DEMOGRAPHIC DIVIDEND IN INDIA: AN ANALYSIS OF ECONOMIC EFFECT OF DEMOGRAPHIC TRANSITION IN INDIA

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Abstract: Demographic change in India is opening up new economic opportunities. India is passing through the favorable age structure and dependency profile. The increasing Working Age Population (WAP) in proportion to total population leads to the rise in labour supply, savings and Human capital. The trios are growth driven factors. The study tries to assess the relationship between the Working Age Population and Gross Domestic Saving Rate in India during the period of 1961 to 2017 and 2011 to 2017. The author use secondary data for this purpose. The study also analyzes the challenges which are interrupting in actualizing the demographic dividend. The study finds positive relation between the two variables during the period of 1961 to 2017 but it's also found there is negative relation between the two variables during the period of 2011 to 2017. The main challenges to materialize the window of opportunity in India are low quality, unhealthy and unskilled labour force, which leads to low productivity of labour force. The low participation rate of women force in economic activities is also hindering to realize demographic dividend. These all factors influence the saving rate in India. The failure to address challenges in reaping Demographic Dividend may lead to Economic Disaster.

Keywords: Demographic Dividend, Demographic Transition, Working Age Population, Dependency Ratio and Gross Domestic Saving Rate.

I. INTRODUCTION

The much talked and debated issue in India as well as at global level is Demographic Dividend which is considered as gift for any country. Demographic dividend occurs during middle stage of demographic transition when fertility and mortality rate is declining and population pyramid shows sign of bulges in the middle, the demographic dividend is also known as demographic gift or bonus or demographic window. These demographic bonuses arise out of rapidly increasing of the productive Population (WAP) in relation to the total population. The increase in the proportion of working age population can reap the demographic dividend that enhances the rate of economic growth through increase in supply of labour, the huge labour force will contribute in higher saving rate which increases the domestic savings for productive investment and due to decrease in fertility rate the female labour force will increase and they produce few Childs hence they will save more and few child's can get much attention in the form of good health and education. India is running through the stage of demographic transition at present, due to which India is known as YOUNGESTAN in world. The data shows that, India's working age population (15-64 years) was 64.3% according to census 2011, of total population, as against just short of 61% in 2001 which increased further up to 66.23% in 2017 and on the other hand the trend in unproductive population (0-14 years and 65+ years) is decreasing from 38.6% in 2001 to 33.7% in 2017, as mentioned in table and figure below (Table 1.1 and Figure 1.1). It's necessary to mention here the distribution of population and economic resources in India are uneven between different states. India is second populated country in world after china, the total population of India was 121.01 crore according to census 2011. This was increased to 130.9 crore in 2015 according to UN-Population Division, Department of Economics and Social Affairs. The annual growth rate of population in India is 1.7 in 2011 census, which decreased to 1.6% in 2015. On the other hand the WAP is increased and dependency ratio is decreasing.

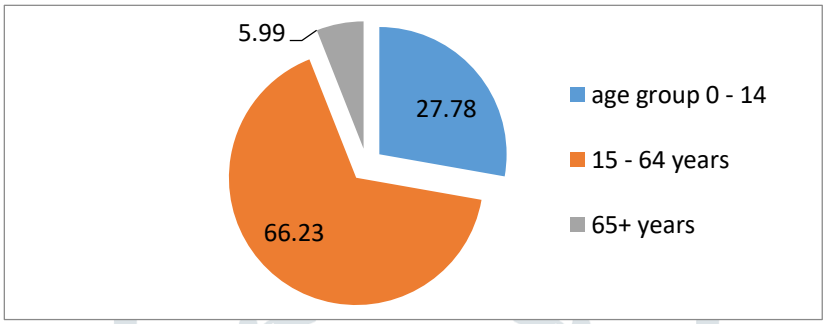
The increasing trend of demographic dividend indicating in coming few decades India will have a youthful, dynamic and productive workforce, then the rest of world. The IMF, in 2011, reported the India's demographic dividend has the potential to add 2 percentage points per annum to India's per capita GDP growth over the next decades.

