

Lessons for India on demographic dividend: Experiences of China, South Korea, and Brazil

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Abstract

The phenomenon of demographic dividend signals transition of a country characterized by minimal use of technology, low level of education, and low economic growth having high birth and death rates to an industrialized nation with advanced technology, higher literacy level, and income growth having low birth rates and low death rates. The existing scientific literature confirms that now developed nations were able to successfully exploit their demographic dividend and translate it into sustained economic growth and improved standard of living. The birth rates and death rates are affiliated to and correlate with accompanying stages of manufacturing growth. The objective of this study is to review the experience of three countries in exploiting their demographic dividend and map out the lessons that India can implement to benefit from this window of opportunity. The countries selected for examination are the Republic of Korea, Brazil, and China. The nations selected had varied success in unlocking the demographic dividend. South Korea along with other Asian tiger economies has successfully utilized both first and second demographic dividend. With sustained investment in health and education along with increasing women's participation in the labor force and utilizing increased saving rates for capital accumulation, it was successful in leveraging its demographic dividend for economic development. China too greatly benefitted from its first demographic dividend becoming the 'factory of the world'. Comprehensive planning and its effective implementation along with an export-oriented growth strategy led to accelerated economic growth. With an aging population and the demographic effects of the one-child policy, China's ability to capitalize on the second demographic dividend in the future is not certain. Brazil on the other has failed to take advantage of its favorable demographic transition. With misplaced priorities and the absence of determined policy action to manage its demographic transition, Brazil has left itself vulnerable to demographic 'disaster' instead. The paper concludes that demographic dividend is not a guaranteed event for a country. To successfully benefit from demographic dividend a country needs conducive policy planning and investment in the development and utilization of the country's human capital. India also needs to correct the problem of 'missing women' in its labor force. It needs to empower local public administration to ensure efficient public services and fostering local opportunities. Also, India should have the foresight to formulate a comprehensive economic and social strategy to ensure a smooth demographic transition from a young country to a middle-aged one. A country's success with demographic dividend ultimately needs integrated demographic, political, economic and, social policies altered a country's requirements.

Keywords

Demographic dividend • Demographic transition • Economic growth

Introduction

As per United Nations Population Fund, the demographic dividend is a period of economic growth that a country experiences due to a large section of the population being of working age. This change in age structure gives rise to a large labor force.

Increased labor supply accelerates production activity. Increased production leads to higher per capita income and an improved standard of living.

The demographic transition which can lead to demographic dividend occurs in four stages. The first stage is associated with high birth rates and death rates, commonly present in pre-industrialized nations. In the first stage, population increase is gradual and partly aided by the surplus availability of food. Population growth rate increases in the second stage due to higher fertility and lower mortality rates. Improvement in nutrition and sanitation decreases the frequency of disease outbreaks and extends life span [1-5]. The birth rates and death rates fall in the second stage due to improved social status and literacy rate in females, increasing per capita income,

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higher wage rates, rapid urbanization, societal shifts, and access to contraception. Growth independent population) is slower than growth in the labor force. With fewer younger people to feed, resources become available for investment in economic activities. Resources freed up are utilized by the working-age population to increase economic activity. Stage Four indicates low birth rates and death rates. Population born during the second stage enters the working-age cohort. Birth rates fall below the replacement rate. During the fourth stage size of the population shrinks [6-10]. Death rates either remain low or there is a slight increase due to increment in lifestyle diseases linked with little exercise, high diet, and high obesity. The third and fourth stages are the phase of demographic dividend.

Demographic dividends last for an average of fifty years or more. Eventually working population ages and fertility decreases the growth rate of the labor force. The age distribution again shifts in favor of less productive age groups. The proportion of dependent population increases while working-age population share diminishes [11-15]. Given everything else is equal, growth in per capita income slows down and more resources would need to be devoted to dependent age groups. Demographic dividend eventually turns negative. The burden of financing long-term health care and social security would fall on the economically active population. The limited resources a country might have would be used up by the dependent age groups.

