratio as under

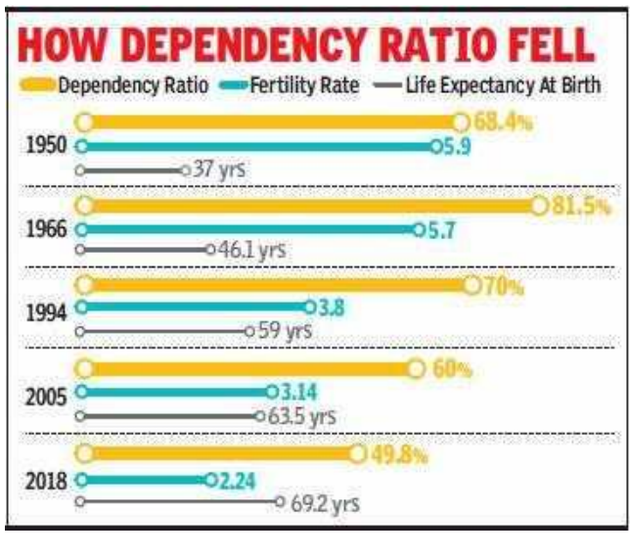


Fig. 2: Falling Dependency Ratio – India

Dependency Ratio Formulae

The basis of calculation of the Demographic Dividend is arrived from the Dependency Ratio. Higher the Dependency Ratio, more the number of people, who need looking after. Subsequently, it is also observed that countries that have a higher dependency ratio have more people who are not of working age, and have fewer people who are of working age and paying taxes.

Looking up the Formulae of Age Dependency Ratio, we have

Chart 1: Dependency Ratio Formulae

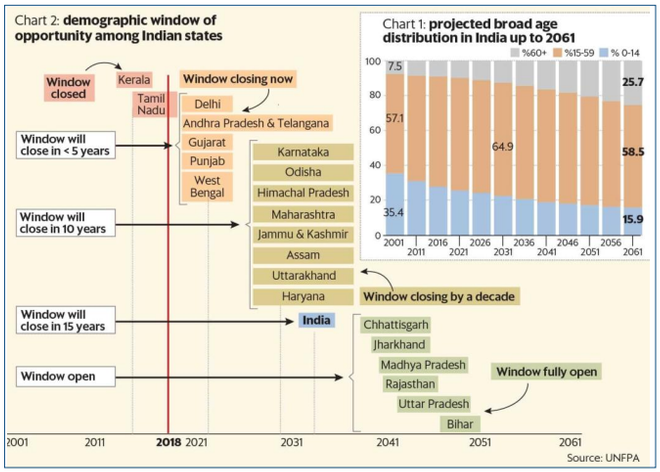
Total (Age) Dependency Ratio =	$\frac{\text{(Population 0-14 + Population 64>)}}{\text{Working age population 15-64}}$	X 100
Child Dependency Ratio =	$\frac{\text{Population 0-14}}{\text{Working age population 15-64}}$	X 100
Old-Age Dependency Ratio =	$\frac{\text{Population 64>}}{\text{Working age population 15-64}}$	X 100

Expressed normally as a percentage in published international statistics, the dependent part usually includes those under the age of 15 and over the age of 64. The productive part is made up of the population in between i.e. ages 15-64.

Understandably, a higher dependency ratio can cause serious problems for a country. The largest proportion of a government's expenditure is spent on health, social security and education which are most used by old and young people alike. Also the increasing expenditure on pension becomes a problem too (AUK notes, 2011).

In the year 2019, India's total dependency ratio (between the ages 0-14 and 65+ per 15-64) was 49.2. This total dependency ratio (again between the ages 0-14 and 65+ per 15-64) fell gradually from 79.3 in 1970 to 49.2 in 2019. According to the UNFPA, around 2025, India's dependency ratio will be 47.9 & by 2030, India's dependency ratio is expected to be reduced to about 45. Welcome numbers, indeed.