Table 1.1: Trend of population in different age group in India (1961-2017)

Year	Child Pop. (0-14 age)	WAP (15-64)	Old age pop. (65+)	Dependency ratio
1961	41	56	3	.78
1971	41.2	55.5	3.3	.80
1981	39.5	57	3.5	.75
1991	37.7	58.4	3.9	.71
2001	34.3	61.4	4.3	.63
2011	30.5	64.3	5.25	.55
2017	27.78	66.23	5.99	.51

Source: compiled from World Bank and www.stastista.com>international>india.

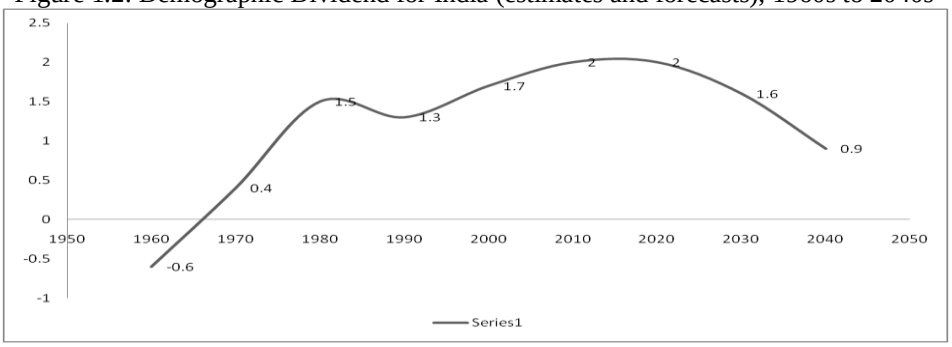
Figure 1.1: Population distribution in India in 2017



To reap the benefits from increasing working force it is necessary to address those factors on which the productivity of labor force depends. The rise in the share of working age population (15-64 years) proportion to the non-working age population (0-15 years of age and above 64 years of age), leads to the rise in labour supply, savings and human capital. Bloom rightly discussed these forces as the factors of demographic dividend. Demographic dividends are a composite of five distinct forces: The 1st is the swelling of the labor force as the baby boomers reach working age. The 2nd is the ability to divert social resources from investing in children to investing in physical capital, job training, and technological progress. The 3rd is the increase in women's workforce activity that naturally accompanies a reduction in fertility. The 4th has to do with the fact that the working ages also happen to be the prime years for savings, which is key to the accumulation of physical capital, human capital and technological innovation. And the 5th is the further push to savings that occurs as the incentive to save for longer periods of retirement increases with greater longevity.

It may be highlighted that the notion of demographic dividend is not necessarily based on the concept of labour abundance (in India), but is associated essentially to changes in population age structure and dependency ratio. E.g. consider two large and labour-abundant economies, one having lower dependency burden and the other with higher dependency ratio. With same growth environments, it can be said, that the economy with lower dependency ratio will present itself with higher chances of economic growth, because a lower dependency ratio allows for higher savings and investment in physical capital and human capital, and thus contributes to desirable economic growth. In fact, it is estimated that nearly one-third of the economic miracle of East Asian countries (including China) can be attributed to the demographic dividend (Bloom and Williamson 1998; Bloom and Finley 2009). Similarly, other cross-country studies have observed a positive association between age structure transition and economic growth (Bloom et al. 2003; Bloom et al. 2006; Mason 2005). Following the experience in East and Southeast Asia, there was high optimism that the demographic dividend phase could take India to newer economic heights (Bloom and Williamson 1998; Bloom et al. 2006; Bloom 2011; Aiyar and Mody (2011). However, unlike these countries, India did not gain much in the early phases of demographic transition (1980s and 1990s). To some extent, the poor gains can be associated with concerns surrounding the growth environment (James 2008; Chandrasekhar et al. 2006; Navaneetham 2002; Mitra and Nagarajan 2005; Bloom 2011). Nevertheless, since the 1980s, India's growth story has been exceptional and very different from its past stagnancy (Rodrik and Subramanian 2005; Basu and Maertens 2007). In fact, after the 1990s, the per capita income of India increased at a rate of over 5 per cent per annum, the equivalent rate before the 1990s was below 3 per cent. This turnaround is partly associated with—although neglected by the growth literature on India—the increasing share of the working age population since the 1980s (Bloom 2011; Aiyar and Mody 2011; James 2008). In fact, Bloom (2011) suggests that 'if India adopts policies that allow the working age population to be productively employed, India may receive a demographic dividend of roughly 1 percentage point growth in GDP per capita, compounded year by year'. Similarly, Aiyar and Mody (2011) expect a large and significant impact of both the level and ratio of working age population on economic growth in India. They expect the demographic dividend to add about 2 percentage points per annum to India's per capita GDP growth over the next two decades **(Fig. 1.2).**