A country can unlock a second demographic dividend utilizing advantages accrued during the first dividend. The first demographic dividend was a period of high per capita income and a lower fertility rate, which ensured fewer children to spend resources on. This translates to increased savings of the now-retired population. Nudged by a conducive policy environment, accumulated savings can be invested in capital formation that would raise the income levels of the nation. Unlike the first demographic dividend, this virtuous cycle of investment and higher returns can last indefinitely. It is important to note that the dividends are not automatic and can only be ensured by effective policy planning and implementation [16]. The second dividend will transform transitory advances of a country into sustainable economic development.

Presently India is in the third stage of demographic transition. India's dividend window began in 2018 and is predicted to last till 2055. With a population of 1.33 billion, India lags behind Japan and other countries in European Union by almost 40 years. Most of India's large population base resides in its 1.6 lac villages. The young population has an opportunity to prosper and yield significant demographic dividends for the country.

This paper aims to review the experiences of countries with varied success with demographic dividends and map out the lessons India can learn from those experiences. I have selected the Republic of Korea, Brazil, and China as the three countries for review [17-19]. The three countries performed differently in exploiting the demographic dividend. The Republic of Korea like fellow other three industrialized Asian tiger economies in east Asia have sustained their pace of growth having unlocked its second demographic dividend. China starting with similar economic conditions as India during the 1950s has raced ahead and achieved remarkable growth in a short duration of time, unprecedented in history. With an aging population and the demographic effects of the one-child policy, China's ability to capitalize on the second demographic dividend in the future is not certain [20]. Brazil, the biggest South American

economy, a developing country just like India, has missed out on taking advantage of its demographic window and is caught in the middle-income trap like its fellow Latin American nations.

It is important to note that in research on population growth and its impact on development, not every literary work supported the dividend theory. It's an age-old debate of Marx vs. Malthus. The demographic dividend is termed as an optimistic theory as population growth increases human and intellectual capital and furnishes expanding markets promoting economic growth [21-25]. Pessimistic and neutralist theories as their names suggest believing in detrimental impact by reducing capital per worker and reducing productivity and independence of population growth to the development of the nation.

The demographic dividend is delivered through various mechanisms .1) Labor Supply- Generation born during the period of high fertility enters the workforce. Women with fewer children are free to seek profitable employment. Surplus and cheap workforce also attract foreign investment. 2) Savings-Working adults tend to save more as they earn more. Low levels of fertility ensure a smaller young population (0 to 14 years of age) needs financial support. Personal income savings is one of the sources of investment in economic activities that boost growth. 3) Human capital-Income earning households can focus on providing better health through better nutrition, access to safe water, sanitation, and education for limited young members of families especially the erstwhile neglected girl child in developing countries which translates into a more productive future working population Wongboonsin and Phiromswad in their 2017 paper titled " Searching for empirical linkages between demographic shape and monetary growth", proved that developed and developing countries' experience with the third stage of demographic transition is different. For developed countries, an increase in the share of middle-aged workers has a positive effect on economic growth through institutions, investment, and education channels [26]. On the other hand, an increase in the share of the senior population dampens economic growth through institutions and investment channels. For developing countries, an increase in the share of young workers dampens economic growth through investment, financial market development, and trade channels.

Faster growth of the working population relative to consumers, which is the first demographic dividend, directly increases economic input, while the second demographic dividend – increased saving and investment with wealth accumulating – causes physical and human capital input to rise massively. The dividend is not automatic and some countries had gained more than others capitalizing on demographic advantage through policies related to health, fertility, financial and labor markets, and education in place before demographic transition allowing maximum gains from the phenomenon. Misra in her 2017 paper, found a positive relationship between GDP growth rate and demographic dividend[27]. The study relied on data from BRICS countries and European Union. Golley and Tyler in their 2012 paper titled,'Demographic dividends, dependencies, and economic growth in China and India' concluded that while China gained from its demographic transition, India was yet to enter the stage of its demographic dividend.