Accordingly, on looking up the UNFPA Repository, we can also cull out the Sub National i.e. State-wise data as under:



Source: The Mint, 11th January, 2019

Fig. 3: State-Wise Demographic Window – India

Rest of the World on Dependency

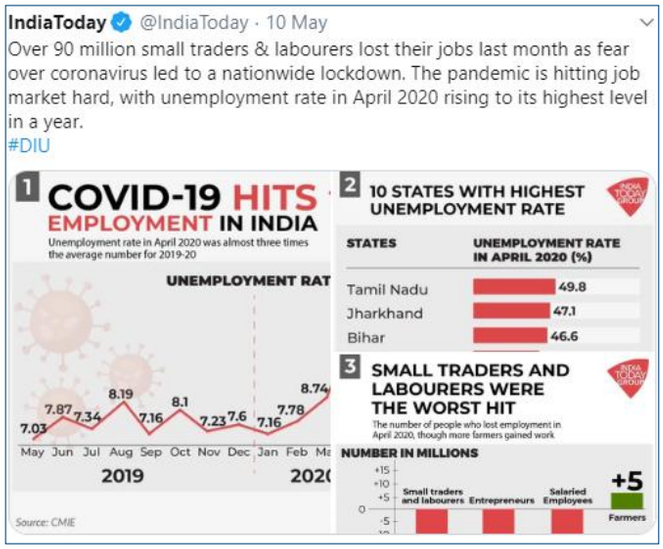
While India rests on its laurels on Dependency, the going's getting tougher for the rest of the world.

As per the data from United Nations Population Division, the Baby Boomers of 1980 would be entering retirement in 2050. Coupled with the fact that there exists a huge dip in the multitude of populace walking the planet caused due to the superlative controls on reproduction resulting in dwindling Total Fertility Rates (TFR) and Crude Birth Rates (CBR) post 1980, the year 2050 and thereafter indeed does not auger well when looked at from the aspect of Dependency Ratio.

Demographic Dividend and the Current Pandemic

According to a study by the Centre for Monitoring the Indian Economy (CMIE), the COVID-19 lockdown hit the Indian employment scenario, hard.

By 13th May 2020, when the government lifted some of the lockdown restrictions, the unemployment rate had gone up to 23.97%. The worst affected seem to be India's youth, under the age of 35 years, who constitute approx 65% of India's population and form the majority of the labour force in both the organised sector or unorganized sector.



Source: The India Today, 10th May 2020

Fig. 4: Demographic Dividend and COVID19

Analysis and Discussions

Crude Birth Rate and Total Fertility Rate

Looking up the formulae for Crude Birth Rate, we find

CBR = B/P × 1000

Where

B = No of Births in a given year

P = Total Mid-Year population of the same year, and

CBR = Crude Birth Rate

Also for calculating the Total Mid-Year Population, we have,

$Pt = Po\ (1 + r/100)^t$

Where

Po = Population at an earlier period

Pt = Unknown population to be estimated

r = Annual population Growth Rate

t = Time interval between Po and Pt

The UNFTA data also enables us re-produce the following –

Total Fertility Rates for India – for 1980 & 2000 (as actual), 2020 & 2040 as expected & projected are:

Chart 2: Total Fertility Rates for India

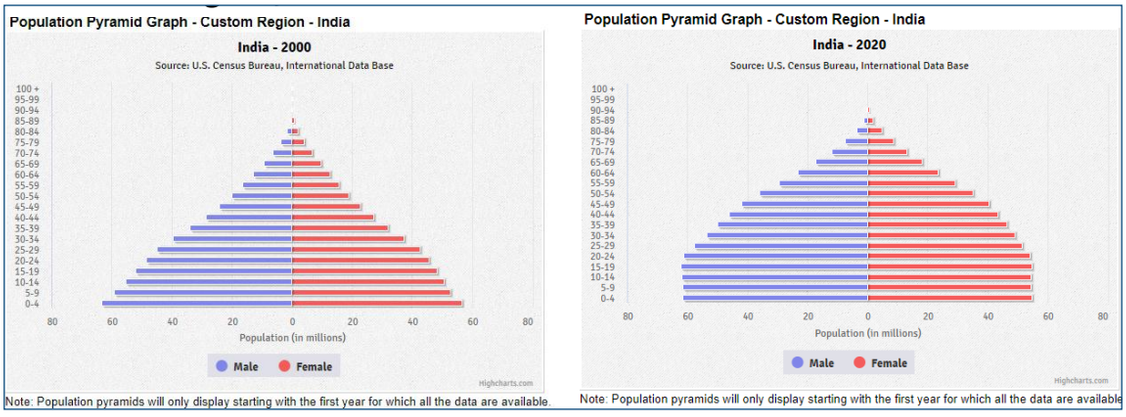
1980	2000	2020 (Expected)	2040 (Projected)
4.97	3.48	2.30	1.95

