The Demographic Dividend: Challenges, Opportunities, and Prospects; The Case of Oromia National Regional Government

Collaborative Research (Oromia State University & Oromia Planning & Development Commission)

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CHAPTER ONE
1.1Introduction

Because people's economic behavior varies at different stages of life, changes in a country's age structure can have significant effects on its economic performance. Nations with a high proportion of children are likely to devote a high proportion of resources to their care, which tends to depress the pace of economic growth. The effects are similar if a large share of resources is needed by a relatively less productive segment of the elderly. By contrast, if most of a nation's population falls within the working age output per capita, all other factors are equal. As countries move through the demographic transition from a high fertility and high mortality to a low fertility and low mortality equilibrium, the size of the working-age population mechanically increases. This can create virtuous cycles of economic growth commonly referred to as the "demographic dividend". Bloom, Canning, and Sevilla (2003) explore this concept of the demographic dividend in detail and compare the variation in the age distribution across countries and regions.

Demographic dividend, i.e., the accelerated economic growth and increasing surplus resulting from an expansion of the working-age population with respect to the young dependent population. In order to fully explain the rapid economic growth that took place in East Asia, demographers, economists, and social scientists were compelled to take into account the significant shifts in age structures, which were triggered by rapid fertility declines. It was estimated that the increasing weight of the number of active adults relative to their young dependents accounted for about 40% of the economic growth that had been observed in the region at the time. This analysis of the East Asian "economic miracle" led to the formulation of the concept of the demographic dividend (Bloom and Williamson, 1998).

The demographic dividend is the accelerated economic growth that may result from a rapid decline in a country's fertility and the subsequent change in the population age structure. With fewer births each year, a country's working-age population grows larger relative to the young-dependent population. With more people in the labor force and fewer children to support, a country has a window of opportunity for rapid economic growth if the right social and economic investments and policies are made in health, education, governance, and the economy. The impact of population on economic development has been a subject of major debates in the economic and social science literature (May, 2012).

The East Asian "economic miracle" offers some of recent history's most compelling evidence of the "demographic dividend (Mason, 2001)." The East Asian demographic transition occurred with relative rapidity, over a 50–75-year period—the fastest demographic transition to date (Bloom, Nandakumar, and Bhawalkar, 2001). Modern transitions are faster because countries gain the benefit of knowledge, experience, or technology developed by others. The idea of a "demographic dividend" is a phenomenon based on the premise that economic growth in a country is linked to an increase in the share of its working-age population. In East Asia, this increase is associated with driving much of the region's economic boom. Nonetheless, the notion of the demographic dividend is as important as it is inaccurate (Mason, A, ed., 2001).

Less developed countries have a large proportion of their population in the younger age groups as fertility rates are high and life expectancy is low. More developed countries have lower fertility rates and higher life expectancy and thus a large proportion of their population is at higher ages. Lee (2003) and Weil (1999) examine the projected demographic transition and the effect of this transition on economic outcomes respectively. While most regions around the world are evolving through the demographic transition Africa stands as an outlier. Fertility rates are high and falling only slightly and life expectancy is actually falling in some countries due to the impact of HIV/AIDS. Given these trends, Bongaarts and Bulatao (1999) have argued that Sub-Saharan African countries are not likely to earn the demographic dividend. We draw a more differential picture for Sub-Saharan Africa and present a positive outlook for those countries with the right set of institutions in place.

Ethiopia's development goals over the last ten years have included a focus on improving the education, health, and well-being of its citizens. Although plans have varied in their emphases, each has had some element of sector-specific policies, inclusive of education, job training, and economic growth. The Ministry of Health launched the Health Extension Program (HEP) in 2003, which has deployed thousands of health workers to rural areas. Development can be seen from different directions; but as most agree it encompasses, economic development, political maturity, and social development. Social development especially demographic changes seems to be **given less attention** in the way they can play a role in a nation's development, especially in the Ethiopian context (World Bank, 2016).

Challenges related to population growth spiralling out of control or weak mechanisms linking demographic transition to social change could delay or even deny reaping the demographic

dividend. One of those important mechanisms or channels is job creation and productive employment. However, it should be noted that the link between demographic transition and demographic dividend is not necessarily one way; development could promote or speed up the transition process (UNDP, 2018). Ethiopia has seen a significant decline in both death and birth rates over the years. However, the fertility rate is still high at 4.6 though slightly declining. The fertility rate declined by 0.9 percentage points between 2000 and 2016, and the percentage change in rural areas was higher, but the decline in rural areas only started after 2005. With regard to mortality rate, there was a sharp decline in both child and adult mortality (Ibid).

Oromia National Regional State (ONRS) is the largest Regional State in terms of population and territory, economic contribution, and political influence. According to the 2016 EDHS, in Oromia, only 35 percent of women (aged 15-49) decide on their first marriage and 6per cent of women's parents made the decision for their first marriage. Both rates are the same as the national average. There is a worryingly high rate of girls/ women who stop attending school after marriage, coupled with a high rate of child marriage. Of girls who were enrolled in school at the time of their marriage, only 27 percent were still enrolled one year later. The main reason for discontinuing school, 71 percent of women (one of the highest rates in the country) are busy with family life, while 19 percent of them discontinued schooling due to their husband's refusal to let them continue their education. Around 17 percent of girls aged 15-19 had begun childbearing is high compared to other regions. The relative percentage of married women in the region who use modern contraceptive methods is 29 percent compared to the national 36 percent (EDHS, 2016).

According to the 2016 Ethiopian Demographic and Health Survey, Oromia has the third highest total fertility in the country after Somali and Afar. Oromia is well positioned for a demographic dividend if fertility continues to decline and the current large youth population is able to find productive employment. The average household size in Oromia is large, at 5.2 people per household compared to the national average of 4.8 people per household. The dependency ratio is high (97 percent) and most dependents come from the lower end of the age distribution.

The policies and strategies of the country should not just dwell on generating employment, but productive employment. Harnessing demographic dividends requires creating decent and high-productivity jobs. Accordingly, key policy actions should be able to address the root causes of underemployment such as low productivity and low access to resources. This includes policies to

increase capital endowment per worker through encouraging capital investment, particularly by promoting domestic private investment. The most urgent interventions in this regard shall focus on skills development through quality education and training, and increased access to means of production for the youth cohort. Therefore, the study determined to assess the demographic dividend challenges, opportunities, and prospect of the Oromia Regional State.

1.2 Rationale of the study

Most regions of the world have experienced gradually declining rates of population growth. Such demographic changes have played a major role in the respective nations' economic growth and poverty reductions. By now, while developed nations are suffering from very low fertility and a growing elderly population, least developed nations, on the other hand, are having the highest fertility and growing child dependency. By 2050, Africa's population is projected to increase to 2.4 billion from 1.1 billion today, making it the region with the largest population growth (PRB, 2013). This projection is under the assumption of increased access to family planning that will result in a reduction in fertility rates.

The divergence between production and consumption interacts with changes in population age structure to generate what is called a demographic dividend (Bloom and Williamson, 1998; Mason, 2001; Bloom et al., 2002). Globally, over the last 40 years, women are having fewer children, from 4.7 children per woman in 1970 to an average of 2.5 children in 2014, the highest fertility being in Niger at 7.4 children per woman and the lowest in Taiwan at 1.1 children per woman (PRB, 2014).

East Asian economies grow after World War II, especially South Korea, a country with no natural resources. It has invested in its human resource and utilized them to harness its economic development to be in the top global economies within a very short period (Gribble, 2012). Good demographics may be a precondition for high growth but are not enough, and need to be supported by descent governance. Leaders in least-developed nations need both the peace dividend, demographic dividend, and financial dividend. It is common to notice that some countries having low fertility are not making fast progress in economic achievement like East Asia's fast development.

In line with this, the literature places a particular emphasis on changing the age structure of the population to capture the demographic dividend, the fertility rate becomes an essential adjustment

variable. The decline in fertility appears to be a necessary condition for achieving the demographic dividend, particularly through its effect on the age structure of the population (Bloom et al., 2003, 2017; Jiang et al., 2016; Lee & Mason, 2006). However, the decline in fertility should be followed by active job creation policies to ensure that the ratio of effective workers to effective consumers (support ratio) is constantly increasing. Hence, employment should also matter for the capture of the demographic dividend (Prskawetz & Sambt, 2014). Furthermore, investments in high-quality family planning services yield increased uptake and continued use of modern contraception, which have positive impacts on the health of women and children (Canning D, Schultz TP, 2012). Healthier women with fewer children participate more in the workplace, resulting in economic benefits that also extend to children who are better educated and equipped to be more economically productive in the future (Bailey MJ, 2013). Moreover, when population dynamics shift due to a reduction in mortality and fertility rates, there is a resulting increase in the proportion of working-age adults (Bloom DE, Canning D., et al., 2003). When combined with appropriate policies, including the expansion of FP, this shift can yield the 'demographic dividend', a phenomenon in which there are relatively fewer dependents (children and elderly) and a greater proportion of working-age adults, spurring rapid economic development and income generation (Bloom DE, Canning D., et al., 2003).

Africa has shown a 30% reduction in the fertility rate from 6.7 to 4.7 in the same 40 years past, however still growing very rapidly. Similarly, a speech made by the director of the State of World Population 2014 Report says (UNFPA, 2014); if Africa can get things right, including bringing down its birth rates, the demographic dividend could add as much as $500 billion to sub-Saharan economies every year for as many as 30 years. However, demographic changes seem to be given less attention to the way they can play a role in a nation's development, especially in the African context. According to the wall street journal, the chances for swift economic growth are higher when a country hits that sweet spot called "demographic dividend" (Rosenthal, 2014).

Ethiopia has realized successes in the MDGs: poverty reduction, education, access to safe drinking water, and peace and stability in the country. The proportion of people living below the absolute poverty line had decreased from 48% in 1990 to 23.4% in 2015. The total fertility rate declined from 7.7 children per woman in 1990 to 4.6 children per woman in 2015 (Central Statistical Authority, 2000, 2016). The proportion of households with access to piped water increased from

18% in 2000 to 88% in 2015 (CSA, 2016). The 'one plan, one budget, and one report' approach also facilitated coordination and partnership among stakeholders (including multilateral, bilateral, private, and public organizations) towards improved efficiency (Federal Ministry of Health of Ethiopia, 2007).

However, Ethiopia including Oromia has not achieved a demographic transition yet, a case where both fertility and mortality are low, could significantly impact the level of socioeconomic development. Ethiopia's Demographic Health Survey (DHS) data show vast differences in fertility and other health and education-related indicators between rural and urban Ethiopia and across regional states. Therefore, demographic data and studies are of critical importance for development policy formulation and planning. In spite of this, until recently.

The demographic dividend does not last forever. There is a limited window of opportunity. In time, the age distribution changes again, as the large adult population moves into the older, less-productive age brackets. When this occurs, the dependency ratio rises again, this time involving the need to care for the elderly. In addition, the dividend is not automatic. While demographic pressures are eased wherever fertility falls, some countries will take better advantage of that than others. Some countries will act to capitalize upon the released resources and use them effectively, but others will not. Then, in time, when the window of opportunity closes, those that do not take advantage of the demographic dividend will face renewed pressures in a position that is weaker than ever. Therefore, this study was meant to examine the demographic dividend in Oromia National Regional State in terms of Population dynamics, economic growth, governance, health, and education to understand the challenges, opportunities, and prospects.

1.3 **Research Questions**

1. What is the status of the region to reap the window of opportunity and harness demographic dividend?

2. How does the interaction between population dynamics and investment in education, health, Economy, and Governance promote the region to attain a Demographic Dividend?
3. What are the opportunities and challenges for the realization of the Demographic Dividend at the regional level?
4. What Policy & program is needed to harness the demographic dividend?

1.4 Objectives of the Study

1.4.1 General Objectives of the Study

The purpose of this study is to assess how population distribution across different age structures, and gender compositions can have implications on the investment in education, health, economy, and governance of the region in realizing Demographic dividends.

1.4.2 Specific Objectives of the Study

1. To identify the status of the region to reap the window of opportunities to harness demographic dividend or not.
2. To examine how the interaction between population dynamics and Economic growth, investment in education, health, and Governance promote the region to attain Demographic Dividend,
3. To identify opportunities and challenges in the realization of Demographic dividends at the regional level.
4. To inform Policy & program insights needed to harness the demographic dividend.

1.5 Scope of the study

This study was limited to assess the demographic dividend prospects, opportunities and challenges of Oromia National Regional State selected five (5) zones (Jimma, West Arsi, East Shoa, Oromia Special Zone surrounding Finfinne, Arsi and West Hararge) and four (4) cities (Adama, Bishoftu, Jimma, Burayyu and Sebeta) selected purposively because these zones & cities are more populous. The study also limited due to many reasons especially security, time and resource constraints.

1.6 **Significance of the study**

The study is significant for the researchers that want to conduct similar research on the area of demographic dividend. The study also helps the Oromia regional government for policy making and strategic plan on socio-economic development of the region to maximize the benefits of the society life. Moreover, the findings of the study will help researchers grasp the education, health, women, youth, and demographic dividend. It also helps to prepare future plan for public institutions and others stakeholders.

The demographic dividend has long been viewed as an important factor for economic development and provided a rationale for policies aiming at a more balanced age structure. Simply stated, the demographic dividend occurs when a falling birth rate changes the age distribution. So that fewer investments are needed to meet the needs of the youngest age groups and resources are released for investment in economic development and family welfare. If leaders throughout the country can make investments to change the population structure and strengthen programs for health, education, economic policy, and governance, they may be able to harness a demographic dividend.

1.7 Definition of basic terms

Demographic Dividend: - The economic growth potential that can result from shifts in population's age structure

Fertility: - Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year.

Mortality: - is a measure of the frequency of occurrence of death in a defined population during a specified interval. Morbidity and mortality measures are often the same mathematically; it's just a matter of what you choose to measure, illness or death.

Youth: -comprises part of the society who are between age 15-29 (MOY, 2004).

Demographic transition: is a long-term trend of declining birth and death rates, resulting in substantive change in the age distribution of a population.

Working Age Population/Economically active age population: -all persons aged 15 to 64 of either sex who furnish the supply of labor for the production of economic goods and services.

Dependency ratio

Chapter Two: Literature Review

2.1 Introduction: Demographic Dividend

Development is multidimensional and is often focused on boosting the well-being of a country's citizens. Economically, development can be regarded as an increase in the gross domestic product that is expected to improve people's living standards. With a demographic lens, however, development might indicate a decline in both mortality and fertility rates, which will in turn translate into higher quality of life for the population. A socially developed country will have a higher proportion of its population being literate, having access to quality and economical healthcare, and eventually better life expectancy. The demographic dividend is a probable economic opportunity afforded by changes in the population age structure due to a decline in mortality and fertility and an increase in the ratio of working-age to non-working-age dependents. Although the benefits of the demographic dividend have been achieved by certain Asian and Latin American countries, this has yet to materialize in many sub-Saharan African countries (Gribble & Bremner, 2012).

According to the ILO (2019), paid labor is the fundamental driver of material well-being, economic security, equality of opportunities, and human development. Unfortunately, progress in these areas seems to evade many people in sub-Saharan Africa (SSA). Harnessing this DD requires early investments in health, education, and economic policies/interventions that can absorb the higher labor supply of the youth into the economy, and allow individuals to save and invest in their future.