This research reviewing different countries' degrees of success with demographic transition in the context of applicable policy lessons

for India will add to literature suggesting policy actions for India to leverage its demographic transition for economic growth.

Research Methodology

Descriptive analysis of experience of countries with demographic dividend and lessons India can learn from it. Tabular and graphical representation is employed to add to the theoretical analysis.

Objectives of the Study

The basic objectives of the study are as follows:-

1. The primary objective of this study was to review and compare

the performance of Republic of Korea, China and Brazil in achieving effectively exploiting their respective demographic transitions.

2. The second objective is to map out the policy lessons India can learn from the demographic transition of the three countries.

Data Collection

The study is based on secondary data which was collected from various secondary sources: Asian Development Bank Report, World Bank data bank, United States census bureau international database, online newspapers newspaper articles, magazines and journals.

Limitations of the Study

The study relies on secondary sources for its evaluation. Depending upon dependency ratios measured in the age range as an indicator of demographic dividend in this study has its limitations. Firstly it is incorrect to assume that after a certain age people just quit being economically active. The absence of a considerable number of females in the active working population and increasing length of professional training for young adults means not everyone in the working-age population should be automatically counted as economically productive and participating in the labor market

Analysis and Interpretation of the Study

South Korea

South Korea, Hong Kong, Taiwan, Singapore grew rapidly since the 1960s tripling their per capita income between 1965 to 1990. This impressive performance is sometimes referred to as 'East Asia's economic miracle'. This unrivaled growth was because of many factors including trade and industrial policies, technological progress, savings, and capital accumulation, governance, education and health spending, geography and culture, initial income levels, and demographic factors. Simultaneously growth rate of the working population was ten times faster than the dependent population during this time [28-32]. The increase in the labor force helped South Korea reap demographic dividend South Korea has favorable demographic characteristics in the form of high life expectancy and low fertility. To maximize the demographic dividend the government invested heavily in education at higher education, health services, and family planning Policy initiative for investment in healthcare and education, managing dependent population and promoting gender equity along

increase in labor supply, population concentration and increased life expectancy proved critical for East Asia's economic growth.

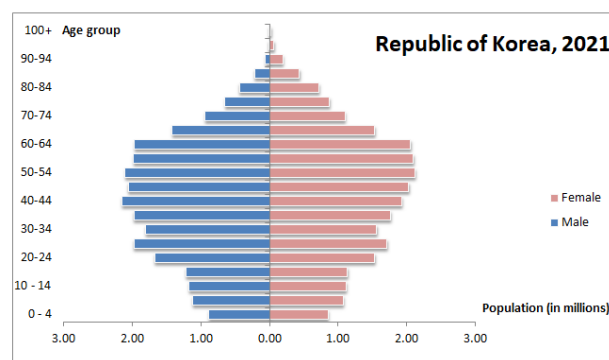


Figure 1: Population pyramid of South Korea (2021).
Source: United States Census Bureau, International Database.

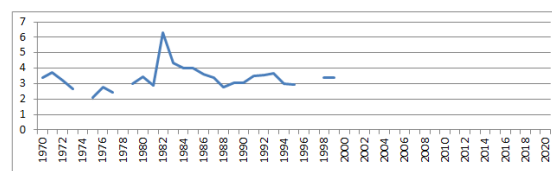


Figure 2: Republic of Korea expenditure on education (% of GDP) Source: World bank. Indicators, various years.

Ha reviewed the literature for demographic dividend role in East Asian economic growth and the important role family planning policies played in their growth story. Mason and Kinugasa claimed that demographic change accounted for about 92 percent of the increase in East Asian saving rates for 1965–1995. Deaton and Paxson elaborated on the effects of economic and population growth on increasing national savings and rising inequality. showed that East Asia's demographic transition multiplied saving price via a vast degree, implying that the 2d demographic dividend additionally performed a wonderful position in Asia's convergence. Asian tigers' growth miracle was only possible because policy-induced demographic characteristics and economic variables interacted in a mutually reinforcing manner [33]. The baby boom post-world war could easily have turned into a demographic disaster if policies were not formed and enforced anticipating the demographic dividend in these countries. Surplus from the first demographic dividend was reinvested in the economies to ensure permanent growth with the second demographic dividend.