Population Momentum and India

Population momentum refers to the tendency for population growth to continue beyond the time that replacement- level fertility has been achieved, because of a relatively higher concentration of people in the child bearing years (Population Reference Bureau, 2019).

Going by the latest data released by the US Census Bureau, International Database, population momentum in India can be observed due to a large, younger generation, replacing a smaller, older generation. This generally requires 50-60 years to happen – therefore a substantial growth continues even after replacement fertility has been attained (in 2025). Once the momentum has stopped, then births (additions) equal deaths (losses) – predictably in 2050 – and the growth ceases.

While the brains of the country burn the midnight oil to spare some time off the menacing pandemic COVID 19, and try and put up a brave front against the threat of rising population, fact of the matter remains that India's bulging population is indeed a blessing in disguise!. So what if half of the sub-continent still struggles to come to terms with a two children per mother norm and that too well into 2020? [As per the last Census, Census 2011, and the total fertility rate (TFR) by residents, 1990-2009: 2.6].



Source: USA Census International Data Base

Fig. 5: Population Pyramids – India – 2000 & 2020

Stages of Population Pyramid and India

Under population pyramid stages, India is currently moving from the middle transitional stage to the late transitional stage.

Population Pyramid is but a graphical representation of the Age-Gender distribution of a particular population. Practically speaking, Population Pyramid is the graphic profile of the population's residents.

If one looks at the population pyramid of India in 2019, we come up with the following:

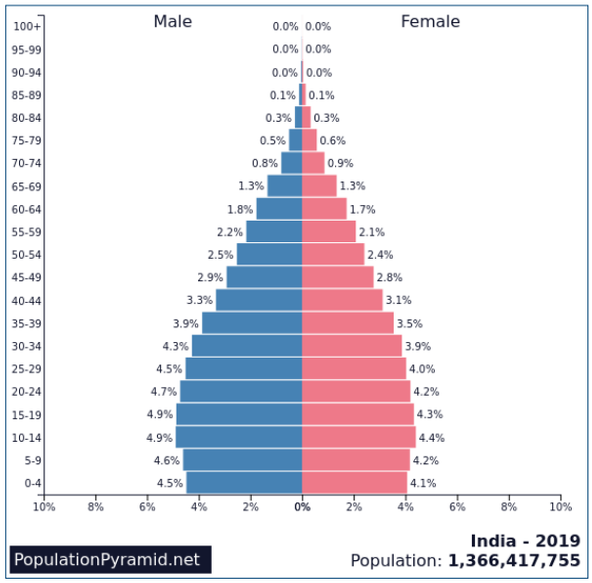
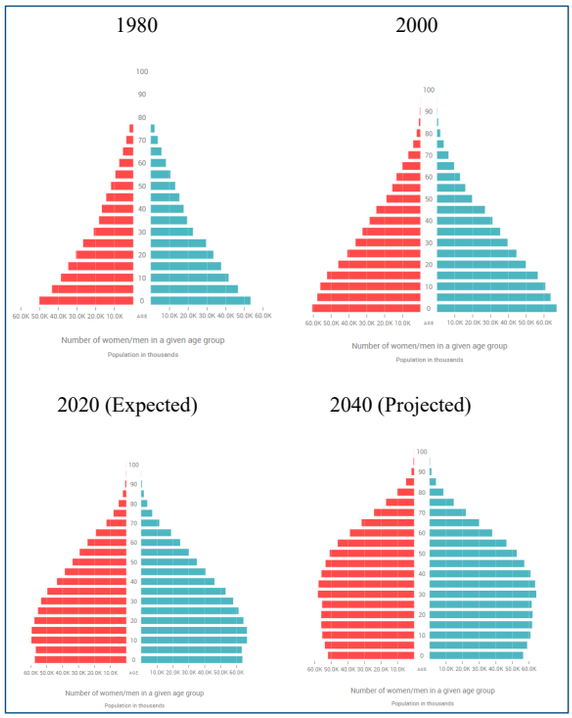