Figure 1.2: Demographic Dividend for India (estimates and forecasts), 1960s to 2040s



Source: Aiyar and Mody (2011) *Note::*Demographic dividend calculated as the increment to annual per capita income growth relative to a counterfactual in which the working age ratio stays fixed at the 1961 level. Also, note that growth in per capita net domestic product is in constant 1993–94 prices.

II. WORKING POPULATION IN INDIA

India is second most populated country after China, its population was 121.02 crore in according to 2011 census which was estimated to increased 133 crore in 2017. In this huge population the WAP of India was 64.1% in 2011 and it's increased up to 66% in 2017. Despite the huge WAP in India the actual Working Population was just 39.8%.

Table 2.1: Working Age Populations and Female Working Population.

Total pop. Of India.	Male pop.	Female pop.	Total working age pop.	Tot. Actual working pop.	FWP/AWP	FWP/ TFP
121.1 crore	51.5%	48.5%	64.1%	39.8%	31.1%	25.5%

Source: Calculated by author from different sources like, NSS various rounds. Census of India 2011

FWP = female working population,
AWP = actual working population,
TFP = total female population.

The Population of India is divided into three groups, according to their economic status namely; Main Workers, Marginal Workers and Non-Workers. It's observed that in India the proportion of workers (Both Main and Marginal) is only 39.8% (2011) leaving a vast majority of about 60% as Non-Workers. This refers there is a larger proportion of dependent population in reference to Economic status. The main Worker is a person who workers for at least 183 days in a year and Marginal Worker is a person who works for less than 183 days in a year. The large proportion of Working Population is still engaged in primary sector as compared to secondary and tertiary sectors; about 54.6% of total working population is cultivators and agriculture laborers, while as only 3.8% of workers are engaged in secondary sector and 41.6% are engaged in tertiary sector. The female workers are relatively more in primary sector then male, though in recent years there has been shown improvement in work participation of women in Secondary and Tertiary sectors due to increase in Education or literacy rate among woman folk and development of industries and service sector.

III. RESEARCH DESIGN AND METHODOLOGY

This study is based on descriptive research design.

3.1 STATEMENT OF THE PROBLEM

India is considered as a young nation in world with a huge working age population at present. the data shows that India's working age population (15-64 years) is 63.4% according to census 2011,of total population, as against it was 61.4% in 2001. The data indicates in coming few decades India will have a youthful, dynamic and productive workforce, then the rest of world. But at the same time India faces multiple challenges to reap the fruits of demographic dividend, so that author try to identify the basic challenges which are hindering India to taste fruits of huge working age population and author try to find to relation and impact of WAP gross domestic saving rate in India. In case India fails to convert the huge working age population into efficient human capital it may lead to drastic bane. The goal of the author is to explore the relationship and impact of demographic dividend on economic growth of India with reference to the variable domestic savings. The studies also examine the factors responsible for fluctuations in demographic dividend in India and author seeks to analyze the demographic trend in India during last three decades. The study also emphasizes to address the challenges which India faces to reap fruits of demographic dividend.