Although fertility rates in poor countries are declining, they are still high relative to countries in the developed North. The World Bank (2015) reported that the fertility drop in Africa has been very slow, resulting in a significant increase in population, forecasting the region to have a substantially higher percentage of the future global population than it does today. The World Bank additionally states that Africa would contain 2.8 billion of the globe's estimated 10 billion population by 2060 compared to 5.2 billion in Asia, 1.3 billion in the Americas, 0.7 billion in Europe, and 0.1 billion in the rest of the world. The quick population growth rate in a country has ramifications for economic development. This rapid expansion in the population that defines the population dynamics of most of sub-Saharan Africa's countries does not necessarily mean doom

for the countries in the region. This is because closely associated with the current rise of the population of most of these countries is the appearance of a demographic dividend that must be discovered and utilized for sustainable development.

The Demographic Dividend is often revealed through the changing demographic pyramid from a large base to one with a diminishing base, a rising workforce, and a lowering age dependence ratio. This is accurately described as the “youth bulge” (Fluckiger & Ludwig, 2018; Jimenez & Murthi, 2006), which illustrates a growing number of young people entering the labor market every year for whom the government will need to find jobs. Many sub-Saharan African countries either are beginning to observe this predicament or are currently in it. Thus, the rapid population expansion could hamper or assist economic growth depending on the policies put in place by the various governments in Ghana, Sierra Leone, and the Gambia to facilitate this rapid growth.

The demographic dividend is crucial to four areas of development in every country. Economy, health, education, and governance, as well as the environment, are among these sectors. According to Ahmed (2015), Africa's demographics might contribute to 11-15 percent of the region's GDP growth between 2011 and 2030, with differences among nations. According to the World Economic Outlook Database (IMF, 2018), Seychelles has the highest per capita GDP in Africa and Malawi has the lowest. Ghana was ranked 17th, Sierra Leone was ranked 35th, and The Gambia was ranked 37th. It is also expected that demographic shifts will reduce Africa's poverty rate, which stood at 52 percent in 2007, to 17-37 percent, with 210-451 million impoverished people (Ahmed, 2015). (Ahmed, 2015). This clearly displays the potential influence of the demographic dividend in each country and how it could be utilized to benefit the country. It means that, depending on how the demographic dividend is handled and addressed through policy interventions, more people will be pulled out of poverty or pushed deeper into it.

In the health sector, lowering birth rates are predicted to reduce newborn and child mortality, raise life expectancy at birth and increase the population's potential for output and wealth creation as national expenditure falls. To reap the benefits of the demographic dividend, it will also be vital to make strategic investments in education while guaranteeing transparent, participatory, and accountable governance. However, due to the different social, economic, demographic, and political realities in various nations, there is currently inadequate knowledge of the timing of the demographic dividend in many African countries. The commencement of the demographic

dividend is also tied to the demographic transition in each country within the setting of its particular socio-political economy.

2.2 Definitions and Concepts

The concept of the demographic dividend i.e., the accelerated economic growth and increasing surplus resulting from an expansion of the working-age population with respect to the young dependent population, was formulated after a closer examination of the East Asian "economic miracle", which occurred between the 1960s and 1990s. In order to fully explain the rapid economic growth that took place in East Asia, demographers, economists, and social scientists were compelled to take into account the significant shifts in age structures, which were triggered by rapid fertility declines. It was estimated that the increasing weight of the number of active adults relative to their young dependents accounted for about 40% of the economic growth that had been observed in the region at the time. This analysis of the East Asian "economic miracle" led to the formulation of the concept of the demographic dividend (Braun, J. and Olofinbiyi, T, 2007).

The demographic dividend is the accelerated economic growth that may result from a rapid decline in a country's fertility and the subsequent change in the population age structure. With fewer births each year, a country's working-age population grows larger relative to the young-dependent population. With more people in the labor force and fewer children to support, a country has a window of opportunity for rapid economic growth if the right social and economic investments and policies are made in health, education, governance, and the economy.

The impact of age structure on economic development was first posited by Coale and Hoover (1958), but the magnitude of the effect was not realized until the 1990s. At that time the the theory was tested retrospectively in relation to East Asia in careful work associated with Andrew Mason, David Bloom, Jeffrey Williamson, Allen Kelley, and others; their work has been summarized in two important collections of papers: Birds all, Kelley, and Mason (2001). Simply stated, the demographic dividend occurs when a falling birth rate changes the age distribution so that fewer investments are needed to meet the needs of the youngest age groups and resources are released for investment in economic development and family welfare. That is, a falling birth rate makes for a smaller population at young, dependent ages and for relatively more

people in the adult age groups-who comprise the productive labor force. It improves the ratio of productive workers to child dependents in the population. That makes for faster economic growth and fewer burdens on families (John Ross, 2004).

The demographic dividend describes the interplay between changes in a population's age structure due to the demographic transition and rapid economic growth. Declines in child mortality, followed by declines in fertility, produce a "bulge" generation and a period when a country has a large number of working-age people and a smaller number of dependents. Having a large number of workers per capita gives a boost to the economy provided there are labor opportunities for the workers. More important for a sizable dividend, however, are changes in worker productivity. Smaller family sizes mean that both families and governments have more resources to invest in health and education per child (Gribble and Bremner, 2012).

The Demographic Dividend is the potential growth in a country's economy resulting from a change in the age structure of its population. It occurs when a falling birth rate changes the age distribution so that fewer investments are needed to meet the needs of the youngest age groups and resources are released for investment in economic development and family welfare. That is, a falling birth rate makes for a smaller population at young, dependent ages and for relatively more people in the adult age groups-who comprise the productive labor force. It improves the ratio of productive workers to child dependents in the population and makes for faster economic growth and fewer burdens on families (Cuddington, John T. and John D. Hancock, 1994).

2.3 Demographic Change and Economic Growth

For decades, economists and social intellectuals have disputed the influence of population change on economic growth. Three possible positions describe this debate: Population growth either inhibits, promotes, or is independent of economic growth. However, all of these arguments center on population numbers and increase. In recent years, however, the debate has paid little attention to the population's age structure (that is, how the population is dispersed across different age groups), which can alter substantially when fertility and mortality rates fluctuate.

Nations with a high population of children are likely to dedicate a significant proportion of resources to their care, which tends to reduce the pace of economic growth. By contrast, if most of a nation's population falls into the working age, the extra productivity of this group can create a

"demographic dividend" of economic growth, assuming that policies to take advantage of this are in place. In fact, the combined influence of this huge working-age population and health, family, labor, finance, and human capital policies can affect virtuous cycles of wealth generation. And if a high part of a nation's population consists of the elderly, the impacts can be similar to those of a relatively youthful population. A substantial percentage of resources is needed by a relatively less productive segment of the population, which thus can limit economic progress.

Policymakers in underdeveloped countries have a window of opportunity for harnessing the maturing of previously young populations. Policymakers should investigate how to maximize and exploit this dividend by accelerating the demographic shift and allowing more labor to be absorbed productively in the market. Finally, authorities must plan for the future health care and pension-income demands of this baby-boom generation when it ages. The demographic change affords policymakers a window of opportunity. Seizing it could be important to the economic and social development of their countries. Note that policies that support the free operation of markets are frequently referred to throughout the report.

Previously, the discussion over rapid population expansion was mostly about how population growth affects aggregate economic development (An & Jeon, 2006; Barro, 1991; Boserup, 1965; Grossman & Helpman 1991; Malthus, 1817; Solow, 1956). There are two camps of thought: those who believe high population expansion inhibits economic growth (Barro, 1991; Solow, 1956; Malthus, 1817); and those who feel it fosters economic progress (Boserup, 1965; Canning et al., 2015). Recent studies in development economics and human geography emphasize the relevance of population in conversations about economic growth, dealing with the environment, and development (Bloom et al., 2003; Canning et al., 2015; United Nations 2013; Peterson, 2017).

2.3.1 Population Growth Restricts Economic Growth

Concerns about high population increase voiced by demographers, social scientists, and others were founded largely on the premise that such expansion would "serve as a brake" on economic development (Bulatao, 1998). In the late 1940s, conservationists began to write about unsustainable population expansion as a threat to food supplies and natural resources. Fears about the impact of rapid population expansion and high fertility drove the widespread deployment of family planning programs in many areas of the developing world (Seltzer, 2002). Policymakers presumed that by helping to reduce high fertility, family planning programs would slow population

growth, which would contribute to improved economic performance by freeing resources that otherwise would be devoted to childrearing and reducing strains on infrastructure and the environment.

"Taking the population of the globe at any number, a thousand million, for instance … the human species would increase in the ratio of 1, 2, 4, 8, 16, 32, 64, 128, 256, 516, etc. and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc. In two centuries and a quarter, the population would be to the means of subsistence as 512 to 10; in three centuries as 4096 to 13, and in two thousand years the gap would be incalculable" (Malthus, 1798). Malthus's pessimism has remained with us. In 1968, for instance, Paul Ehrlich launched his landmark book The Population Bomb with the lines, "The struggle … is over. In the 1970s hundreds of millions of people are going to starve to death" (Ehrlich, 1968). More measured analyses done by the U.S. National Academy of Sciences (NAS) in 1971 and the United Nations in 1973 likewise anticipated that the net effect of population expansion would be negative (National Academy of Sciences, 1971; United Nations, 1973). Rapid population expansion continues to impinge on the modern mind. The world's population has expanded sixfold since 1800 when it stood at approximately 1 billion. It takes fewer than 130 years to add another billion. Things have quickened dramatically subsequently.

In addition to the effect of population numbers on the demand for fixed resources, there is also a potentially negative impact of population expansion on capital intensity. In essence, increasing population numbers demand additional homes, factories, and infrastructure to shelter, employ, and cater to their needs. In the long run, such capital can be produced, but periods of fast population increase may well lead to reductions in capital per worker and reduced living standards. When population growth is high, a major part of the investment is used to satisfy the demands of the rising population rather than permitting an increase in the level of provision per capita.

Empirical research had weakened the pessimists' case; economic theory had begun to give increasing importance to technology and human capital accumulation rather than to the old key growth factor of physical capital; and the demographic theory started to look to the intermediate and long term, where the short-term effects of population growth were likely to have at least partly smoothed out (Romer, and Weil, 1992). As Kelley (2001), organizations such as the National Academy of Sciences began to revise their earlier views, as economists' voices, with their greater faith in markets' ability to respond to population growth, no longer took a backseat to those of the

social and biological scientists who previously dominated population thinking (National Research Council, 1986).

2.3.2 Optimistic view of Population growth

Recent history has placed further doubt on the pessimists' theory. In the last few decades, during which the world's population has doubled per capita incomes have climbed by nearly two-thirds. Famines have occurred, but Ehrlich's "hundreds of millions" of people have not starved. The famines that have happened were mostly driven by poverty and lack of cash within a segment of the population to buy food rather than by any absolute shortage of food. (As Amartya Sen has emphasized, there has never been a famine in a functional democracy, whatever its population growth rate [Sen, 1999].)

Technological advancement, in both agriculture and industry, has been more rapid than during any other time in human history. There have been similarly substantial social and institutional innovations: in the way people work, the standard of their education and health, and the amount to which they participate in the political process (Sen, 1999; Bloom, Craig, and Malaney, 2001). Rather than being bound by fixed resources, the prices of many raw commodities are in long-term fall, and some sections of the economy are becoming "dematerialized" as information becomes an increasingly crucial asset (World Bank, 1997; Task Force on Higher Education and Society, 2000).

These developments have bolstered the ideas of a group of "population optimists" who have worked to promote the idea that population expansion may be an economic gain. Simon Kuznets and Julian Simon, for example, claimed (separately) that as populations expand, so does the stock of human inventiveness. Larger societies with the capacity to take advantage of economies of scale are better positioned to generate, use, and spread the increased flow of knowledge they get (Kuznets, 1960, 1967). Simon, in his renowned book The Ultimate Resource (1981), argued that high population expansion can actually contribute to favorable consequences on economic development (Simon, 1981).

Population growth creates pressure on resources. People are resourceful and are stimulated to invent, especially amid hardship. When expanding populations swamped traditional hunter-gatherer arrangements, slash-burn-cultivate agriculture evolved. When that, too, became inadequate, intense multi-annual cropping was devised (Boserup, 1965, 1981). Extra recently the

Green Revolution, which has roughly doubled world food production since 1950 using just 1 percent more land, was a direct answer to population pressure. (Department for International Development, 1997).

2.4 Causes of demographic change

2.4.1 Mortality

The mortality rate is the first major driver of demographic change. The beginning of an epidemiological transition is associated with the initial decline in mortality that occurs as part of the demographic transition. A decrease in a population's mortality rate is usually accompanied by a decrease in the incidence of infectious and contagious diseases, particularly among children under the age of five.

Increased use of vaccines against fatal diseases, along with improved hygiene and sanitation and improved access to clean water, typically contribute to the initial declines in mortality rates (Bloom and Williamson 1998; Cutler, Deaton, and Lleras-Muney 2006). Mortality has only recently begun to fall in developing countries, and it remains high in low-income countries. It is still driven by infectious diseases and neonatal complications in low-income countries. More than half of all deaths in children under the age of six are caused by neonatal disorders, diarrhea, lower respiratory infections, and other infections. Between 1990 and 2010, neglected tropical diseases (NTDs), malaria, HIV, and tuberculosis accounted for roughly half of all deaths in Sub-Saharan African countries (WHO 2015).

Access to and supply of public health services has a significant impact on mortality rates across countries. Death, unlike other vital events that are under an individual's control, can be the result of a number of factors that are beyond an individual's control (Soares 2005). East Asia, for example, experienced a particularly rapid decline in child mortality, as well as mortality at all ages, resulting in an increase in life expectancy from 61.5 to 76.6 years between 1960 and 1992 (World Bank, 2015c). One explanation for this achievement could be widespread access to new public health programs, medical knowledge, and technologies (Bloom and Williamson 1998). Although there is a clear relationship between income and mortality outcomes, access to new technologies and public health improvements played a significant role in lowering mortality rates. Improving nutrition, public health quality and access, urbanization, vaccination, and medical treatments are among the primary causes of lower infectious disease and child mortality rates (Fogel 1997; Cutler Deaton, and Lleras-Munry 2006; Chaturvedi, De Costa, and Ravem 2015).

2.4.2 Fertility and Education

The fertility rate is a second important driver of demographic change. Lowering infant mortality rates, as well as rising educational attainment, life expectancy, and income, are all associated with lower total fertility. On the other hand, education (especially among females) and household income are negatively associated with fertility. The importance of infant mortality for fertility is discussed by Reher (2011), Soares (2005), and Acemoglu and Johnson (2007). The empirical literature testing the proposed three main determinants of long-term demographic transition, however, does not reach the same conclusions. Martin (2013) discovers that education outperforms infant mortality, income, and other variables in predicting fertility transitions. According to Herzer, Strulik, and Vollmer (2012), mortality changes and income growth are the most important drivers of changes in fertility rate, whereas Angeles (2010) believes that fertility rate reductions are primarily driven by mortality rate reductions.

Rising levels of education's labor market implications, particularly for women, influence fertility. According to Bloom et al. (2009), high fertility rates may limit female education and labor force participation, and a single birth may reduce a woman's labor supply by nearly two years during her reproductive life. As women become more educated, the opportunity cost of not participating in the labor market rises, leading to either fewer or later births, though gender empowerment also plays a role in women's labor-force participation. While higher educational attainment (particularly among females) and higher household income are both associated with fertility declines, the importance of education (particularly primary education) in affecting fertility appears to be more robust in analyses aimed at identifying a causal relationship between fertility and education.