South Korea invested in a more egalitarian education system doing away with the previous Japanese multi-tiered education system. Presently its education system is ranked amongst the world's best credits the role of South Korean public administration and the local opportunities it successfully fosters. Ensuring effective local institutions not only promotes demographic bonuses but also plays an important role in unlocking the second demographic dividend.

Investing in health and education, skilling the labor force, utilizing national savings, and export-oriented economic planning and implementation were the factors behind South Korea's success story.

Country	Period of first demographic dividend	Average annual growth rate of GDP per capita	Increase in life expectancy over the period	Change in Total fertility rate over the period
Republic of Korea	1960-1990	6.9	17	-4.3
China	1970-2000	4.9	9	-4.1
Brazil	1970-2020	1.8	17	-3.27

Table 1: Economic growth and demographic transition .

Brazil Demographic Dividend

Brazil on the other has failed to take advantage of its favorable demographic transition. With misplaced priorities and the absence of determined policy action to manage its demographic transition, Brazil has left itself vulnerable to demographic 'disaster' instead.

Developing nations tend to miss upon the demographic transition phase that accompanies structural-demographic transition. It is due to adopting misplaced domestic policies or completely ignoring policy formulation in required sectors. But Brazil's case is peculiar[34]. The country has a low literacy rate and a vast social security net. In 2012 the public pension systems transferred about 13 percent of the GDP to the elderly in Brazil, a significant amount for a country where there are ten over-65s for every hundred 15 to 64 year-olds. As of 2018, Brazil spent more on pensions than the education, health, and social development budget combined.

Brazilian pension payments are one of the most generous in the world. It replaces 75% of the average income. In a developing country like Brazil, one might expect that a pay-as-you-go scheme would generate surpluses that would be further get invested in infrastructure, social, economic, and education. Higher pension does not translate into higher investments due to the lack of a conducive local investment climate. The Brazilian economy is in deficit, where investment is about 20% of Gross Domestic Product, out of which hardly 3% comes from the Brazilian government.

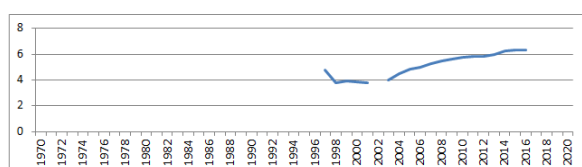


Figure 3: Brazil total yearly expenditure on education as percentage of GDP. Source: World bank, Indicators, various years(Brazil)

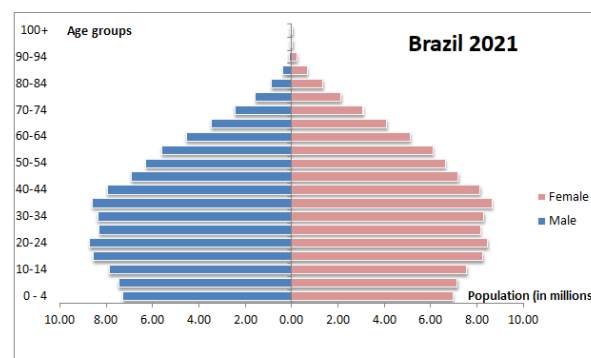


Figure 4: Population pyramid for Brazil,2021.Source: United States Census Bureau, International Database.