3.2 SIGNIFICANCE OF THE STUDY

As a result of demographic transition, the number of working-age adults grows larger over time relative to the dependent population. This enlarges of the productive working age population share leads to a potential economic growth opportunity which is known as the Demographic Dividend (Bloom et al. 2002). In this research work the demographic transition is explained as the change from a situation of both high birth and death rates to a situation in which both birth and death rates are low. The demographic dividend may guide to more rapidly growth of economy as the various age groups of population have particular economic feature. The Young people under the age group of (0-14 years) require consistent investment in education and health system; the productive working age group (15-64 years) provides labor supply and domestic savings, whereas the old age group (65+) has requirement of health care facilities and retirement income. The demographic dividend cannot be achieved automatically but it requires consistent policy and strategic efforts in health sector, education sector, and labor markets to transform the possible opportunity of high economic growth in actuality. In this connection India's significance increase more as India is considered as a young nation in world with a huge working age population at present. The data shows that India's working age population (15-64 years) was 66.4% 2017, of total population. The data indicates in coming few decades India will have a youthful, dynamic and productive workforce, then the rest of world. But at the same time India faces multiple challenges to reap the fruits of demographic dividend, so that author tries to identify the basic challenges which are hindering India to taste fruits of huge working age population.

3.3 OBJECTIVES OF THE STUDY

1. To work out and analyze rate and trend of demographic trend in India.
2. To analyze the effects of working age population on India's gross domestic savings variable.
3. To discuss the challenges to reap the benefits of demographic dividend in India.

3.4 HYPOTHESIS OF THE STUDY

***Ho*$_{1:}$** Effect of Working Age Population (WAP) on Grass Domestic Saving rate (GDSR) in India does not show any significant differential impact.

***Ho*$_{2:}$** There is no significant relation between working age population and Gross domestic saving rate in India during the period of 2011 to 2017.

3.5 DATA COLLECTION

Data for analysis purpose is collected from secondary sources along with shared ideas and thoughts from researchers, different international and national institutions and experts of this field.

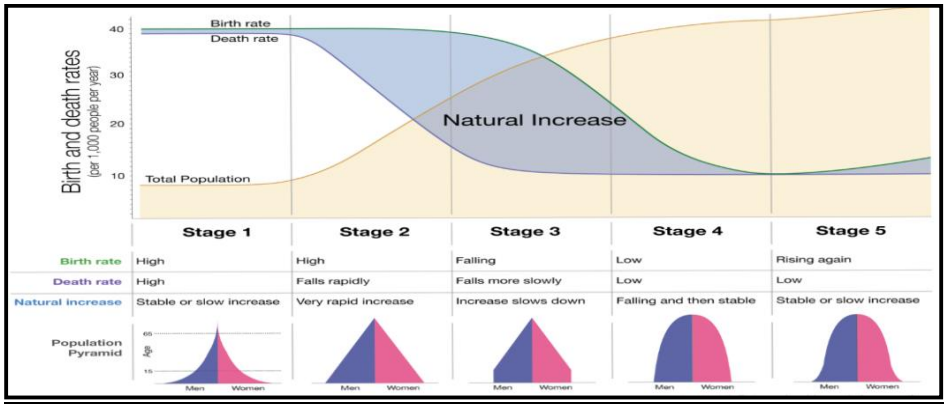
3.6 DATA ANALYSIS AND STATISTICAL TOOLS

The collected secondary data has been analyzed through SPSS V-10.0 by applying statistical tools like, Correlation analysis method and simple regression analysis method.