2.4.3 Education, Income, and Fertility

Parents face two potential income-related mechanisms that underpin the "quality" versus "quantity" trade-off. First, as parents' educational attainment rises, especially that of women, so does the opportunity cost of having children. That alone may persuade parents to have fewer children or to postpone having children (Galor 1999; Galor and Weil 2000). Second, as incomes rise, parents may choose to have more children while also investing more in their children's human capital. However, empirical evidence suggests that as incomes rise, families choose to have fewer but more educated children. This behavior would imply that the elasticity of demand for quality is greater than the elasticity of demand for quantity (Becker, 1960) and (Becker and Lewis, 1973).

2.4.4 Migration within and across

Migration across and within countries is a third major driver of demographic change. Migration can significantly alter age structure and population growth and is influenced by a variety of "push" and "pull" factors. Push factors are those that encourage migration away from a specific location (whether it is a country or a subnational region), whereas pull factors are those that encourage migration to a specific location. Economic inequalities (differences in wages, employment prospects, or access to services) and inequalities defined more broadly (differences in physical safety, violations of human rights, and restrictions on religious or personal freedoms) are examples of push and pull factors (Hansen and Spilimbergo 1999; Harris and Todaro 1970; Mayda 2010; Molho 1986).

Economic incentives for migration may become less pronounced as migrant-sending countries develop and inequality within recipient countries declines. High-income countries are the most popular destinations for migrants, with the majority of migrants coming from developing countries (Ahmed, Go, and Willenbockel 2016). The broader impact of development on migration, on the other hand, is determined by growth patterns. If economic development does not promote job growth, it has the potential to exacerbate the push factors that cause people to leave (Massey, 1988).

Massey (1988) provides examples of how rapid structural transformation in the economy has the potential to create unemployment in rural primarily agriculture-dependent areas, increasing the incentives to migrate. If, on the other hand, a country's growth is on a path of eventual convergence with high-income countries' incomes, the pull factors may be reduced. Simultaneously, as fertility rates fall and working-age population growth slows in developing countries, emigration pressures may ease. Another major driver of internal and international migration is conflict, with the number of forced migrants now at its highest level since World War II: 65.3 million people were displaced in 2015, up from 59.5 million the previous year (UNHCR 2016).

2.5 Demographic change and development outcomes

Age structure changes have been identified as potentially having a significant feedback effect on per capita income growth, savings, and poverty reduction. Bloom and Canning (2004), Higgins and Williamson (1997), Kelley and Schmidt (1995, 2005, 2007), and the World Bank are some of the authors (2013a). Most notably, East Asia's demographic transition has been credited with facilitating the region's rapid income growth since the 1960s (Bloom and Williamson 1998; Bloom

et al. 2000; Higgins and Williamson 1997). At the same time, countries that are still in the early stages of transition, such as many high-fertility African countries, are thought to have enormous potential for accelerating income per capita growth in the coming decades as fertility rates fall (Eastwood and Lipton 2011; Ahmed et al. 2016). Cruz and Ahmed (2016) estimate that a one-percentage-point increase in a country's working-age population share can increase GDP per capita growth by 1.5 percentage points, the savings share of GDP by 0.8 percentage points, and poverty headcount rates by 0.76 percentage points on average.

However, studies of the development implications of demographic transition are not limited to countries at the beginning of the transition process. In contrast to the potential to boost economic growth in many developing countries, demographic change has been identified as a potential drag on economic growth in aging - and generally wealthier - economies. McKibbin (2006) analyzes several economies and discovers that demographic change can result in lower GDP for many high-income countries. For example, Japan's GDP in 2050 is expected to be 28% lower than in 1985. The policy issues arising from demographics in these aging economies are thus fundamentally different from those in younger countries and tend to focus on issues such as potentially slower labor supply growth, weakening economic dynamism, fiscal sustainability of old-age support systems, and long-term care, among others. Aging in advanced economies will also be a drag on global growth due to international spillover effects (IMF 2015).

Manyika et al. (2015) examine the long-term impact of demographic change on growth and estimate that the declining working-age population share could reduce global average income per capita by 20% between 2015 and 65.

Lee and Mason (2006) connected demography and development by introducing the first and second demographic dividends, which can be realized at various stages of demographic transition. These ideas are related to the demographic transition model (DTM), which describes how populations transition from high to low fertility and mortality rates. This transition generally corresponds to a country's economic development (Szreter 1993). The model has at least four distinct phases, with countries effectively transitioning from **high fertility and low life expectancy to low fertility and high life expectancy** as they navigate the demographic transition. At the same time, they shift from a high proportion of children to a low proportion of children and more elderly. In the **first stage**, where the population is younger and population growth is stable

but low, fertility and mortality rates are both high. If mortality rates fall but fertility rates remain high, as in the second phase, population growth accelerates, resulting in an increase in the number of young people and increased youth dependency. Fertility rates begin to fall in the third stage, and population growth slows. After a long period of lower fertility, the working-age population's growth rate slows and the aged dependency ratio begins to rise. In the fourth stage of the DTM, when fertility and mortality rates reach low levels, population growth also stabilizes at a low rate. The **first demographic dividend** may be realized when countries are in the early stages of transition when **their working-age population shares are increasing and their child and elderly dependency ratios are low**. The rising proportion of working-age people suggests that, even if employment rates remain constant, the proportion of income earners will rise relative to the total number of consumers in the economy. Because dependency ratios are decreasing, more resources will be available for consumption and investment. All of these will boost aggregate growth, and consumption, and, as a result, poverty reduction almost immediately. According to Mason and Kinugasa (2007), the contribution of the first demographic dividend explains between 9.2 and 15.5 percent of per capita economic growth between 1960 and 2000 for a diverse set of countries.

Looking ahead, Ashraf, Weil, and Wilde (2013) use simulation methods to show that differences in fertility rates exemplified by the United Nations World Population Prospects (UN WPP) medium- and low-fertility variants can mean a 5.6 percent difference in output per capita over a 20-year horizon and an 11.9 percent difference over a 50-year horizon for the case of Nigeria. Ahmed et al. (2016) used a global simulation model to show that the demographic dividend could account for 11-15% of Sub-Saharan Africa's GDP volume growth by 2030.

The second demographic dividend emerges and can persist as countries progress through the demographic transition. **When working-age populations are rising and dependency ratios are low**, economies have the potential to save more and invest more in both physical and human capital. Loayza, Schmitt-Hevel, and Serven (2000) discovered that increasing old-age dependency by one-point results in a 0.66 percentage point decrease in the ratio of gross private savings to gross private disposable income. Using a similar specification, **an increase of one point in the young dependency ratio would reduce 0.3 percentage points**. Many studies have found that lower child dependency leads to higher savings rates (Mason 1987; Kelley and Schmidt 2005; Higgins and Williamson 1997; and Kinugasa and Mason 2005). However**, there is less agreement**

on how the aged dependency ratio affects savings. People may save more during the economically active portion of their lives because they expect to live longer (Kinugasa and Mason 2007; Attanasio and Szekely 2000, Mason et al. 2011). **Lower fertility rates, which result in lower child dependency ratios, are also associated with the increased human capital investment** (Becker, 1960; Soares, 2005). These additional investments in physical and human capital can result in a long-term increase in productivity, even after the working-age population share has begun to decline and populations begin to age.

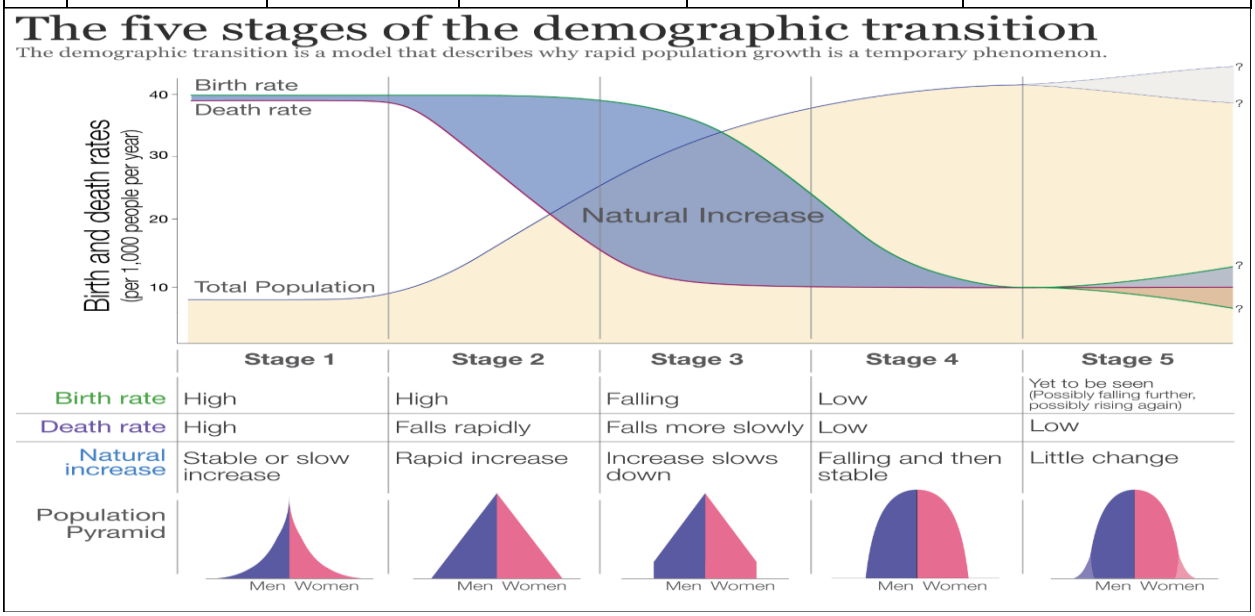
2.6 Realization of demographic dividend

These demographic dividends are not automatically realized. Given the potential for demographic change to accelerate development, the literature has extensively examined the policy and institutional conditions required for countries to capitalize on the demographic transition from high to low fertility (Bloom, Canning, and Sevilla 2003). Recent World Bank analyses have looked at how Sub-Saharan African economies can capitalize on their large and growing working-age populations (Ahmed and Cruz 2016; Canning Raja, and Yazbeck 2015; World Bank 2015b, 2016). In a scenario analysis, Ahmed and Cruz (2016) find that changes in age structure in those Southern African economies could account for 35 to 75 percent of poverty reduction between 2015 and 2050, despite no improvements in policy outcomes such as employment rates. However, the magnitude of the demographic dividends could be greater if countries can achieve policy outcomes in education, savings investment, and employment. The paper concludes that, despite qualitatively similar policies, different policy outcomes interacting with shifting age structures in different ways suggest quantitatively different economic impacts.

2.6.1 Demographic transition model

	Stage	Birth	Death	Natural Increase	Population Pyramid
	Stage: 1	High	High	Stable and Slow	
	Sate: two	High	Falls rapidly	Rapid Increase	
	Stage: three	Falling	Falls more slowly	Increase slows down	Youth Bulge
	Stage: Four	Low	Low	Falling and then Stable	

	Stage: Five	Possibly falling further	Low	Little change	



STAGE 1: LOW GROWTH RATE

We have lived in the first stage of the Demographic Transition Model for most of human existence. In this first stage, CBRs and CDRs fluctuated significantly over time because of living conditions, food output, environmental conditions, war, and disease. However, the natural increase in the world was pretty stable because the CBRs and CDRs were about equal. However, around 8,000 BC, the world's population began to grow dramatically due to the first agricultural revolution. During this time, humans learn to domesticate plants and animals for personal use and became less reliant on hunting and gathering for sustenance. While this transition allowed for more stable food production and village populations to grow, War and disease prevented population growth from occurring on a global scale.

STAGE: 2 HIGH GROWTH RATE

Around the mid-1700s, global populations began to grow ten times faster than in the past for two reasons: The Industrial Revolution and increased wealth. The Industrial Revolution brought with it a variety of technological improvements in agricultural production and food supply. Increased wealth in Europe, and later North America, because of the Industrial Revolution, meant that more

money and resources could be devoted to medicine, medical technology, water sanitation, and personal hygiene. Sewer systems installed in cities led to public health improvements. All of this dramatically caused CDRs to drop around the world. At first, CBRs stayed high as CDRs decreased; this caused populations to increase in Europe and North America. Over time, this would change.

Africa, Asia, and Latin America moved into Stage 2 of the demographic transition model 200 years later for different reasons than their European and North American counterparts. The medicine created in Europe and North America was brought into these emerging nations, creating what is now called the medical revolution. This diffusion of medicine in this region caused death rates to drop quickly. While the medical revolution reduced death rates, it did not bring with it the wealth and improved living conditions, and development that the Industrial Revolution created. Global population growth is highest in the regions that are still in Stage 2.

STAGE 3: MODERATE GROWTH RATE

Today, Europe and North America have moved to Stage 3 of the demographic transition model. A nation moves from Stage 2 to Stage 3 when CBRs begin to drop while CDRs simultaneously remain low or even continue to fall. It should be noted that the natural rate of increase in nations within Stage 3 is moderate because CBRs are somewhat higher than CDRs. The United States, Canada, and countries in Europe entered this stage in the early 20th Century. Latin American nations entered this stage later in the century.

Advances in technology and medicine cause a decrease in IMR and overall CDR during Stage 2. Social and economic changes bring about a reduction in CBR during Stage 3. Nations that begin to acquire wealth tend to have fewer children as they move away from rural-based development structures toward urban-based structures because more children survive, and the need for large families for agricultural work decreases.

STAGE 4: LOW GROWTH RATE

A nation enters Stage 4 of the demographic transition model when CBRs equal to or become less than CDRs. When CBRs are equal to CDRs, a nation will experience zero population growth (ZPG). It should be noted that sometimes a nation could have a slightly higher CBR, but still

experience ZPG. This occurs in many countries where girls do not live as long before they reach their childbearing years due to gender inequality.

When a country enters Stage 4, the population ages, meanwhile fewer children are born. This creates an enormous strain on a country's social safety net programs as is tries to support older citizens who are no longer working and contributing to the economy. Most of Europe has entered Stage 4. The United States would be approaching this stage if it were not for migration into the country.

A nation in the first two stages of the transition model will have a broad base of young people and a smaller proportion of older people. A country in Stage 4 will have a much smaller base of young people (fewer children), but a much larger population of elderly (decreased CDR). A nation with a large youth population is more likely to be rural with high birthrates and possibly high death rates. This can tell geographers a lot about the health care system of that nation. Moreover, a country in Stage 4 with a large elderly population will have much fewer young people supporting the economy. These two examples represent the dependency ratio, mentioned earlier in this chapter. This ratio is the number of people, young and old, who are dependent on the working force.

Human geographers like to focus on the following demographic groups: 0-14 years old,15-64 years old, and 65 and older. Individuals who are 0-14 and over 65 are considered dependents (though this is changing in older generations). One-third of all young people live in emerging nations, and this places considerable strain on those nations' infrastructure such as schools, hospitals, and daycare. Older individuals in more developed nations (MDL) benefit from health care services but require more help and resources from the government and the economy. The author of this textbook uses the term "emerging nations," rather than "less developed" "developing," or "third-world" nations as a more inclusive and equitable term.

higher death rate than females. However, understanding a nation's sex and dependency ratios helps human geographers analyze fertility rates and natural increases.