Fig. 6: Stages of Population Pyramid – India

India's Population Pyramid over the Years

The last part of our research has been on studying India's Population Pyramid.



Data Source : UNFPA, 2019

Fig. 7: India's Population Pyramids Over the Years

Looking up the Graphs, we observe that Gender is shown both on the left & right sides, age is on the y-axis, and the population is depicted on the x-axis. Finally, each grouping (for Example – males in the 20-24 yrs bracket) is addressed as a cohort.

Going by the shape of the Population Pyramid, the more rectangular the graph, slower is the rate of population growth, thereby resulting in a more uniform spread across cohorts. Accordingly the older generations are being replaced by newer generations of approximately the same size. The more the graph looks like a pyramid, the faster the growth of population.

Also as the bottom of a Pyramid is larger than the top, the faster the speed at which the population is growing. This implies that the old generations are shrinking and larger new generations are coming up. This shape can also point out to the fact that, a large part of the country's population has just about reached their reproductive age, while a larger segment is yet to reach even that age. Hence, there exists much a potential for growth.

As mentioned earlier, population pyramids are graphical representations of the age and sex of the population. Hence, Population pyramids also find mention as Age-Sex pyramids, with the vertical line in the middle separating the two genders. Though the graphical representations of the population is commonly named as a Pyramid, these 'pyramids' can also take shapes that are different from a 'Triangle'.

Discussions

The five stages of Demographic Transition are - High Stationary, Early Expanding, Late Expanding, Late Stationary and Declining (Blacker, 1947).

Chart 3: The Five Stages of Demographic Transition

Stage 1 High Stationary	Stage 2 Early Expanding	Stage 3 Late Expanding	Stage 4 Late Stationary	Stage 5 Declining
High Birth and Death Rates leading to low growth rate of population.	Decline in Death Rate and no change in birth rate leads to population explosion.	Birth Rate starts falling with Death Rates declining rapidly. Population grows at a diminishing rate.	Birth Rate declines tending to equal the Death Rate. Stationary growth rate of population.	Death Rates exceed Birth Rates and the population growth declines.

Source: Blacker, 1947

Types of Population Pyramids

Expansive Population Pyramids depict a structure in which there is a larger percentage of population in the relatively younger age groups. Such type of population usually contains high fertility & lower life expectancy. Ex: Developing Economies.

Constrictive Population Pyramids are called so because they are constricted at the bottom. Which implies that there is a lower percentage of younger people, and hence, show declining birth rates. Ex: The United States.

Stationary population Pyramids are those in which there exists a somewhat equal proportion of the population in each age group. Populations in such countries are more or less stable, without much change in births and or deaths. Ex: Austria.