Even after accounting for the difference in income and demographic profile, Brazil spends twice of OECD average on each pensioner. And only two-third towards the education of each child. Brazil's spending on children is less than its spending on older age groups. It has resulted in a unique development where fewer elderly are below the poverty line, but a third of children are. It is not to say that there has been no improvement in literacy rates [36]. Public Education faces a lack of resources as there's more emphasis on spending on the aged population. Low literacy levels in the younger population, increasing tax evasion and extensive social security benefits offset any gains the increase in the share of the working-age population accrues to the country. Lowering social security support ratios (the ratio of social security taxpayers to beneficiaries) signals the fiscal burden for the future working-age populace, thereby decreasing the ability of workers to save for the future and endangering any possibility of a second demographic dividend. Brazil's policymakers have formulated policies contrasting the country's actual requirements. They have ignored the importance of demographic transition for the economic growth of the country. Brazilian policymakers provide new forms of benefits without needed contribution (for example, the addition of rural workers in 1988), and without the approval of reforms for encouraging tax compliance; they have lower down the benefits of the demographic transition and further increased the financial issues from the aging populace. The scenario might be different if there had been an appropriate institutional structure and sound policy framework.

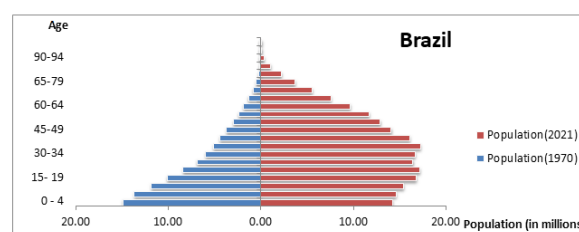


Figure 5: Brazil population pyramid in 1970 and 2021. Source: United States Census Bureau, International Database.

China's Demographic Dividend

China's economy grew at an unprecedented rate 1980s onwards. Utilizing its large working population in an export-oriented

economic framework made it one of the world's fastest-growing economies in the world. Economic reforms in the seventies and open-door policy encouraged the entry of foreign companies into China which made it the 'factory of the world'. While liberalization policies were crucial for it to happen, paper titled, "Demographic transition and economic growth in China, India, and Pakistan. Economic Systems" estimates that demographic dynamics explain 46% of growth in per capita GDP in China between 1961 to 2003. A large section of the population saw improved living standards and higher per capita income. Chinese government's mandatory one-child policy led to a non-organic decline in fertility rates which helped save resources for industry-driven growth (Wei, 2010). The policy led to a substantial decline in dependent population and thus the forgone consumption was instead saved and contributed to capital deepening in the country. China invested in education and health. The mortality rate started early declined in socialistic structure and public health system governed by the government of China. Reforms, population control policies, and investment in health and education helped China gain demographic dividend.

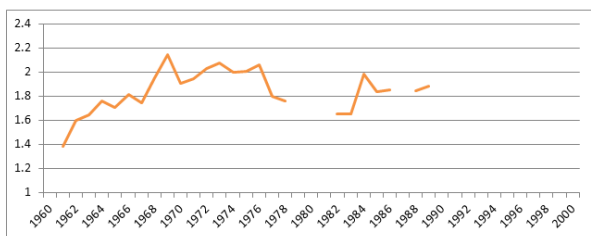


Figure 6: China total yearly expenditure on education as percentage of GDP. Source: World bank, Indicators, various years.

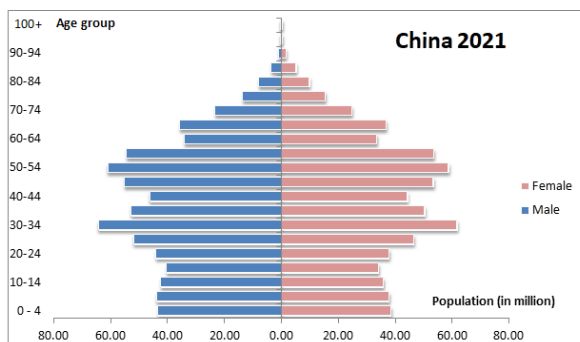


Figure 7: China population pyramid, 2021. Source: United States Census Bureau, International Database.