As noted earlier, population growth has increased dramatically in the last century. No country is still in Stage 1; very few have moved into Stage 4. The majority of the world is either in Stage 2

or 3, both having higher crude birth rates than crude death rates; therefore, the world's population is over 7 billion today.

In summary, the demographic transition model is a model that helps human geographers understand and predict the demographics of individual nations. In Stage 1, CBR and CDR are very high and thus produce a low natural increase. In Stage 2, a nation's CBR stays relatively high, but the CDR drops dramatically, producing the highest growth in population. In Stage 3, CDR stays low; however, changes in social customs and economic conditions result in a moderately low CBR. Finally, nations in Stage 4 have nearly equal CBR and CDR (sometimes higher CDR), creating a drop in natural increase.

2.7 Demographic Dividend in African Context

The greatest resource we have no doubt is in our manpower potential. With a population of over1Billion people of whom 65% are below the age of 35years, Africa is indeed a youthful continent and this presents both opportunities and challenges. The need to empower youth by defining and developing the right socio-economic and political environments that will help them to succeed cannot be overemphasized. From access to education to access to funding for innovative entrepreneurial ideas, investing in Africa's youth needs to be more than a popular catch phrase of the day. The population dividend envisaged for Africa tends to circle back to addressing youth employment. This means that at a policy level our education systems need to be overhauled to reflect the needs of countries to industrialize. The issue of skills mismatch between what the markets (industries) require and what is being churned out of our academic institutions needs to be addressed urgently.

Africa is the remaining region of the world where many countries still have the opportunity to realize a demographic dividend. Many countries are making progress in the key policy areas, but most countries in East, Central, and West Africa must increase their commitment to strategies that hasten a fertility decline and open the window for a demographic dividend. In Northern and Southern Africa, the fertility decline and age-structure transition and higher levels of education achievement have set the stage for a demographic dividend; now these countries must put in place the right set of economic and governance policies in order to harness a demographic dividend. While each country is unique, the demographic dividend suggests an opportunity for accelerated economic growth in Africa, and the time to take necessary action is now. Between 1970 and 2010,

Africa's working-age population grew from 92 million to almost 575 million, and will continue growing over the next 40 years. As youth grow older between now and 2050, the size of the working-age population relative to the younger dependent-age population (under age 15) is projected to increase significantly, helping to set the stage for a demographic dividend.

Over time, many African countries can become poised to move toward a window of opportunity for a dividend, but their labor and capital markets must also be ready for this change in the population age structure. Failure to absorb the large working-age population into productive, formal-sector employment could have an opposite effect on African economies, inevitably leading to contracting markets and stagnant growth (Agenor, Pierre-Richard. 2010).By 2050, Africa's population is projected to increase to 2.4 billion from 1.1 billion today, making it the region with the largest population growth (PRB, 2013). This projection is under the assumption of increased access to family planning that will result in reduction in fertility rates.

The accelerated economic growth of the demographic dividend remains a possibility for many African nations, but for the process to begin, countries must prioritize strategic investments to lower fertility (children per woman) and child mortality (deaths). Until countries address their extremely young age structure through family planning, education, and other investments that contribute to smaller and healthier families, they will not achieve their full potential for economic growth that comes through a demographic dividend (African Union Commission, 2013).

Moreover, too few African leaders advocate for more direct interventions to bring down high fertility levels. At this juncture, it appears that the demographic dimensions of African development prospects have yet to be fully taken into account. The current climate of optimism about the socioeconomic prospects of SSA should not overshadow the importance of the demographic issues at hand. On the contrary, it appears that tackling the SSA population challenges will be a necessary condition for the region to reach its demographic window of opportunity, capture a first demographic dividend, and eventually join the group of the emerging market economies. There is no doubt that the world demographic landscape of the twenty-first century will be heavily influenced by the potential quadrupling of the African population. In addition to shaping the future development prospects of the African continent itself, these trends will also influence global geopolitics and in particular the demographic trajectory of the region due to high population growth.

2.8 Demographic Dividend in Ethiopian Context

The first Population and Housing Census was conducted in 1984 and based on this and earlier surveys, the Central Statistical Agency (CSA) made a reconstruction of the population of Ethiopia until 1900. The Second Population and Housing Census of Ethiopia was conducted in 1994 and the third in 2007. Evidences depict the pattern of Ethiopia's population growth since 1950 based on the estimates and projections from the three rounds of censuses, various surveys, as well as the UN projections; it has grown even faster since then with greatest gains occurring after the 1980s.Absence of accurate time series of population data limited the estimation of past growth rates of the Ethiopian population (UN, 2012).The Ethiopian population is characterized by a young age structure with a median age of not more than 18 years-a feature of rapidly growing populations.

According to UN, the ratios for the Ethiopian population may be observed that high age dependency has been prevailing in Ethiopia. Due to high mortality, old-age dependency remained very low (less than 6%) throughout the period from 1960 to 2000 but recently, it began increasing with decreasing adult mortality. Childhood dependency ratios increased from 80% in the 1960s to 90% in 2000 and subsequently, it has been declining. In 2010, child dependency declined to 75.5% while old age dependency increased to 6.5%. As explained earlier, fertility has been declining during the last 20 years. In Ethiopia, high fertility and declining mortality has resulted in an accelerated growth in both the population as well as in labor force during the last two decades (UN, 2012).

In recent decades, Ethiopia has made steady progress in expanding access to education and health services. Educational access and opportunity are crucial to attaining a demographic dividend. The knowledge, skills, and capabilities of Ethiopia’s future working-age population will determine the extent to which Ethiopia can capitalize on demographic changes. Secondary and tertiary education for men and women will increase the proportion of skilled workers in the labor force-preparing young people to take advantage of new opportunities and broadening sources of economic growth (Hailemariam, A., Alayu, S., & Teller, C (2011).

The main drivers for fertility decline in Ethiopia are: changing norms, values, and attitudes regarding the desired number of children as a result of the decline in infant and under-five mortality; increasing female participation in primary education, and increased contraceptive use among currently married women. According to Growth and Transformation Plan (GTP) 2010/11-

2014/15) during the past decades, Ethiopia has undergone rapid demographic changes as well as remarkable progress in the social sectors. The country has also achieved significant improvements of its economic performances (GTP) 2010/11-2014/15).

Ethiopia is well positioned to benefit from a demographic dividend if fertility continues to decline and the current large young population is able to find productive employment. Better income distribution and employment opportunities will help the nation maximize the promises of its proportionately large working-age population. Policies that aim at harnessing the youth population by investing in quality education, skill-development, and improved health outcomes will help Ethiopia capture the potential benefits of demographic changes.

2.9 Factors Affecting Demographic Dividends in Ethiopia

2.9.1 Education

Strategic investments in young people's education are integral to a demographic dividend. Educated young people have more options, are healthier, and are better able to contribute to society. In Ethiopia, 65 percent of primary-school-age children attend school with high levels of gender parity. However, only 15 percent of young people of secondary school age attend school. Despite progress, young people's literacy rates continue to be low. Only 64 percent of females ages 15 to 24 are literate. Twice the number of rural women ages 15 to 49 has no education compared to urban women. Investments in primary and secondary education are crucial to attaining a dividend. School completion, particularly for girls, will delayfirst pregnancy and expand opportunity. Focus on improving quality of education will prepare young people to move into higher-wage jobs (Population Reference Bureau, 2014).

The knowledge, skills, and capabilities of Ethiopia's future working-age population will determine the extent to which Ethiopia can capitalize on demographic changes. Simply put, for a demographic dividend in the future, we must invest in young people today. Education can open up opportunities for young people and contribute to the future development of Ethiopia. Girls' education-especially at the secondary level-often supports a fertility decline and improves economic growth because it prepares women for non-traditional roles outside the home. More educated people also have better chances of obtaining loans and financial assistance for small businesses.

According to World Bank one of the pre- conditions to catalyse demographic dividend is to invest in the quality of education from primary, secondary and tertiary level institution (Shaker et al, 2016). However, one of the challenges in tracking progress on education quality is the limited availability of information among the countries. Access to education is crucial for a demographic dividend. It contributes to economic growth because it opens opportunities for women other than traditional role in home.

Improvement in girl's access to education, female labour force participation and political participation contribute to an enabling environment for demographic dividend. Girls' education onset of child bearing allows women the opportunity to contribute to economic growth (EEC, 2015). Individuals with higher level of education are more efficient producers of health which in turn is translated in to healthier population with higher productivity level. Women education also improves the welfare of both parents and children by increasing the transfer of knowledge between generation and further increasing the value of the next generation human capital(Grossman, 1972).

According to Economic Commission for Africa (ECA) and the African Union Commission (AUC), 2013 brief report, Education-especially for girls-plays a critical role in lowering fertility. When girls stay in school longer, they are less likely to get married and bear children at a young age. Girls with a secondary education have fewer and healthier children. When both boys and girls have access to education, accelerated economic growth is possible. In the case of girls, education-especially at the secondary level-actually helps initiate the needed fertility decline. Secondary education helps girls delay marriage and first pregnancy and opens up new opportunities for women beyond their traditional roles in the home. Women who marry later tend to have fewer children than women who marry at a young age. Focus on improving quality of education will prepare young people to move into higher-wage jobs(Kim, 2016).Economic growth requires increasing a country's productivity. Simply having a large working age population relative to dependents will not provide this increase. It can, however, help make resources available that households and governments can invest to boost productivity. One of the most important productivity-enhancing investments that they can make is investing in **education.**

2.9.2 Health

Strong health systems are crucial to the first step in initiating a demographic dividend: a fertility decline. In the past decade, Ethiopia's major investments in child and maternal health and voluntary family planning have achieved a number of results. Evidence suggests that better health facilitates improved economic production, and it points to the importance of policies to promote health during the demographic dividend. For examples insuring that infants receive good medical care, protecting women's reproductive health (and enhancing their health knowledge, since they play the central role in the health of their families), stressing the health of children and teenagers, to improve educational performance, focusing especially on low-income populations, with strong public sector programs.

Poor health is an important cause of losses in household income. Improvements in health, particularly increasing access to family planning services, will reduce fertility and maternal and child mortality, and foster the development of a population that is ready to contribute to economic growth.Health affects **not only** life expectancy and mortality rates, and hence population growth rates, **but also** the extent to which working-age people become productive contributors to the economy. Healthy older people may be able to contribute to the economy even after they otherwise might have retired, while improvements in health and longevity can motivate people to save more for retirement.

The health of a population affects its demand for health care and the resources devoted to it. Ethiopia has been making considerable effort to improve the health status of its population in the last 15 years. Ethiopia's health systems are now stronger and reach more rural people, but regional and socioeconomic disparities continue to have **negative impacts** on health and could delay a potential dividend. Challenges continue to exist related to young people's sexual and reproductive health. Investments in young people's health will increase the likelihood of a dividend. Moreover, Oromia has experienced various emergencies, conflicts, disease outbreaks and droughts since 2015. Many people are displaced, including children. These emergencies have heavily impacted the availability, accessibility and quality of health services to harness demographic dividend.

2.9.3 Economy

The Ethiopian economy is predominantly agricultural. Agriculture, which is the primary source of livelihood for the vast majority of the population, accounts for 41.5% of GDP, 80% of

employment, and generates 70% by value of all exports. However, the sector largely depends on rains that are erratic and is also dominated by traditional farm technology. Moreover, it is affected by structural factors such as internal conflict, land degradation, low levels of household assets, and limited opportunities to diversify sources of income with the result that recurrent drought, food insecurity, and extreme poverty persisted in the country (AfDB, OECD, & UNDP 2014). Economy: Reduce reliance on imports and invest in the production of local and homegrown goods, improve the flexibility and efficiency of the labor and financial markets by reducing taxes on new businesses, improving labor-employer relations, and lowering service fees on bank accounts and mobile money transfer services, invest in the ICT sector to improve Internet and mobile phone infrastructure, and reduce corruption in public institutions by addressing the irregular payments that are often required for services.

2.9.4 Governance

Good governance is required throughout the process of reaping a dividend. Two aspects of governance are key to this overall process. One is the diligent allocation of new resources to productive investments in growth and human capital. This requires substantial discipline in countries experiencing modest growth, rising consumer aspirations or inequality. The second aspect of governance is the efficient transformation of resources into development outcomes and, more broadly, the careful monitoring and handling of the country-specific bottlenecks.

Changes in the population age structure are not guaranteed to produce economic growth; a favourable policy environment is required. Bloom & Canning (2008) highlight the case of Latin America, a region that missed the opportunity to exploit its demographic window of opportunity due to high inflation, political instability, adversarial labour relations, and an inward orientation with respect to trade.

Good governance and strong institutions can encourage civil participation and enable policies that will make a favourable policy environment across all economic sectors to benefit from the demographic dividend (Bloom et al., 2014; Shekaret al., 2016; UNFPA, 2019). Political stability and the rule of law are part of good governance practices which help create a climate to attract foreign direct investments that will be catalysed to job creation and development. Institutions have the capacity to support (or block) the development of policies to realize the growth potential

created by the transition (Guengant& May, 2013), and institutional quality is correlated with growth (Bloom et al., 1999).

Political commitment and strong leadership are needed to ensure coordination across all sectors and levels. Strengthening and developing monitoring and evaluation plans for program implementation is also required to hold institutions, programs, policies, and governments accountable (Shekaret al., 2016; UNFPA, 2019). AU's report titled "Harnessing the Demographic Dividend through Investments in Youth" (2017b) acknowledges that "Africa needs to invest in ensuring participatory, representative and inclusive political processes as well as responsive state institutions… ensuring protection and respect for fundamental civil, political and socioeconomic rights of young people including young women". Bloom & colleagues (2014) also highlight the importance of a carefully constructed trade policy.

2.9.5 Age Structure

The population age structure is critical for the socio-economic development of countries. A large working age population provides countries with a window of opportunity to accelerate economic growth through increased productivity, savings and investments. The population's age structure influences almost all social phenomena, making age structure one of the most important population characteristics. Data on age composition is relevant for planning social services as well as for measuring and projecting school enrollment, the labor force, and the economically dependent population. The population's age structure affects and is affected by mortality, fertility, and migration (Bloom, D., Canning, D., &Sevilla, J. (2003).

The age dependency ratio, often defined as the ratio of the dependent population-those under age 15 and those aged 65 and older-to the working-age population (age group 15–64), provides a useful summary of a population's age structure. A high age dependency ratio indicates that the economically active population is supporting a large population of children and elderly. The Ethiopian population is characterized by a young age structure. The recent population broadly indicates the predominance of children under the age of 15 due to past high fertility.

As a result of the changes in the level of mortality and fertility, the age structure of the Ethiopian population has begun to shift from traditional. The changes in age structure are important because less youth means a relatively working or active population. Moreover, number of dependents

(below age of 15 and above 65) decline with respect to the number of adults (people between 15 and 64). This shift in age structure translates in to more available resources to build human capital (education and health) for the younger cohorts or generation (Megquier and Berahlav, 2014).Ethiopian age structure may soon enable the country to capture the benefits of demographic dividend, provided continuation of policies and investments in education, health and job creation (ibid).Ethiopia with broad base age structure and high dependency ratio has a long way to go before it starts harvesting the demographic dividend and accelerate economic growth. The transition to low fertility is slow and the increase in support ratio that it generates is not large enough to produce demographic dividend. Age structure of a population is an important factor in population dynamics and proportion of a population in different age classes. A changing in age distribution has significant social and economic consequences. It has implication to the allocation of education, healthcare and social security resources to the young, old and other segments of the society (Birdsallet al. 2001).