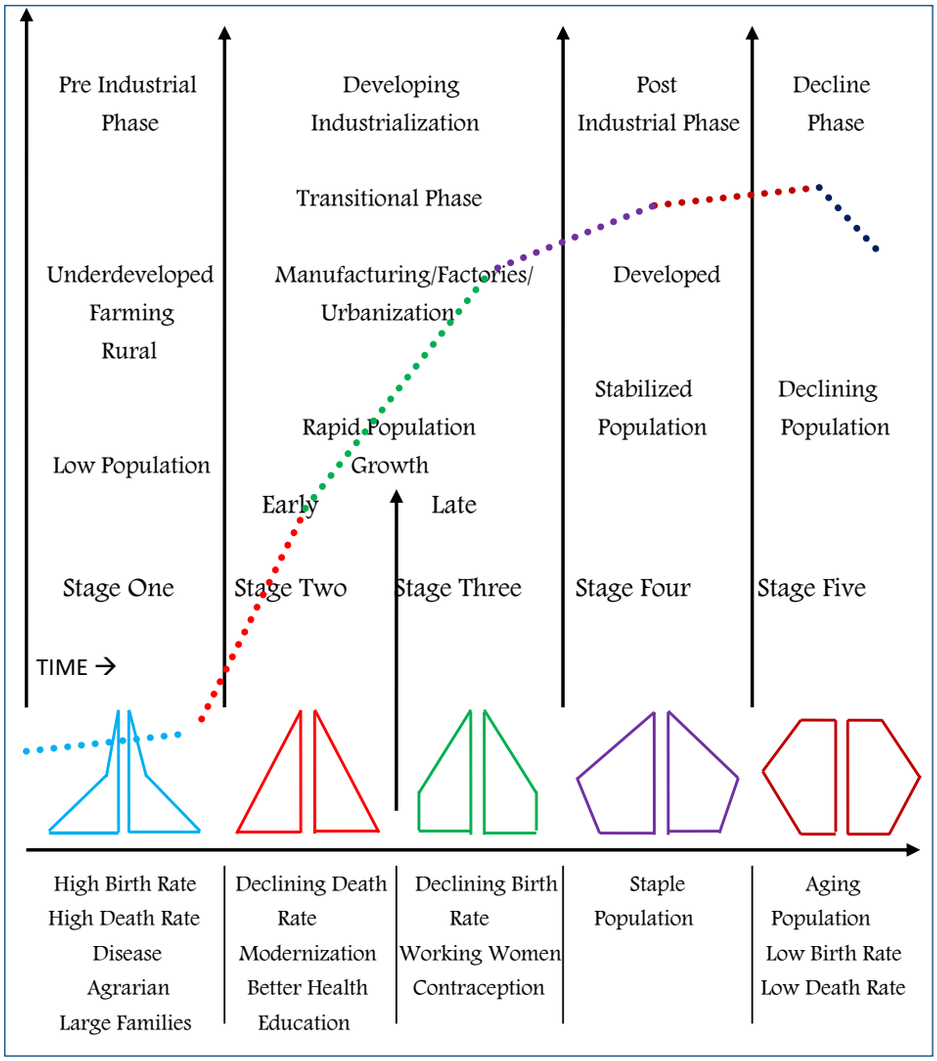


Fig. 8: Demographic Transition

Stages under Population Pyramids

Stage 1: High Fluctuating and Stationary

A stage characterized by high and fluctuating birth and death rates. Most of the countries in the Pre-industrial phase fall under this category. Birth rates are high due to a lack of family planning & birth control. The death rates are equally high – due to less available medication against diseases, as well as pandemics & plagues (ex – The Bengal Famine in 1943; Impact of EBOLA in 2014 in Liberia, Guinea & Sierra-Leone).

Stage – 2: Early Expanding

Birth rates stay high throughout. Death rates also fall faster as newer vaccines are invented and diseases controlled (For Ex: Polio vaccine by Dr Jonas Salk in 1955; Varicella Vaccine in 1995; Rotavirus in 2006).

A good example is the country of China, which had rapidly growing population levels, before it introduced the drastic one child policy.

Stage – 3: Late Expanding

A stage characterized by falling births rates and becoming at par with the death rates. Reasons are many – For ex: Due to the family planning programs like 'Mission Pariwar Vikas' and 'Mission Hum Do' as in India.

All of these make up the 'Late Expanding; stage in the Population pyramid (www.unicef.org).

Stage – 4: Low Fluctuating/Stationary

In this stage, both the birth and the death rates remain low and fluctuate, giving a steady population. In the low fluctuating stage, the shape of the population pyramid is of a narrow base, which also indicates that the birth rate is decreasing. The Low fluctuating stage of the population pyramid is typical of most of the countries that are well developed.