The forced demographic transition comes with a cost. China saw a sharp decrease in the supply of its cheap labor that affects its export competitiveness. China entered the fourth stage of the demographic transition in 2014, with a population of 1.45 billion that constitutes 18.74% of the world population. The peak of the demographic dividend has passed in China. The fourth stage of the demographic transition will have low birth and death rates. People born during the second stage of demographic transition have started moving into older dependent age cohorts and depend on the current smaller working population to support it. Fall in birth rates below replacement level will lead to a shrinking population. Death rates might remain low, or they will increase marginally. Prevalence of lifestyle diseases brought on by a low amount of physical activity and high obesity. An

aging population and the demographic effects of the one-child policy might turn China's demographic dividend into a demographic 'drag' in the future.

The Chinese government is taking steps to arrest this decline. It has phased out the one-child policy and is investing heavily in education and skilling its labor force. It is difficult to determine whether China will be able to achieve the second demographic dividend.

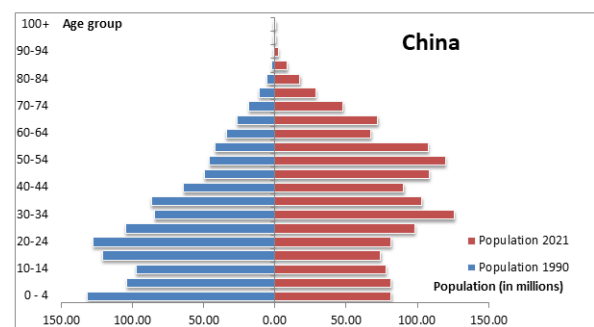


Figure 8: China population pyramid in 1990 and 2021. Source: United States Census Bureau, International Database.

India's Demographic Dividend

India is in second stage of its demographic transition with high birth rate and low death rate. India's number of working-age people has grown faster than the dependent population since 2018. According to United Nations Population Fund study the increase in the labor force is going to last till 2055 or for 37 years. Dependency ratio started decreasing in India in 1970s with baby boomer generation moving in working age group. An estimated 40 to 50 percent of increase in per capita income in India can be attributed to demographic dividend. With dependency ratio predicted to decrease to 50 in 2050 from 79 in 1970s, India is likely to enjoy significant demographic dividend.

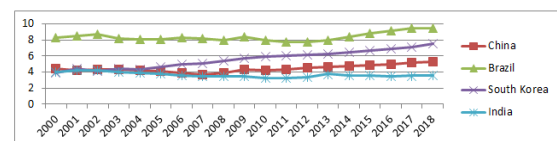


Figure 9 : Annual health expenditure as percentage of GDP. Source: World bank, Indicators, various years.

Year	Dependency Ratio	Child Dependency Ration	Old Dependency Ratio	Age
1950	73	67	6	
1955	74	68	6	
1960	76	70	6	
1965	78	72	6	
1970	79	72	7	

1975	77	71	7
1980	74	67	7
1985	72	65	7
1990	69	62	7
1995	68	60	8
2000	64	56	8
2005	60	51	8
2025	48	36	12
2050	50	27	22

Table2:Dependency Ratio in India .Source: Population Division of Department of Economic and Social Affairs of United Nations Secretariat, World Population Prospects.

To assume that a demographic bonus is imminent would be incorrect. India has a long way to go before fulfilling its potential to be a global economic power. Several challenges remain like underwhelming employment prospects for the labor force, low allocation of funds for the health and education sector leading to poor human capital which results in lower productivity of low skilled labour, lack of efficient services supply by local public administration, lower female participation in the labor force.

The education enrollment rate in India is rising. Subsidized public education and various other policies like mid-day meal scheme, scholarships are few ways through which the government is attempting to make education more inclusive and accessible. Many states have achieved universal primary enrollment. The problem of education persists mainly due to the quality of education and lack of or poor quality educational infrastructure in higher education. These problems have become more widespread in rural areas of the country. Education in India faces the challenge of quality of education and lack of or poor infrastructure and its upkeep. According to the 2020-21 Economic Survey report India allocated 2.8% of GDP during 2014-19 which is expected to increase between 3-3.5% in 2019-21. The allocation falls short of 6% of GDP recommendation by experts. Low levels of investment along with the quality of education across all levels of education will present a challenge for India in its quest to maximize demographic dividend.