2.10 Challenges and Opportunities of Demographic Dividend in Ethiopia

2.10.1 Challenges

The main challenges for Ethiopia would be to avoid a slowdown of fertility decline and to advance voluntarily family planning until fertility reaches replacement level. Ethiopia's future ability to accelerate demographic transition became ambiguous ;- due to that the desired fertility appear to be remain high and family planning (FP) use for limiting number of births appear to be increasing less rapidly than for spacing. The transition to low fertility is slow and the increase in support ratio that it generates is not large enough to produce demographic dividend.

Social norms that are biased against gender equality tends to stifle female labour participation, leading to low opportunity cost of children and thus to persistently high fertility. The same applies to social norms that militate against the use of contraceptive. With fertility remaining at high level, the quality = quantity substitution cannot pick in, so investments in the human capital of children remain low. This observation points to the value of policies aimed at overcoming the social norms underlying persistently high fertility, including educational complain .female labour market access (even against norm) , and reducing labour market discrimination against women (Schober and Winter - Ember, 2011; Rees and Riezman ,2012).

High Fertility: Although fertility rate began to fall in Ethiopia in the mid-1990s, it is still high with an average of about 5 children per woman in 2010. This means that it will take longer for Ethiopia to complete the demographic transition indicating that it will exert more pressure on the demand for higher education, housing, health care and employment opportunities. Moreover, it will result in high levels of age dependency, reduces saving and downsize investment in human capital. All of these reduce economic growth rates from what they might have been if the age-dependency ratio were lower. On the other hand, if fertility rates can be induced to decline further, it provides a reserve for higher growth rates.

Low level of savings: Ethiopia is characterized by low savings because of the high ratio of consumers to producers. As children and the elderly consume more than they produce, while working-age people, for the most part, do the opposite, increasing the proportion of working-age to dependent population will automatically increase savings. This is not going to happen any sooner than 2030 or 2040 as the population will continue to be dominated by those under the age of 15.

High dependency on rain fed agriculture for food, employment and export: Irrigation is expensive and extremely limited, with the result that agriculture remains largely rain fed and subject to periodic drought. As a result, the country remained food in-secure. One of the key policy questions for the future of Ethiopia is whether it will be possible to accelerate the demographic and particularly the fertility transition. Progress in recent years has been remarkable. The main future challenge for Ethiopia will be to avoid a slowing down of the decrease of fertility and advance voluntary family planning until fertility reaches about replacement level(World Bank, 2010).

2.10.2 Opportunities

The demographic dividend leads to opportunities for growth in output per capita in two principal ways. One there is an age structure impact on total GDP due to increasing proportion of working age group in total population and the other increasing ratio of producers to consumers. Demographic Transition passes through a phase it adds to the labour force. The number of people in the working ages gets bigger, and women are more likely to enter labour market as fertility level decline. Life cycle variation in productivity leads individuals their savings over their life time in order to accumulate their consumption. Demographic transition thus encourage saving's which in turn can boost countries ability for investment and growth. Opportunities;-

(i) Favourable policy environment: Since 1992/93, the government began introducing a series of economic reform programs aimed at reorienting the economy from a command to market economy, rationalizing the role of the state and creating legal, institutional and policy environments to enhance private sector investment and enhance economic development. The Plan for Accelerated and Sustained Development to End Poverty and the Growth and Transformation Plan (GTP) are among the many that were designed to enhance development. 26 World Bank, 2007.Demographic Transition and Demographic Dividend in Ethiopia: Opportunities and Challenges.

(ii) Youth bulge: Ethiopia is creating the window of opportunity by generating proportionally large working age population, which if supported by the right policies in public health, education, and finance, will give demographic dividend.

(iii) Human capital Development: The Government has increased and strengthened educational and skill development opportunities for youth cohorts, with a focus on improving female participation The focus on technical and vocational training and education, science and technology; the increasing number of institutions of higher learning are all contributing for building human capital and skill enhancement.

(iv)Infrastructure development: Ethiopia has realized that a well-developed infrastructure can reduce transactions costs, increase labour productivity, promote savings and investment, enable economic efficiency, and boost private capital formation and thus the overall rate of accumulation of physical capital. Thus, concerted effort is being made to develop the road network, power and communication infrastructure as well as financial institutions.

Chapter Three: Research Methodology

3.1 Research Paradigm and Philosophical Assumptions

Introduction

In this chapter the blue print (methodology) of the study was briefly and neatly discussed. Among other things, research paradigm and philosophical assumptions, approaches to research design, research design, types and sources of data, instruments of data collection, description of the study area and selection justification, study population, sampling techniques and sample size determination, methods of data analysis, instrument development, ethical consideration and measures of trust worth were the major subtitles discussed in this chapter.

To argue for mixed methods research as a specific research design requires not only an accepted term but also a common definition. Building on earlier definitions of mixed methods research (Fielding & Fielding, 1986; Greene et al., 1989), a mixed methods research design at its simplest level involves mixing both qualitative and quantitative methods of data collection and analysis in a single study (Creswell, 1999). A more elaborate definition would specify the nature of data collection (e.g., whether data are gathered concurrently or sequentially), the priority each form of data receives in the research report (e.g., equal or unequal), and the place in the research process in which "mixing" of the data occurs such as in the data collection, analysis, or interpretation phase of inquiry.

The collection and combination of both quantitative and qualitative data in research has been influenced by several factors. Unquestionably, both quantitative and qualitative data are increasingly available for use in studying social science research problems. Also, because all methods of data collection have limitations, the use of multiple methods can neutralize or cancel out some of the disadvantages of certain methods (e.g., the detail of qualitative data can provide insights not available through general quantitative surveys) (Jick, 1979). Thus, there is wide consensus that mixing different types of methods can strengthen a study (Greene & Caracelli, 1997). Qualitative research has become an accepted legitimate form of inquiry in the social sciences, and researchers of all methodological persuasions recognize its value in obtaining detailed contextualized information. Also, because social phenomena are so complex, different kinds of methods are needed to best understand these complexities (Greene & Caracelli, 1997).

To be familiar with research philosophies is very crucial to identify the most appropriate methodologies. According to Creswell (2009), there are three major research philosophies (which include post-positivism, constructionist and pragmatic) that the researchers should consider in selecting appropriate methodologies for their studies.

“Post-positivism” is a traditional worldview based on empirical observation, measurement and quantitative research. It is interested in determining cause and effect relations and theory verification, hence deductive in its approach. “Social constructivism” is based on qualitative research and subjective analysis aimed at understanding the views of others. It is interested in theory generation, hence inductive in its approach. “Pragmatism” is a result of actions, situations and consequences. It, unlike post-positivism, is not based on “antecedent conditions”. Pragmatist researchers, instead of devoting attention to methods, directly focus on “the research problem and use all approaches available” to look into the problem. Pragmatism is based on mixed (both quantitative and qualitative) methods (ibid).

This research philosophy is not aimed at verifying (testing) theories through rigorous quantitative measurements and analysis (purely positivist) or is not intended to generate new theories through qualitative data collection and subjective analysis (as in the case of purely constructivist). This research was guided by a pragmatist paradigm that mixes qualitative and quantitative methods of data collection and analysis. This paradigm will be employed because the mixed methods research pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as to different forms of data collection and analysis. Because demographic dividend, window of opportunity, and population structure varies contingent to the political, economic and social policy dynamics of the country or the region. Therefore, to grasp the flexibility of the mixed research paradigm and its alignment to the subject under investigation, this study adhered to pragmatist paradigm.

A philosophical underpinning for mixed methods studies, as Patton (1990), Tashakkori and Teddlie (1998), and Morgan (2007) conveyed is that it is important for focusing on the research problem in social science research and then using pluralistic approaches. That is why pragmatists do not see the world as an absolute unity (Creswell, 2003). Similarly, mixed method enables the researchers to look at many approaches for collecting and analyzing data rather than subscribing to only one way quantitative or qualitative (Creswell, 2008). Thus, in mixed methods research,

investigators use both quantitative and qualitative data because they work to provide the best understanding of a research problem. Therefore, this study grounded on a pragmatist paradigm that blends quantitative and qualitative research methods.

3.2 Research Approach

Although the specific objectives of this study are more qualitative nature, to bring some level objectivity and stick on the above underpinning research philosophy (pragmatism), the study employed mixed approach by merging both qualitative and quantitative methods. The logic behind of triangulating qualitative and quantitative approach is that it is the most appropriate method of study to reach a level of truth and it enables the researcher to come up with complementary and convergence of facts (Redinour and Newman 2008). It enables the researcher to crosscheck the error made in one method by the other data source.

First, the study employed quantitative approach to collect statistical data systematically by using structured and semi- structured data collection techniques (Questionnaire), and express the statistical result in meaningful way to make inferences and reach conclusion about the issues under investigation. Furthermore, the study used a qualitative approach to collect qualitative and detailed data by using documents, reports, and empirical reviews.

The justification behind using the qualitative approach is to describe and understand a social, political, or human problem that cannot be numerically stated, which the interaction of multifaceted and intertwined variables is normally. Qualitative research is more involved in human action in its natural setting, it gives detailed engagement and provides a flexible design that can allow the researcher to make changes to the thesis and antithesis of ideas and concepts when and where necessary (Babbie et al, 2006). Thus, to utilize the above strengths and conduct subjective assessment about attitudes and opinions of the study participants towards assignment and utilization of manpower in public sector from principal -agent viewpoint, qualitative approach was employed. Therefore, the study, tried to use both quantitative and qualitative approach in order to get more reliable and in-depth information.

3.3 Research Design

Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the

research, time and money. Generally, the design is needed to minimize bias and maximizes the reliability of the data collected and analyzed (Kothari 2004). Due to this fact, since the research is pragmatism, and the subject that the study is dealing with is recent with no earlier studies, the researcher will use triangulation design, convergent model. The Triangulation Design is a one-phase design in which researchers implement the quantitative and qualitative methods during the same timeframe and with equal weight.

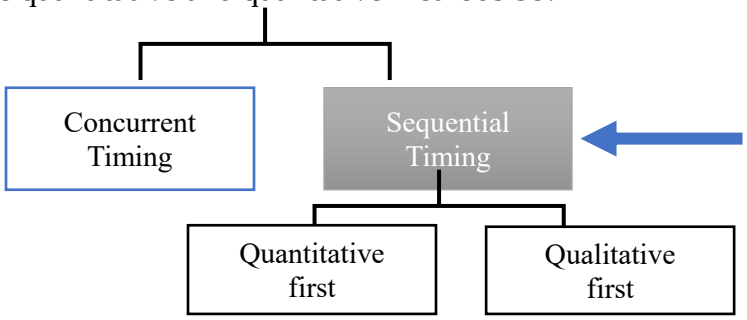
Of the mixed methods design writers, it has been Tashakkori and Teddlie (1998) and Greene et al. (1989) who have emphasized the importance of considering the stage of the research process at which integration of quantitative and qualitative data collection takes place. Integration can be defined as the combination of quantitative and qualitative research within a given stage of inquiry. For example, integration might occur within the research questions (e.g., both quantitative and qualitative questions are presented), within data collection (e.g., open-ended questions on a structured instrument), within data analysis (e.g., transforming qualitative themes into quantitative items or scales), or in interpretation (e.g., examining the quantitative and qualitative results for convergence of findings). The decision that needs to be made relates to a clear understanding of the sequential model of the research process and approaches typically taken by both quantitative and qualitative researchers at each stage.

This study generally involves the sequential, but separate, collection of quantitative and qualitative data so that the researcher may best understand the research problem. The researcher attempts to merge the two data sets, typically by bringing the separate data together in the analysis and interpretation or by transforming data to facilitate integrating the two data types during the analysis. The convergence model- represents the traditional model of a mixed methods triangulation design (Creswell, 1999). In this model, the researchers collected data separately on the same phenomena, and quantitative and qualitative data were analyzed and interpreted concurrently on the same phenomenon by comparing and contrasting the different results during the analysis and interpretation.

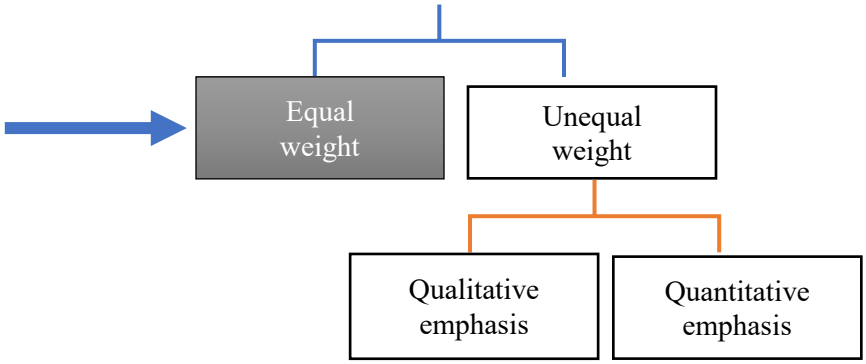
The study collected both quantitative and qualitative data through a survey and document review at different time (sequentially), analyze collected data simultaneously, then compare the results concurrently, and combine analyzed data and interpret concurrently. This design was used to bring

together the differing strengths and non- overlapping weaknesses of quantitative methods (large sample size, trends, generalization) with those of qualitative methods (small sample, details, in depth). This design was utilized because the researchers sought to triangulate the methods by directly comparing and contrasting quantitative statistical results with qualitative findings for corroboration and validation purposes. Other purposes called for this design include illustrating quantitative results with qualitative findings, synthesizing complementary quantitative and qualitative results to develop a more complete understanding about the problem understudy, and comparing multiple levels within a system.

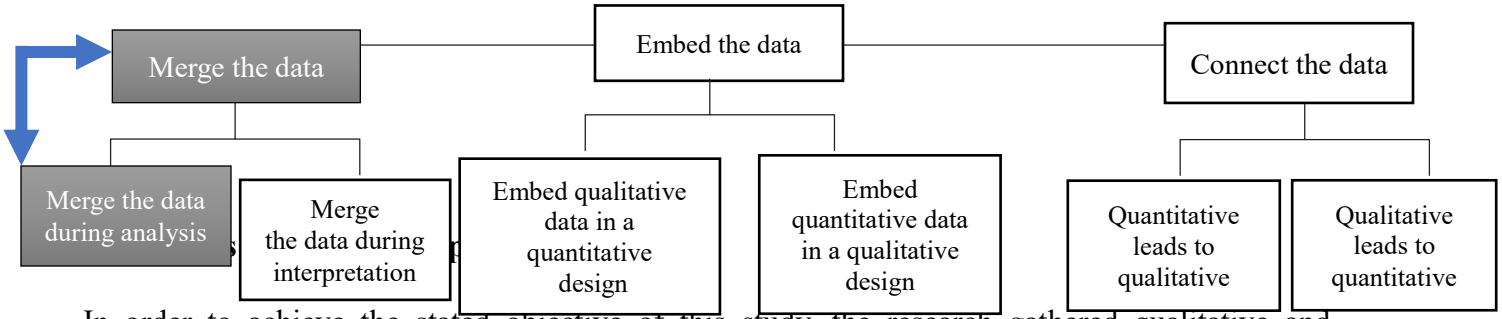
1. When the quantitative and qualitative methods be?