IV. DEMOGRAPHIC TRANSITIONS THEORY AND INDIA

To realize the economic association of population and economic development in India it's necessary to understand position of India in Demographic transition model. The theory of demographic transition describes the process of transformation of society from traditional to modern regime through change in demographic variables from high birth and death rate to low birth and death rate. The demographic transition theory shows the demographic transition through five different stages which explains the transformation of society from traditional agricultural society to modern advanced society. The theory is based on various demographic variables and economically advantageous two demographic dividends which a country or society will attain during the demographic transition of country. A country attain first dividend during the third and fourth stage of demographic dividend when working age population (14-64 age group) is more than unproductive population (includes 0-14 and 65+ age group) and second dividend occurs due to increase in elderly population as the consumption level increases through the income which they have saved for old age during the previous stages. And the author will show demographic trend in India In this chapter along with impact of WAP on Gross domestic Savings of India (GDSR) during the period of 1961 to 2017 aggregately and particularly of 2011 to 2017.

Figure 4.1: Demographic Transition Model.



Source: Max Roser, www.ourworldindata.org

Where India exists in fourth stage? According to demographic transition theory at present India exists at fourth stage of demographic transition, but it's worth to note that India is a vast country so there is difference between the states regarding to demographic and economic conditions like southern developed states are started to ageing and on the other hand the northern states like BIMARU states are just entering in first demographic dividend. Which give a clue to our policy makers to examine every aspect of the economy according the changing demographic and economic conditions.

At present India's population is near about 135 billion according to World Bank estimates and world meter population. The growth rate of population is 1.5 percent Annam. And the birth rate was reduced to 20.4 in 2016 from 25.4 in 2001. And fertility rate reduced to 2.3 in 2016 from 3.1 in 2001. And death rate decreased to 6.4 in 2016 from 7.1 in 2011 and 8.4 in 2001. And expectancy of life was increased to 69 years according to a estimate in 2016 which was 66.1 during the period of 2006 to 2010 and 63 years in 2000-2004. Further the dependency ratio also comes down to 51% in 2017 which was 63 in 221 and 55 in 2011.and over all GDP growth rate of India during the last 30 years increased multiple times. During the fourth stage the average annual growth rate of GDP in India remains between 5.6% to 9%, which was around 3.5 percent in third stage. It's due to these economic and demographic structural changes that India is today among top 10 economies of the world. The average population growth rate of India during the last three decades remains near 1.7 percent per year and in 3rd stage of demographic transition the growth rate was at 2.4. Thus the population growth rate of population remains less the GDP growth rate in India during the 4th stage.

4.1 Trend in Working Age Population and Domestic Saving Rate in India

The rise in the share of Working Age Population, (15-64 years) in proportion to total population with respect to the Non-Working Age Population (0-15 years and above 64 years) leads to the rise in Labour Supply, Savings and Human Capital. Bloom rightly discussed these forces as the factors of demographic dividend.

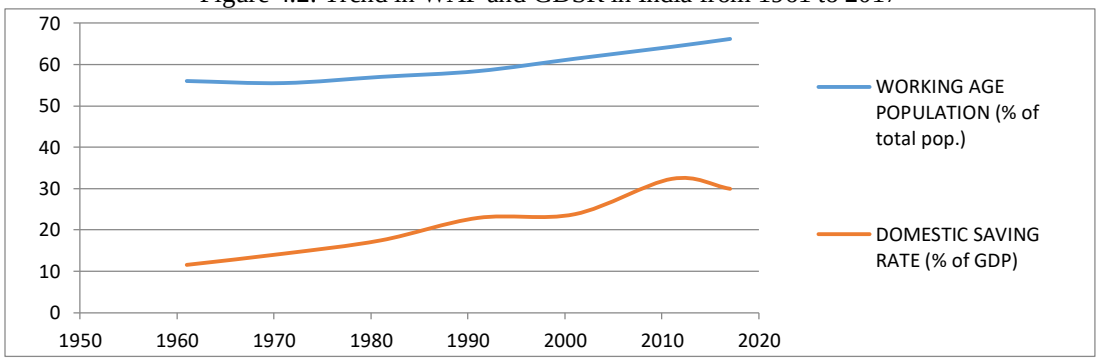
Demographic dividends are a complex of different forces: The 1st one is the bulge of the labor force as the baby boomers arrive at working age group. The 2nd is the ability and capacity to divert social resources from investing in children to investing in education, physical capital, job training, and technological progress. The 3rd is the increase in women's workforce activity that naturally accompanies to turn down in fertility rate. The 4th has to do with the fact that the working ages also occur to be the prime years for savings, which is key to the addition of physical and human capital and technological innovation. And the 5th is the further enhance to savings that occurs as the incentive to save for longer duration of retirement increases with greater longevity. We may now examine the relationship between working age population and total gross domestic saving rate during the period of 1961 to 2011 and 2011 to 2017, in India from available data as shown in table and graph.