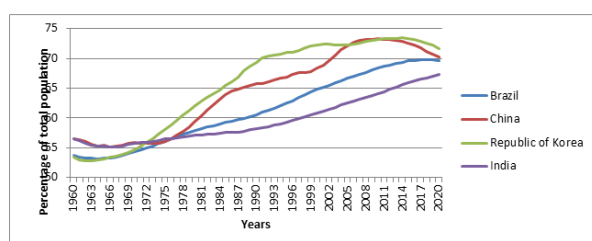


Figure 10: Working ages 15 to 64 as a percentage of total population. Source: World Bank, Key Indicators, various years

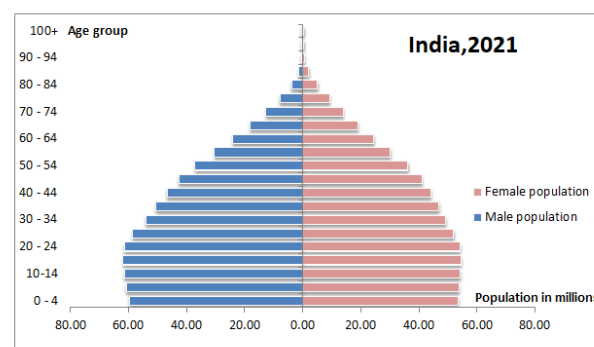


Figure 11: India population pyramid,2021. Source: United States Census Bureau, International Database.

India has a poor record in the health sector. Government makes policy efforts to provide affordable health services for all but the Covid-19 pandemic exposed the gaps in our medical infrastructure and lack of it in rural areas. A healthy individual ensures higher productivity with lower absenteeism rates and higher savings through less disease burden expenditure. India accounts for 16.5 percent of the world's population yet contributes to a fifth of the world's share of diseases. HIV/AIDS and TB, and drug-resistant malaria diseases are estimated to increase in the future. Infant mortality rate, maternal mortality, and reproductive health improvements will require increased and upgraded facilities. Gender disparities in terms of nutritional intake have become a characteristic feature of females in India. The lower nutritional status of expecting mothers and adolescent girls requires urgent intervention. Health services and infrastructure needs immediate attention if India wants to gain any social or economic benefit from demographic "bonus".

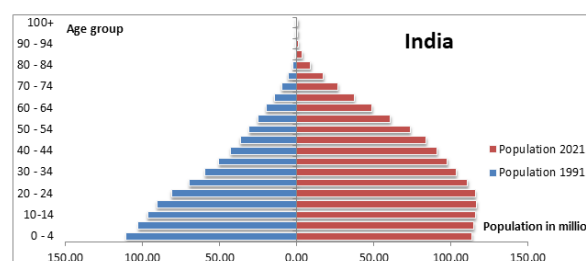


Figure 12: India's population pyramid in 1991 and 2021. Source: United States Census Bureau, International Database.

Job creation lags behind the growth in the labor force leading to the problem of unemployment in India. Unemployment levels for the young are truly alarming, accounting for nearly 20 percent of young men in age-group 15-19 years and 30 percent of women in age-group 20-24 years. India's success story also suffers from a shortage of females in the labor force. Female labor force participation in India is lower than female participation in other parts of the world, even after accounting for poverty and poor opportunities. As of 2005, the number of women absent from the labor market was equivalent to the total population in Brazil. The lower participation rates are due to social factors where women either possess appropriate skills but are discouraged from gaining employment or are excluded from access to capabilities necessary for gainful employment. Lower literacy rates and limited opportunities for skill development for young women

persist, which impacts employment opportunities. In the absence of rapid social change, cultural factors will dominate economic compulsions and aspirations India has an opportunity to benefit from its demography dividend if priorities of economic development are clear and precise and proper policies are formed and implemented. India's 'window of opportunity' is still open for the next few decades. In the coming decades would be able to add approximately 2 percent points annually to India's per capita GDP growth. If not managed demographic transition might become a demographic disaster. With limited resources spread over a large number of people who are not economically productive. India has entered the latter half of the third stage of demographic transition in 2013 with a population base of 1.23 billion, and behind forty years in comparison to European Union, Japan, etc.