2. What will the weighting of the quantitative and qualitative methods be?



3. How study will mix the quantitative and qualitative methods?



In order to achieve the stated objective of this study, the research gathered qualitative and quantitative nature of data from both primary and secondary sources. The primary data will be

collected from assigned or appointed agents working in different sector across sampled regional government bureaus and offices, the task of collecting primary data typically data related to governance in the region was facilitated and collected by the research team and Oromia National state government Planning and development commission employees working in sampled areas.
For secondary data, the research substantially review the available documents CSA population da a and projections, Oromia Regional National State Planning and development commission documents, Unicef data on mortality, fertility, HIV prevalence, antenatal and postnatal healthcare, National Bank of Ethiopia social and economic reports, Lancet healthcare reports, NHS and DDS reports and survey, world Bank, ILO reports, journals, articles, reports, internet sources, and earlier empirical studies on the issues under investigation.

3.5 Sample design

Studies should be designed to include a sufficient number of participants to adequately address the research question. Studies that have either an inadequate number of participants or an excessively large number of participants are both wasteful in terms of participant and investigator time, resources to conduct the assessments,analytic efforts and so on. These situations can also be viewed as unethical as participants may have been put at risk as part of a study that was unable to answer an important question. Studies that are much larger than they needto be to answer the research questions are also wasteful.

In studies where the plan is to estimate the proportion of successes in a dichotomous outcome variable (yes/no) in asingle population, the formula for determining sample size is:

Where,

$$n = p\left(1 - p\right)\left(\frac{Z}{E}\right)^2$$

Z - is the value from the standard normal distribution reflecting the confidence level that be used (e.g., Z = 1.96 for 95%)

E-is the desired margin of error.

p- is the proportion of successes in the population. Here the study was planned to generate a 95% confidence interval for the unknown population proportion, **p**. The equation to determine the sample size for determining p seems to require knowledge of p, but this is obviously this is a circular argument, because if the proportion of successes in the population

is known, then a study would not be necessary. What really needed is an approximate value of p or an anticipated value. The range of p is 0 to 1, and therefore therange of p(1-p) is 0 to 1. The value of p that maximizes p(1-p) is p=0.5. Consequently, if there is no information available to approximate p, then p=0.5 can be used to generate the most conservative, or largest, sample size.

Therefore, this sample size determination formula presumed to be appropriate to study the probability of positive response towards seizing the window of opportunity for demographic dividend or not is 0.5; the propensity to realize or not realize demographic dividend is presumed to be 0.5; the probability of the government to adopt proper education, health, employment, and demographic policy or not is 0.5; and the policy demographic dividend policy also assumed to be 0.5.

Because this study has no pre dated data on the proportion of demographic dividend yielded by any pertinent policy direction in the region or national government, the study used 0.5 to estimate the sample size as follows:

$$n = 0.5(1-0.5)\left(\frac{Z}{E}\right)^2 = 0.5(0.5)\left(\frac{1.96}{0.05}\right)^2 = 384.2$$

3.6 Tools/Instruments of collecting data

Pragmatism is not committed to any one system of philosophy and reality. Individual researchers have a freedom of choice. They are “free" to choose the methods, techniques, and procedures of research that best meet their needs and purposes. Thus, pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as to different forms of data collection and analysis in the mixed methods (Creswell, 2009). Due to this fact, this study used an instrument of data collection guided by pragmatist’s way of collecting qualitative and quantitative type of data from both primary and dominantly form secondary sources. By considering this, the research deployed both questionnaire and Document Review as a data gathering tools.

3.6.1. Survey Questionnaire

Survey questionnaire will be designed in order to collect large amounts of statistical data from sampled agents assigned at different bureaus or offices of the region. The literature of the study will be used as a guideline for the development of the questions in the questionnaire. Most

questions in the questionnaire were be closed-ended questions, with ample of alternatives and contain different parts. In addition to this, the study included some open-ended questions that has given opportunities to the respondents to express their opinion more about subject under investigation. The questionnaire prepared in English language and enumerators were recruited in order to make the data collection simple, clear, understandable and facilitate communication between enumerators and the respondents. In addition to this, enumerators familiar with the study were hired and trained to collect data from each sampled zones and woredas along with the researcher. All of the enumerators were employees of the Oromia National Regional State Planning and Development Commission working in different zone across sampled zones and city administrations.

The researchers trained enumerators on how to fill out the survey questionnaire, and the ethical and confidential issues required from them while conducting the field survey. Finally, the data were collected through enumerators with close supervision of the research team.

3.6.2 Document Review

In this study, the research team used secondary data extensively since demographic studies predominantly rely on the same data that was collected from both published and unpublished sources, reports by development agencies (UNICEF, ILO, UNDP), financial institutions such as the world bank, IMF, National Bank of Ethiopia, and CSA. All necessary secondary data such as manuals, reports books, journals, articles, internet sources, letters of assignment, minutes, political/party regulations and directives, earlier empirical studies conducted by other researchers, and other information relevant to this research were gathered from literature about the topic under study.

3.7 **Method of Data Analysis**

After collecting the data from both primary and secondary sources, the research analyzed the data using ARDL (Autoregressive Distributive Lag Model) model to check the long term and short-term relationship between population dynamics and economic growth. The qualitative data collected through document review was described and summarized using descriptive analytical method. Thematic analysis was deployed to analyze the qualitative data. While conducting thematic analysis, data collected from interviews, focus group discussions and direct observation was transcribed.

In order to get familiarized, the data was read, and relevant points was highlighted to be coded. Then, the lists of codes were sorted into themes. The themes were reviewed again whether they support the collected data. Finally, the themes and sub themes were defined and the data that fit under each theme was written up in direct quote or being paraphrased. For quantitative data analysis, descriptive and explanatory data analysis method and statistics like frequencies, percentage, mean and standard deviation, bar graphs and charts were used to facilitate meaningful analysis and interpretation of the research findings. Statistical package for social sciences (SPSS) version 20 was used for processing and analyzing the data obtained from questionnaires. Lastly, based the finding of the research result/findings, conclusion and solid recommendation was forwarded.

3.2. Sampling Design

3.2.1 Population, Sampling Frame and Sampling Unit

This study was conducted in Oromia, particularly in selected zonal and urban administrations in the region. The selected public sectors which are relevant for realizing the Demographic Dividend are considered in the study area. These sectors are education, youth, health, zonal administration and Finance office. Consequently, sample frame for this study were be five (5) cities (Adama, Bishoftu, Jimma, Sebeta Ambo) and 5 zonal Administration (East shoa, South west shoa, NorthShoa, Jimma and Oromia Special Zone surrounding Finfinne) and respective regional sector bureaus are included. From all these zonal and urban administration five (5) public sectors representatives (senior management/expertise) working in those five cities /urban administrations public sector office will be the units of observation.

Chapter Four

4. Data Presentation, Analysis, and Interpretation

Introduction

Julian Simon (1981) opines that a growing population is necessary for material advancement. People in a country are not only consumers but producers as well. In the short run, population growth may cause some problems, but in the long run, it will be beneficial for the country. Ahlburg (1998) argues that 'economics does not conclusively show that a greater number of people implies slower economic development or a lower standard of living'. In recent years great interest has been shown in examining the relationship between population growth and development. Bloom Canning and Sevilla (2003) while studying this relationship enunciate that it is not merely the size of the population but the composition of the population which is associated with the economic development of a country.

Bloom et al (2011) have asserted that demographic dividend itself cannot lead to the economic development of a country. Proactive policies of the government play a key role in realizing the benefits of demographic dividends. Improper policies and inadequate social infrastructure can also lead to demographic disaster (Bloom and Canning, 2011).

4.1 Ethiopia's Population Growth and Age Structure

Ethiopia's rural and urban population has been increasing rapidly since the 1990s. According to the second Population and Housing Census in 1994, the total population was 53.5 million of which 46.2 million were rural and 7.3 million were urban. By 2007, the total population had increased to 73.9 million; the urban population had risen to 11.9 million and the rural to 62 million. This was a 38.1% increase in the total population and a 63% increase in the urban population in just thirteen years. According to the CSA median variant projection (CSA, 2013), the population increased to 94.2 million in 2017, an increase of 20.3 million, and was projected to increase to 136 million in 2037 (Figure 4.1; CSA 2012).

In the early 1990s, the average annual growth rate of the population was about 3% (TGE, 1993). Since then, however, the rate has been declining, to 2.9% in the mid-1990s, 2.4% in 2008 and it is currently estimated at 2.3%. This still leaves it among countries with a rapid population growth

rate. Indeed, at the current rate, the population may double in about 30 years. Equally, population density has also been increasing rapidly, from 66 persons per sq. km in 2000 to 84 in 2020 an increase of 65%, (3.4% per year on average) in less than two decades)[1]. As the country is rural, with close to 80% of the population living in rural areas, the increase in population density suggests a decline in the size of farmland and increasing rural-to-urban migration.

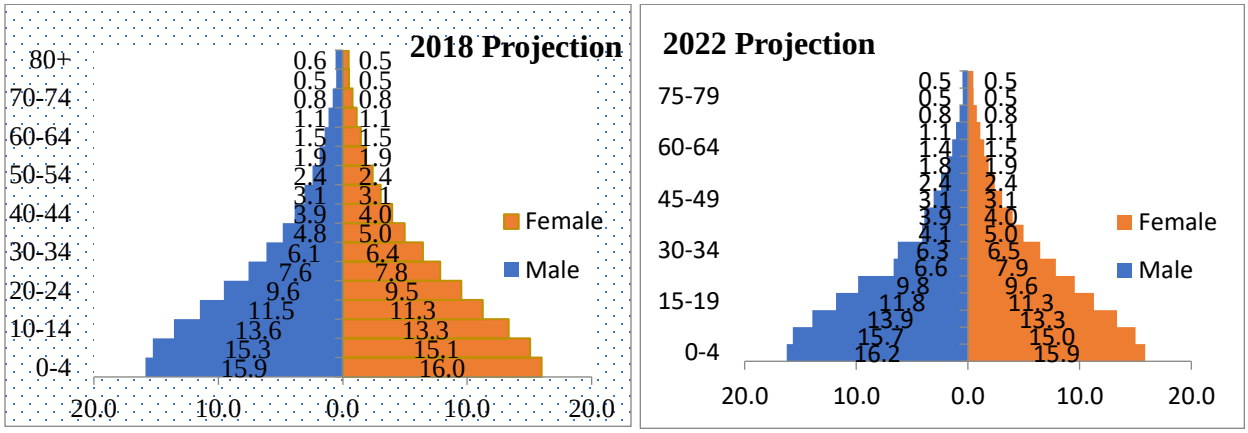
The urban population is also growing rapidly in comparison to other East African countries (Assefa and Aynalem, 2011). Ethiopia's urban population grew by 3.7% between 1994 and 2007 and reached 4.7% in 2017. It then started to decline and is projected to reach 3.7% in 2037 (CSA, 2013). Nevertheless, the urban and rural populations continue to increase in size. The overall urban population increased from 11.9 million in 2007 to 19 million in 2017 and is projected to increase to 31 million in 2030 (CSA, 2013). The proportion of the urban population also increased from 13.8% in 1994 to 16.1% in 2007 and is expected to rise to 30.6% in 2037 indicating rapid urbanization. Ethiopia will, however, remain primarily rural as close to 70% of its population is projected to be living in rural areas in 2037.

Mortality, fertility, and migration are the drivers of change in a population's size, structure, and distribution. However, the significance of these factors varies according to the size of the units of analysis. The annual population increase for the world is due to fertility rates exceeding mortality rates. At the global level, and even for large regional aggregates, migration is less relevant.

The census is an important source of information for the economic and social planning of a country. It provides clear information about the size and structure of the population. Through the census, the statistical office quantifies the social position and living conditions of the people living in the country. Effective policy, planning, and decision-making in education, social development, labor, and health depend heavily on the figures provided by the census. It is also possible, through the census, to locate and determine the size of vulnerable groups, such as people with disabilities, elderly people, and children. Because of its universal nature, the census also provides information about small areas in the country and can be used as a sampling frame for household surveys. However, the census is not without disadvantages and limitations: the census can only contain a limited number of topics, which restricts its capability for in-depth research. Given its sheer size and its enormous costs, in most countries, it can only be conducted every 10 years. In some exceptional cases which is the case in Ethiopia, conducting a census within 10 years may not be

possible and this will impede development planning and policy directions. Therefore, the following analysis is conducted using projected data obtained from Oromia National regional state planning commission projections, National Bank of Ethiopia, UNICEF, CSA projections, and other sources projected data.

Figure 4:1 Ethiopia Population Projection



Source: -

The population's age structure relates to the distribution of a population by age, either by a single year or by age groups. Age structure is a direct product of past and current demographic processes and, as such, represents the development-related factors that determine mortality, fertility, and migration. Broadly speaking, the entire population by age group may be divided into young (age 0–14 years), working (age 15–64 years), and elderly population (age 65 years and above) (age 65 years and above). Due to the interactive effects of fertility and mortality, the proportions of the total population in these age groups may transition from a higher (lower) share to a lower (higher) or declining (increasing) share over time. According to European countries' experiences in the early 19th century, the transition takes three phases without excessive migration among any age group.

In the first phase, when mortality falls but fertility remains high, age distribution shifts towards younger ages as the proportion of children increases owing to the greater number of infants and children who survive through early childhood. In the second phase, where fertility begins to decline, the number of children and youth as a proportion of the total population also declines. Meanwhile, the proportion of adults at the prime age for work and childbearing in the population begins to rise. During the third phase, if a lower level of fertility and mortality is maintained over

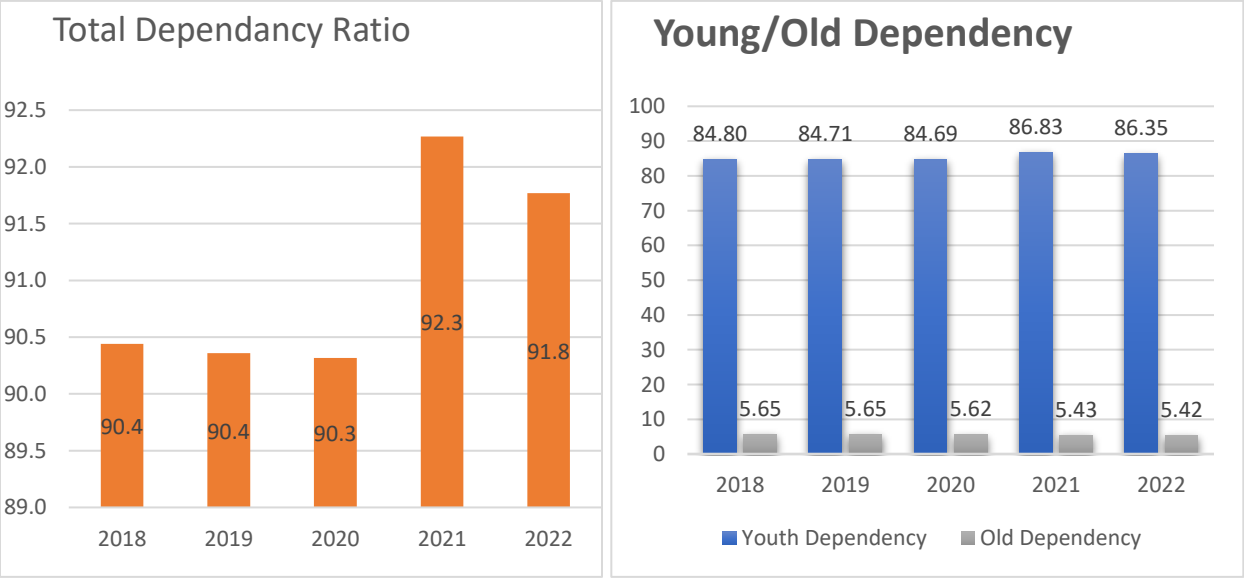
many decades, the proportion of children (under 15), and working age (15-59) as a proportion of the total population, all decline, while the number and the proportion of older persons continue to rise.