Table 4.1: Trend in WAP and GDSR in India from 1961 to 2017

Year	Working Age Population (% of total pop.)	Domestic Saving Rate (% of GDP)
1961	56	11.6
1971	55.5	14.3
1981	57	17.5
1991	58.4	22.9
2001	61.4	23.8
2011	64.3	32.3
2017	66.2	29.9

Source: Compiled and calculated by author from World Bank, www.stastista.com>international>india, RBI, Reports on currency and finance, NASI, 1950-51 to 2000-01 and Encyclopedia.com.

Figure 4.2: Trend in WAP and GDSR in India from 1961 to 2017



The available data given in **"fig. 4.2"** shows that, the working age population (WAP) increases continuously since 1961 to 2017,during 1961 the WAP was 56% of total population, which means unproductive or dependent population was 44%,at the same time total domestic saving is shown 11.6% which was too low than required rate. In 1971 the WAP declined to 55.5% but saving rate increased in the same decade due to nationalization of banks and establishment of new financial institutes, expansion of new branches of existing and new banks and on the other hand government use encouragement policy towards savings. After that in 1981 the WAP percentage was 57% and domestic saving rate (DSR) was 17% which reached up to 64%and 32.3% in 2011 respectively. In three decades saving rate increase effectively along with WAP, despite continuous fluctuations in savings due to different institutional reforms in Indian economy. the above table and graph predicts that during the period of 1961 to 2011 the domestic savings are increasing significantly, but the increasing trend is seemed changing dramatically from 2011 to 2017 as graph of WAP and total domestic savings is seeming goes in opposite direction during the years of 2011 to 2017, as the working age population (WAP) increased from 64.3% to 66.2% but the total domestic saving rate declines significantly from 32.2% in 2011 to 29.9% in 2017. The possible strong reason behind decline in domestic saving rate in spite of increase in WAP during the period of 2011-2017 was increase in prices, there is erosion in the savings of the household sector. In 2011 the household sector saving was 22.8% which declined to 18% in 2017. As the share of household saving is more than 75% in total domestic saving.

4.2 REASONS BEHIND DECLINING TREND IN DSR IN RELATION TO INCREASING WAP DURING THE PERIOD OF 2011-2017

The increasing WAP and decreasing dependency ratio may not hold true in every situation and country. India is one of the fast growing country but still more than 60% population is dependent on agriculture and India have largest informal sector, despite of the large population is engaged in agriculture the contribution of agriculture sector in GDP is less than 14% in India. If the large part of WAP is engaged in low productivity agriculture and other informal activities, it's than obvious that saving rate will not increase at the expected rate. It is one of the reason why DSR in not increasing along with WAP in India. The other important reason for decreasing saving capacity of middle class may be high inflation rate and the increasing cost of education and health care due to the privatization of these services. Moreover, household savings are affected by lack of financial institutions. If a large part of the population remains financially excluded, the expected saving will not materialize.