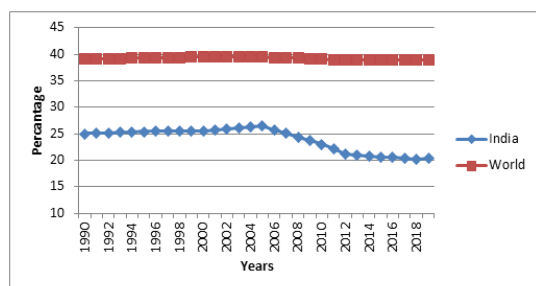


Figure 13: Labor force, female (Percentage of total labor force).Source: World bank. Key Indicators, various years.

Conclusion

Twenty-first century India with a population size of more than 1.3 billion people is facing a multitude of challenges like working with deficient social infrastructure, creating more gainful employment opportunities, managing macro-economic shocks, and mitigating and adapting to climate change. But India also has a big potential advantage: its young demographic populace which if nurtured right will yield a significant demographic dividend.

India can learn some useful and relevant policy lessons from the Republic of Korea, China, and Brazil's experience with demographic dividend. Every country is unique and no one framework will work for everyone but some common themes emerge. One, either of two demographic dividends are not automatic. Appropriate policy planning and its implementation are necessary for a country to leverage its demographic dividend into sustainable economic growth. Second, instead of a top-down approach to creating opportunities to nurture and develop critical human capital effective local public administration would be instrumental. Policies and programmes should be stimulating for the economy and not mandatory for people to comply as it will only result in temporarily artificial gains (UNFPA). Third, if a country wants to leverage its demographic dividend for sustainable economic development it cannot afford to divert its limited resources towards multiple unproductive avenues. India possesses vast entrepreneurship potential. The country needs to expedite the movement of labor into productive employment. To facilitate the capture of demographic 'bonus' a country must create an economic structure where allocation and implementation of property rights along with enforcement of contracts and rule of law are followed.

Fourth, India also faces the challenge of 'missing women' workers in the labor market due to various socio-economic reasons which needs to be challenged. In contrast to high and increasing female labor force participation in the developed countries, India has one of the world's lowest female labor force participation rates. Developed countries have managed to do so by implementing gender-sensitive programmes and policies like increased parental leave and subsidized childcare. Skill development of the existing working population is also equally important. Fifth, at present India's expenditure in education and healthcare, is less than adequate. India's HDI index at 0.645 in 2019 is lower than the three countries in reference (UNDP, Human Development Report, 2020). India needs to develop its human capital by investing in quality education and healthcare infrastructure while also building a conducive economic structure for human capital to work and later invest in. Sixth, the quality of institutions and public accountability is needed to realize the benefits of demographic dividends. Seventh, as was the case with China and South Korea, greater integration into the global market is likely to bring more opportunities for employment and growth. Sixth, the quality of institutions and public accountability is also important to realize the benefits of demographic dividend. Seventh, as was the case with China and South Korea, greater integration into the global market is likely to bring more opportunities for employment and growth.

It is now time for India to initiate the next generation of economic reforms that ensures efficient public services focusing on neglected social needs like nutrition and health services, primary and secondary schooling, quality enhancement of tertiary education, water supply, and sanitation, and urban development. A country's success with demographic dividend ultimately needs integrated demographic, political, economic and, social policies in tune with a country's requirements.

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