Stage – 5: Declining/Natural Decline

In the last stage - the Natural Decline stage, countries start experiencing the population decline. The same are being experienced by quite a few countries in today's times. In this stage, both the Birth (Crude Birth Rate) and the fertility Rate (Total Fertility Rate) generally fall below the replacement rate. Also with better medical facilities and medication, generally life expectancy is seen increasing here thereby resulting in ageing population for most of these countries.

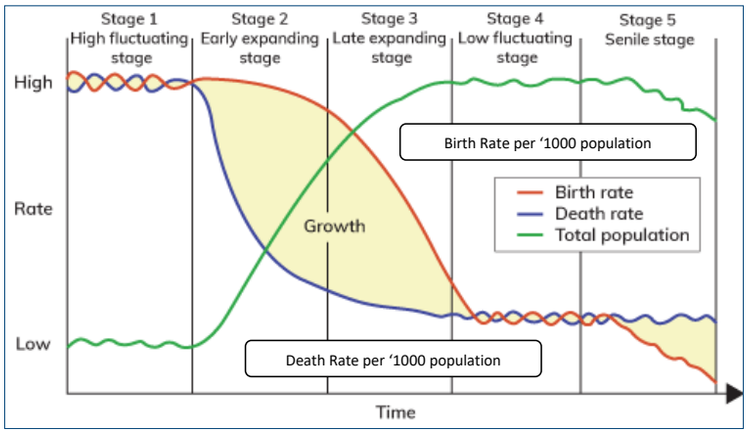


Fig. 9. The Demographic Transition Model

Chart 4: Stages of Demographic Transition Model

Stage	*Pre-Industrial/ LDCs (1^{St} Stage)*	*LDCs/LEDCs (2^{Nd} Stage)*	*NICs (3^{Rd} Stage)*	*MEDCs (4^{Th} Stage)*	*Wealthier MEDCs (5^{Th} Stage)*
	High Fluctuating	*Early Expanding*	*Late Expanding*	*Low Fluctuating*	*Decline/Senile*
Birth Rate	High	High	Declining	Low	Very Low
Death Rate	High	Moderate	Low	Low	Low
Life Expectancy	Short	Medium	Long	Long	Long
Population Growth	Slow	Rapid	Stable	Stable	Shrinking

LDC = Least Developed Country; LEDC = Less Economically Developed Country

NIC = Newly Industrialized Country; MEDC = More Economically Developed Country

Produced under is a graphical representation of the Demographic Transition Model, and also how the population pyramids shape up to the Demographic Transition Model.

Hence, to sum up the discussion, we can say, in order to understand the stages in Population Pyramid, we have to indeed look up the Demographic Transition Model.

Conclusion

Not many decades ago, Population boom was indeed a bane at many a 'developing nation' and society. However, with the passage of time, better monitoring and accountability, many of these developing nations have indeed realized the boon of having a bulging 'working age population'.

Going through the Demographic Transition Model, the population pyramids and the Demographic Dividend that a nation like India is likely to en-cash in the not so distant a future, it can only be said that the bulging Indian diaspora is expected to indeed bring about a structural initiation in the Indian Society.

All of this makes the study a much sought after from the researcher's point in view, as well. Is India going to ape the trend that the Demographic Transition Model specifies or is there still something new that has not been unearthed in the model? Going by all of this, in the next part of the study, the Researcher desires to take this study into an exploratory and empirical one, with 'Primary' being the source of Data, and also test the Hypothesis drawn up basis the Research Objectives.

In conclusion, there's still enough light to be seen at the end of the tunnel. Ranked pretty high in GDP (especially in terms of Purchasing Power Parity) – thereby qualifying to be counted as one of the world's biggest economies, in 2019, India, deals with extremes that range from delightful to excruciating. A country juxtaposed with mysteries spread over centuries, demographic dividend offers a formidable contradiction, indeed.

While an increase in the labour force, upswing in fiscal space, better savings rate and a rise in the women's work force are some of the positives emanating from Demographic Dividend; one needs to be also mindful of the fact that disguised employment, quality of work life and a better standard of living is the least that is expected out of this outcome.

So look up world. Here comes the Economic Behemoth in making – India.

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