The five years projection data shows the distribution of the population is broad-based and narrow top. In other terms, the younger age group population took the lion's share. The proportion of the 0-14 age group across five years (between 2018 to 2022) of the population is moving between 44.4 maximum in (2018) and 44.2 minimum in (2022) for females and 46% maximum in (2021) and 43.8% minimum (2018) for men. The data mentioned in Figures (4.1a and 4.1b) show there was an increment in the under age14 group among boys from 43.8% in 2018 to 46% in 2021. On the contrary, regardless of whether this age group is employed or not, age-wise, the productive or independent age group proportion within the population was 52.8% of female and 52.3% male in 2018 and 2020, 52.8% female and 51.2% male in 2021, and 52.9% are female and 51.4 are male in 2022. The data revealed stagnation among the female productive age group while there was certain fluctuation among their male counterparts.

4.1.1 Dependency Ratio: Ethiopia

According to the Ethiopian Economic Association (200/21), the Ethiopian population is characterized by a young age structure with a median age of fewer than 20 years. This is a feature of rapidly growing populations.

Figure 4:2 - Dependency Ratio (Ethiopia)



Source: Ethiopian Economic Association, 2020/21

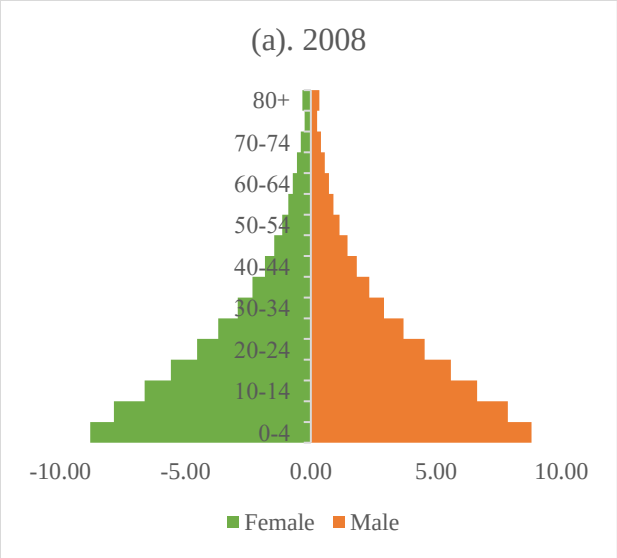
The age dependency ratio is the ratio of dependents, people younger than 15 or older than 64 years of age, to the working-age population, aged 15-64. The dependency ratio can be disaggregated into a youth dependency ratio, the number of children aged 0-14 per 100 persons aged 15-64, and the old-age dependency ratio, the number of persons aged 65 or over per 100 persons aged 15-64. The dependency ratio, also referred to as a total dependency ratio, is the sum of the youth and old-age dependency ratios. The dependency ratio does not account for labor force participation rates by age group. Some portion of the population counted as "working age" may be unemployed or not in the labor force, whereas some portion of the "dependent" population may be employed and not necessarily economically dependent.

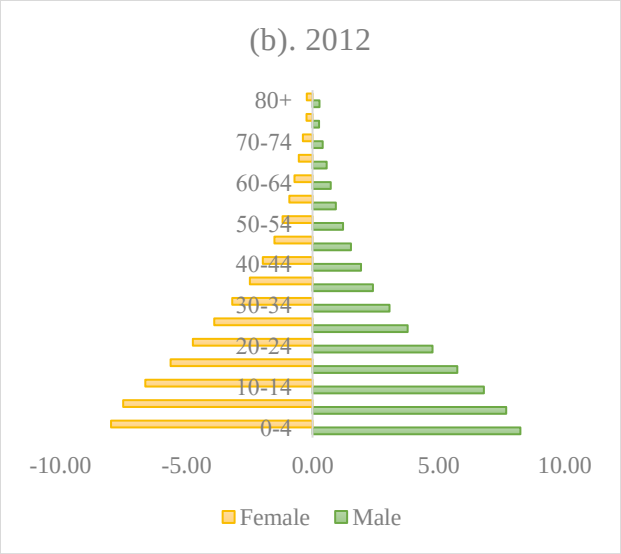
The data in Figure 4.2 shows that on average between 2018 and 2020, there were 90.3 individuals or persons (young and old age dependency) dependent on every 100 economically active people (productive age group) in the country. However, there was a significant increase in 2021 (92.3) and a minor decline in the year 2022 (91.8) which indicates a demographic transition.

When disaggregated, youth dependency is a substantial number, on average younger age dependency was about 85 boys or girls depending on every 100 working men and females. However, the old age dependency ratio reveals that the number of older age dependencies in every 100 working men and women is less than 6 (six). This implies that the life expectancy of men and women is smaller, nonetheless, its demographic dividend is positive. Evidence shows that falling dependency ratios have contributed to economic growth in several East Asian countries (Bloom et al., 2003; Higgins and Williamson, 1997).

4.1.2 Population Projection (2008-2037): Oromia

Figure 4: - 3 Oromia Population projection


(a). 2008
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
-10.00
-5.00
0.00
5.00
10.00
Female
Male


(b). 2012
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
-10.00
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Female
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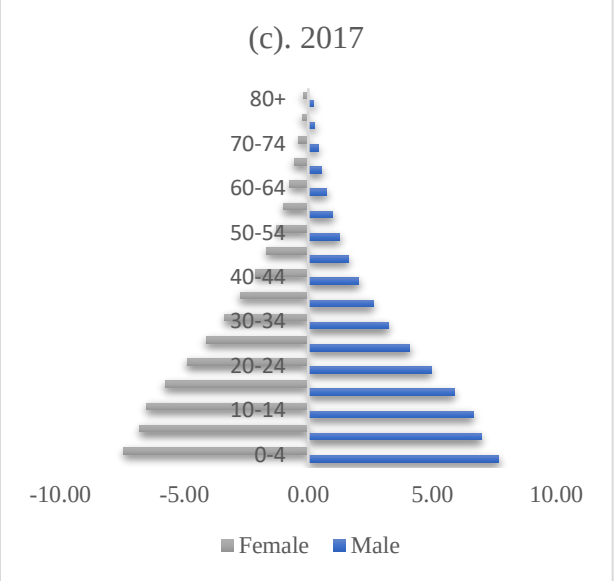
(c). 2017
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
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Female
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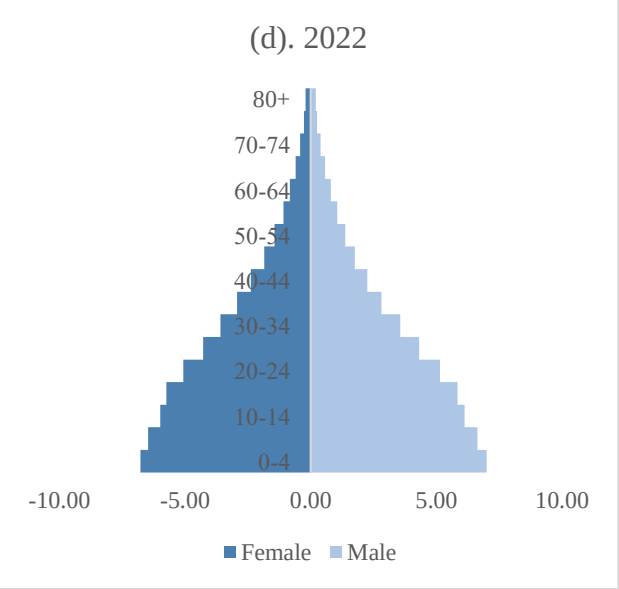
(d). 2022
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
-10.00
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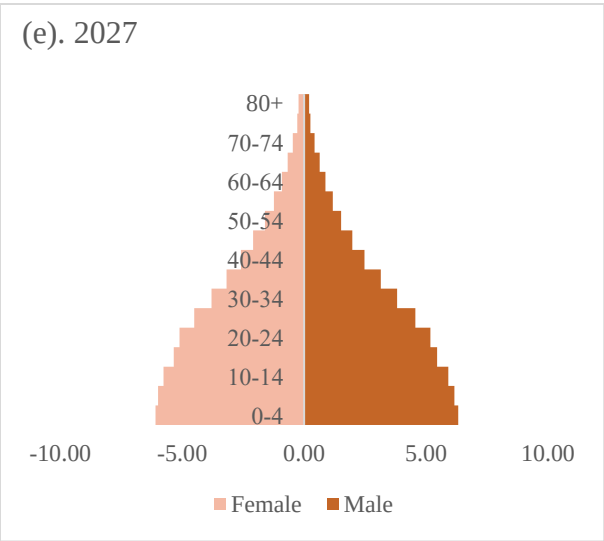
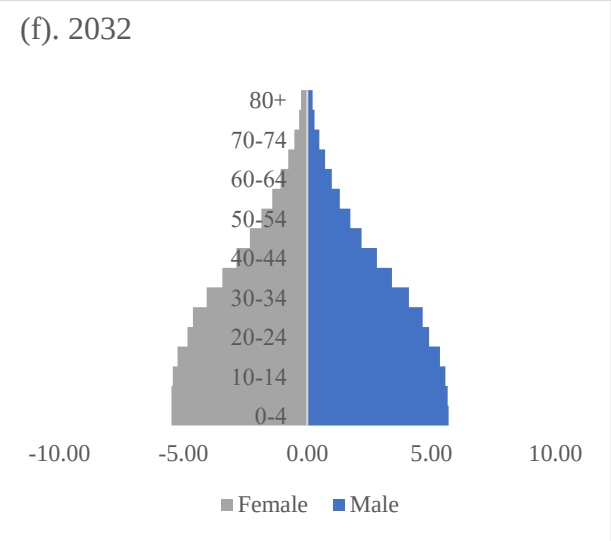
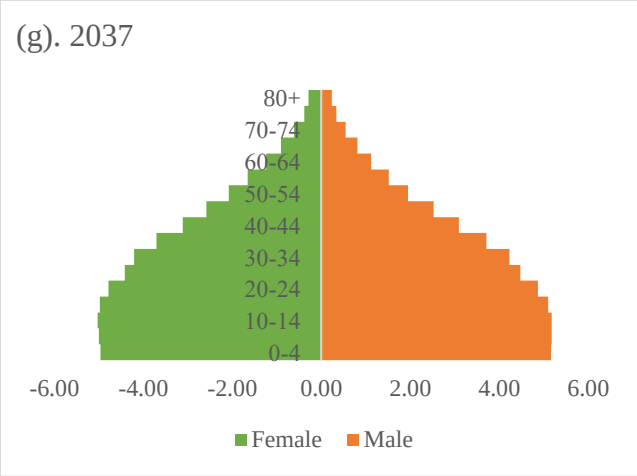
Female
Male







Source: - Reproduced from CSA, 2007

The population pyramid depicted the Oromia National Regional State age structure from 2008 to 2037. The data shows that in 2008 the percentage of juvenile dependents (0-14) was 46.6 percent and 90 percent are rural dwellers, while the productive age group (15-64) accounts for about 50.2 percent of the population and closely 85 percent are residing in rural areas. Accordingly, the remaining 3 percent of the population were old age dependents (>65 years of average) and many of them (88 percent) reside in rural areas of the country. This manifests the ratio of dependency was 0.98 where 98 dependents (young and elderly) were reliant on every 100 working men and women. (See Figure 4:3). In 2008 and 2012, the percentage of juvenile dependents was less urban than in the working-age population proportion. This implies youthful age dependents are more dominant in rural areas of the region contrary to urban areas. This might be due to the migration

of productive age groups from rural to urban areas of the region in seek of jobs or other socio-economic amenities.

However, there was a minor change in the dependent age group after five years; the figure dictum that the percentage of the young dependent group (0-14) was 44.85 percent, whereas the productive age group (15-65 years on average) rose to 52. 24 percent. Besides, the residual 2.89 percent was old age dependent group (>65 years on average). (See figure 4:3). Notwithstanding, there was the growth among economically productive age group and reduced the dependency ratio to 0.91 (there were about 91 dependents economically depending on every 100 productive age group) a significant percentage of the population in three categories lived in rural areas where access to social and economic amenities is inadequate. This will exert a substantial impact on the agriculture sector.

In 2017 the percentage of juvenile dependents was 42.07 percent, a 2 percent reduction from 2012. Whereas the proportion of the economically productive age group (15-65) was closely 55.12 percent. Which indicates about a 2 percent increment from 2012. The remaining 2.81 percent of the population were old age dependents (greater than 65 years on average) and indicated there was a reduction from 2012 that was about 2.89 percent of the population. This reduction might be due to the life expectancy at birth being less and not increasing since 2012. The percentage of support ratio also declined from 0.91 in 2012 to 0.81 (i.e., there were 100 economically productive men and women supporting 81 young and elderly dependents within the population.

The proportion of the working class has been growing even in 2022. Figure 4:3(d) demonstrates the percentage of the productive age group (15-65) grew to 58.12 percent which shows a 3 percent growth from 2017. However, about 21 percent of the working age group age lies between 15- and 24 years on average, and most adolescents in this age remain at school. The juvenile dependent age group (0-14) declined to 40 percent, more than 42 percent in 2017. The residual 2.9 percent of the population were old age dependents with modest growth from 2017. The percentage of support ratio also reduced to 0.72 (i.e., every 100 working men and women support 72 young and elderly dependents).

By the end of the 2027 fiscal year, the projection of CSA (2007) reveals that the percentage of young and old dependents will be 36.25 and 3.16 percent, respectively. The young dependents age cohort will exhibit a substantial decline (4 percent) while the old age group will grow by 0.3

percent. This demonstrates an improvement in life expectancy at birth. The data also depicted that the proportion of economically independent percentage within the population grew to 60.69 percent. However, still, the percentage of young adults who remained at school will be 22 percent. See figure 4:3(e).

CSA, (2007) projection of Oromia National Regional State indicates the percentage of young age (0-14) dependents will be 33.32 and 30.51 percent by 2032 and 2037, respectively. This demonstrates a 3 percent decline every five (5) years. Contrary to the decline in the young age-dependent cohort, the working-class age cohort will increase by more than 63 percent in 2032 and above 65 percent by 2037. However, the percentage of adolescents whose ages between 15 and 24 remained at school will be 19 to 20 percent in 2032 and 2037. The remaining 3.56 and 4.13 percent of the population will be ascribed to old age by 2032 and 2037, respectively. This shows improvement in life expectancy at birth on one side while an increment in old age dependency. Accordingly, the dependency ratio will also diminish to 0.58 by 2032 and 0.53 by 2037. See Figure 4:3 (f & g).