Table 4.2: HYPOTHESES ASSESSMENT SUMMARY

Hypotheses	Status	Sig. Values
H_{01}: Effect of Working Age Population (WAP) on Grass Domestic Saving Rate (GDSR) in India does not show any significant differential impact.	rejected	0.003
H_{02}: There is no significant relation between Working Age Population and Gross Domestic Saving Rate in India during the period of 2011 to 2017.	accepted	0.050

V. CHALLENGES TO REAP DEMOGRAPHIC DIVIDEND FOR INDIA

The benefits flowing from an increasing WAP are irrefutable law but depend upon some vital factors like, education and skill level of country, health conditions of people, woman participation rate in labour force, job creation ability of economy and capital formation, etc. if India at national level will not address these challenging factors soon the opportunity of demographic dividend can convert into demographic disaster. The important challenges which need to be addressed on priority bases are as:

- **Poor and Low Quality Education System**: The literacy rate in India is 74% which is below than world literacy rate 84%. The situation of primary education is more concerned. According to annual status of education report 2014 only 4th of all 3rd class students is able to read 2nd class text book fluently. The other problem is shortage of teachers.
- **Information and Technology Platform**: Since 1990's IT industry has boomed in India. But quality is too matter of concerned here according to Nasscom report only 25% IT Graduates are employable. As per AICTE Report India produce more than 5 lakh engineers annually but only 2.68% meet the skill requirements of the IT products sector. And 92% Engineering students lake computer programming and algorithms skills and around 56% lakh soft skills.
- **Establishment of Vocational Training Programmes:** According to industry analysis, just 5% of youth in India are vocationally trained but need is of 75 to 90% because 90% jobs need vocational training. India have target to skill 500 million people by 2022 but annual rate is just 3.1 million.
- **To Providing Health Care:** To keep 1.3 billion population fit and educated is biggest challenge for policy makers in India. According to WB report India have highest rate of malnutrition and undernourishment among children and underweight children's are highest in India.
- **Low Participation Rate of Woman in Economic Activities:** The woman participation rate in economic activities in India is just 31.1% in 2011 out of actual working population
- **Lack of Employment Generation:** Indian economy is one of the fast growing economies in world despite of that India fails to create adequate jobs for huge unemployed educated youth that is why economists call this growth jobless growth.

VI. MAJOR FINDINGS OF THE STUDY

- India is considered as a young nation in world with a huge working age population at present. the data shows that India's working age population (15-64 years) was 63.4% according to census 2011 of total population, as against it was 61.4% in 2001 and reach to 66% in 2017 approximately.
- According to Demographic Transition Theory India lies in 4th stage of demographic transition where its population is increasing at slow rate and economic growth rate is increasing at increasing rate.
- After analyzing collected data from different sources we find that there is positive relation between the WAP and GDSR in India, as WAP increase the GDSR also vary but during the period of 2011 t0 2017 the relation between the two variables is negatively related to each other as the WAP increases continuously the GDSR declined.
- we also analyze there is significant change in working age population in last three decades, as the WAP of India in 1981 was 57% in proportion to total population of India and it raises up to 63.4% in 2011 and then reaches to 66% in 2017. And the fluctuation factors of WAP or demographic dividend also changes, as the fertility rate declined up to 2.3 in 2016 from 4.5 in 1981. And mortality rate reaches to 34/1000 in 2016 from 110/1000 in 1981. And at the same time the life expectancy reaches to 68.3 in 2015 from 54 in 1981 and just 41 in 1961. The dependency ratio declined to .51% in 2017 from .80% in 1971.

VII. CONCLUSION

The present study shows both theoretically and empirically that, the labour force of the country is dominated by its young population. And India is going through a phase of demographic transition wherein its Working Age Population is larger than its unproductive population. The author reaches the conclusion that India's huge working age population have enough potential to raise GDSR in India, if government establish sound institutions to convert present unskilled labour force into skilled and trained labour force, increase women's participation in labour force and made investment in healthcare and education then the huge available working age population can be converted into demographic dividend.

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