Increased life expectancy because of a better healthcare system and higher living standards may aid in raising the country's working-age population, which represents a significant opportunity if effectively managed. A reduction in the dependent population will allow most households and the public to increase savings and investment, which will then have an impact on the nation's overall development. Besides, the support ratio to the old population remains constant, which is another added opportunity that will not place a significant strain on the public in caring for the elderly population.

Moreover, due to different public health efforts and relative health improvements, the child population has joined the productive adult population. This leads to a higher growth rate of the productive adult population. Coupled with this rapid expansion in the adult population is a minor decrease in fertility, which supports the emergence of a demographic window of opportunity, the demographic dividend, in which the producing population grows faster than the consumer population. As a result, most productive sectors have a surplus of human resources. The entire period during which labor force growth outpaces consumer population expansion is referred to as a window of opportunity for economic development. Most industrialized countries have efficiently

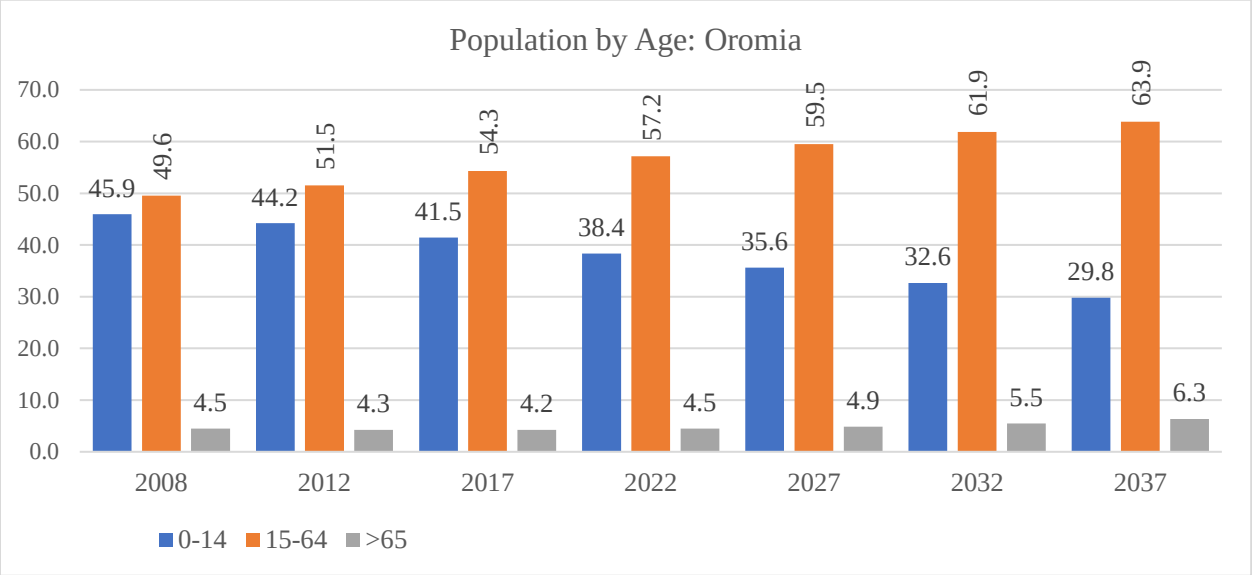
utilized their dividend to accomplish economic and social progress through well-designed policy directions.

As literature emphasizes modifying the population's age structure to obtain the demographic dividend, the fertility rate becomes an important adjustment variable. The fall in fertility appears to be a crucial condition for realizing the demographic dividend, particularly through its impact on population age structure (Bloom et al., 2003, 2017; Jiang et al., 2016; Lee & Mason, 2006). However, when fertility declines, aggressive job creation strategies should be implemented to ensure that the ratio of effective workers to effective consumers (support ratio) continues to rise. As a result, employment should be included when capturing the demographic dividend (Prskawetz & Sambt, 2014). It is the pace of increase of the productive age group that matters in the demographic dividend, not its size.

This is based on the present premise of continuous fertility decline. This is a fantastic chance for politicians to focus on reaching out to the youth population, investing in their education, and including them in the productive sector by establishing innovative job prospects. However, if this growing youth population is not involved in the economic sector, the country will miss a significant opportunity to collect money from its expanding productive sector. However, failing to do so will result in a population dependency rather than a population dividend, with this expanding youth population turning into an elder, nonproductive, and consumptive population, draining the national resource after 40 and 50 years. If the demographic dividend is not used, the least developed countries will face the double burden of an expanding child population and an aging population.

4.1.3 Population by Productive and Dependent Group: Oromia

Figure 4.4: - Dependency Ratio: Oromia



Source: Reproduced from CSA projection, 2007

As Figure 4.4 depicted, the age structure of Oromia's population witnessed the proportion of the productive age group will continue to grow within two to three percent from 2008 to 2037 with inconsequential fluctuations. Accordingly, figure 4.3 revealed that the working age group will be 63.9 percent in (2037), 61.9 percent in (2032), 59.5percent in (2027), 57.2 percent in (2022), 54.3 percent in (2017), and 51.5 percent in (2012). This implies a significant increase in the proportion of the productive age group (15-65 years) in the population which was 49.6 percent in 2008 and will be 63.9 percent in 2037. The proportion of under 15 age group will decline from 45.9 percent in 2008 to 29.8 percent in 2037 at the regional level. However, the proportion of older dependent age group population distribution kept declining since 2008 (4.5%), 2012 (4.3%), and 2017 (4.2%). However, it will start to gain momentum in 2022 which was 4.5 percent in 2022, 4.9 percent in 2027, 5.5 percent in 2032, and 6.3 by the end of 2037. This implies there will be a dire intervention to improve the life expectancy of the regional government.

The study conducted by the Ethiopian Economic Association (2020/21) also dictum that the proportion of the under 15 declined from 45.7% in rural areas in 2007 to 44.3% in 2017; and in the urban areas, from 44.5% in 2007 to 42.1% in 2017 at the national level. The projection shows that if fertility decline continues in both urban and rural areas, the proportion of children under 15 will further decline to 34.3% in urban areas and 40.4% in rural areas by 2037. Again, although the

proportion of children under 15 years is declining, while those of working age (15-59) is increasing in both urban and rural areas, the decline is faster in urban areas compared to that of rural areas and the increase in the proportion of working age population in rural areas is slower.

The working-age population, on the other hand, increased from 52.8% in 2007 to 54.7% in 2017 and is expected to increase to 61.8% in 2037 in urban areas and from 51.5% in 2007 to 55.1% in 2037 in rural areas. In addition, the proportion of the elderly will increase by about 1.3% during the period 2007 to 2037 in urban areas and by 1.2% in rural areas. It is anticipated that the proportion of children under 15 will continue declining and the proportion of elderly continue increasing as the demographic transition accelerates (EEA, 2020/21).

While many economists have studied the effect of population growth on economic growth, far less attention has been paid to changes in the age structure brought about by the demographic transition. Combining the population growth rate and the growth rate of the economically active population captures the way that age structures change and delivers striking results (ILO, 1996). While population growth has a large and statistically significant negative effect on per capita income growth, this effect is counteracted by a statistically significant positive effect from growth in the share of the population that is economically active. While the age structure remains constant, therefore, the effect of population growth is neutral, but as the proportion of workers rises or falls, so do opportunities for economic growth. The demographic dividend, for example, was essential to East Asia's extraordinary economic achievements, accounting for as much as one-third of its "economic miracle" (Bloom and Williamson, 1998; Bloom, Canning, and Malaney, 2000).

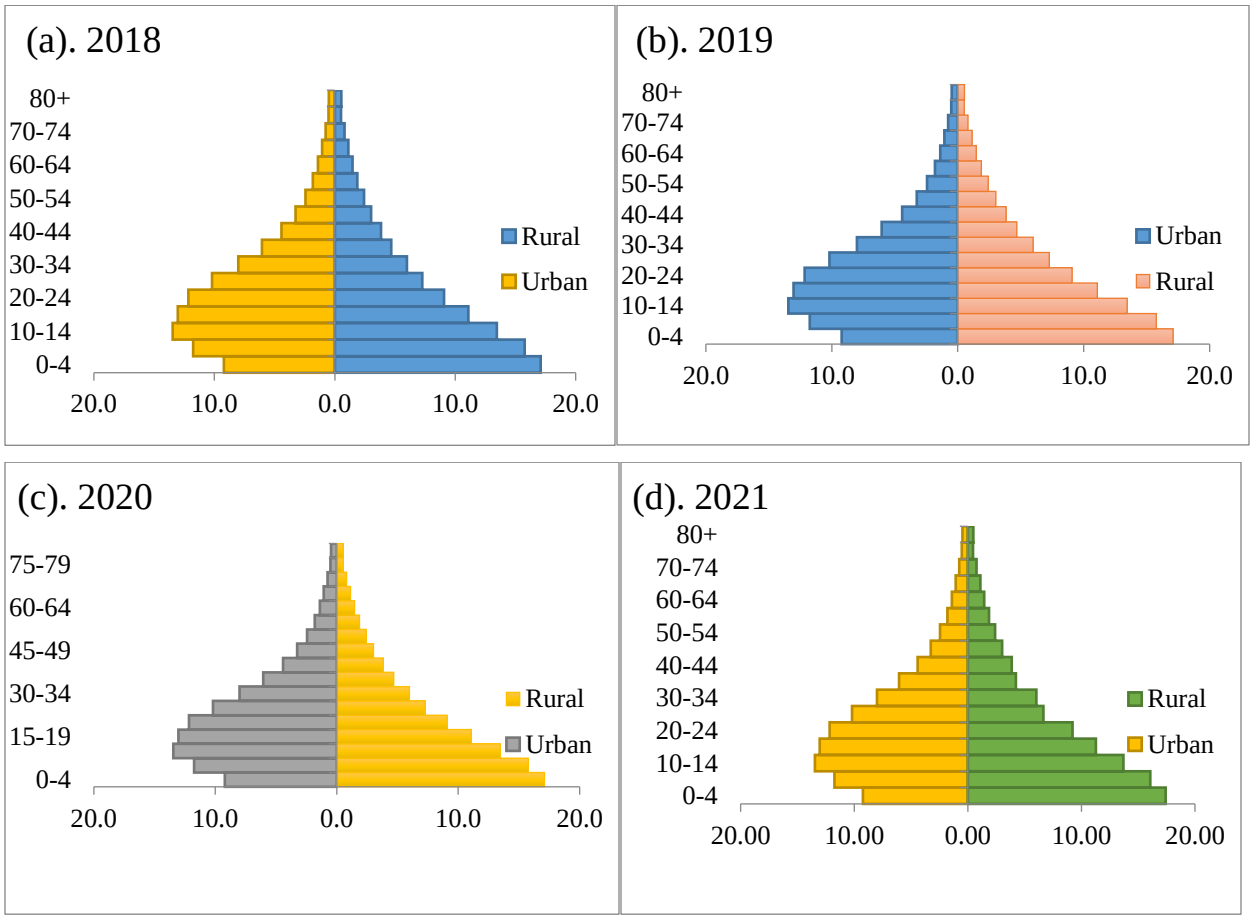
Once the youth dependency ratio decreases and unleashes resources for the government and for families to invest, the chances of enjoying a demographic dividend can then be further increased by resources being spent effectively on accumulating physical capital and human capital, particularly for the young population. Adequate policies, therefore, require combating corruption Gyimah-Brempong (2002); Bah and Fang (2015) as well as building sound political, financial, and economic institutions Ndulu and O'Connell (1999); Block (2002) and education and healthcare sectors with universal access. As the simulations by Ashraf et al. (2013) and Mason et al. (2016) show, such measures, if successful, would strongly reinforce an initial decline in fertility. At the same time, policymakers would need to advance an environment with employment prospects for an increasingly well-educated population to avoid a brain drain to developed countries.

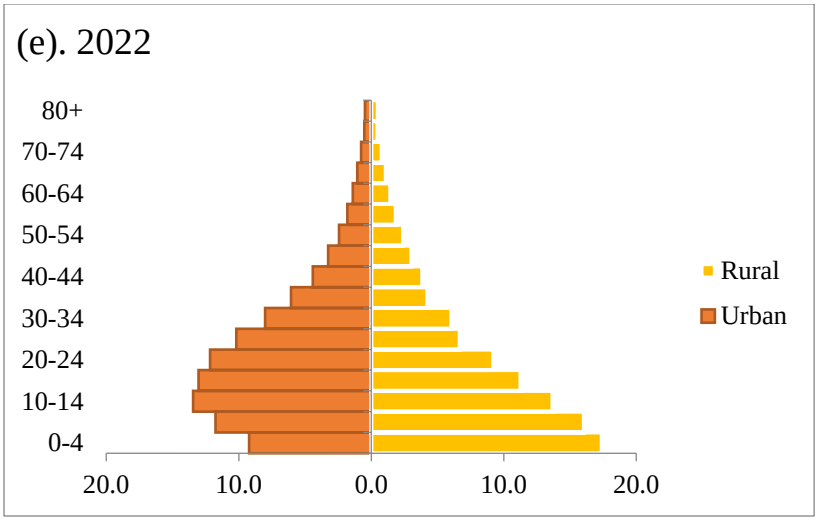
The opening of the demographic window of opportunity occurs when the proportion of those in the working age group starts to exceed the proportion of the dependents, namely the children, the youth, and the elderly. The number of dependents aged less than 15 years and 65 years and more for every 100 "potentially active" people of 15–64 years, is the most common dependency ratio used. However, because of the remarkably high unemployment and/or underemployment rate among young people aged 15–19, and because of the need to enroll many young people at the secondary school, vocational, and higher education levels, it is more appropriate to retain the number of dependents for every 100 "potentially active" people of 20–64 years.

This implies that it is not the age structure alone substantially associate or correlate with demographic transition and creates the window of opportunity for the demographic dividend to the extent of the economically active age group engaged in productive economic activities, quality of education, and skill possession.

4.1.4 Oromia National Regional State Population Distribution: Urban and Rural

Figure 4.5: - Urban-rural Composition





Source: Reproduced from Oromia Planning Commission, 2020

Ethiopia is, and will remain until at least 2050, a rural country. In 2015, the rural population was estimated to be 80.5 million, or 81% of the total population (UNDESA, 2018; CSA, 2013). More importantly, although there are increasing investments to boost manufacturing, as well as ongoing efforts to improve rural electrification, irrigation, and mechanization (which will contribute to the rural-urban transformation), most of the population is expected to reside in rural areas until about 2050. Ethiopia's rural population is expected to reach 102 million by 2030, which represents an average yearly growth rate of 1.6% between 2015 and 2030; growth will then further decrease to 0.65% between 2030 and 2050. By the end of 2050, Ethiopia will remain rural since the rural population will account for more than 61% of the total population (UNDESA, 2018).

Regarding Oromia national regional state population distribution, the data stated in Figure 4.5(a, b, c, and d) revealed that between the years 2018 to 2023, the proportion of the under 15 years population is higher in rural areas (47.1% max. and 46.3% min.) while urban under 15 years population is (34.4%) on average. However, the proportion of the economically active age group (15 to 65 years average) in urban areas is higher as compared to rural areas of the region which is 62.8% in urban and 50.7% in rural areas. Furthermore, the proportion of the old age group does not show any significant variation between rural and urban areas. The percentage of older age proportion (>65) stretches between 2.8% minimum and 3.0% maximum both in rural and urban areas of the regional government. This implies migration of the working age group from rural to urban is higher in search of employment and better social amenities.

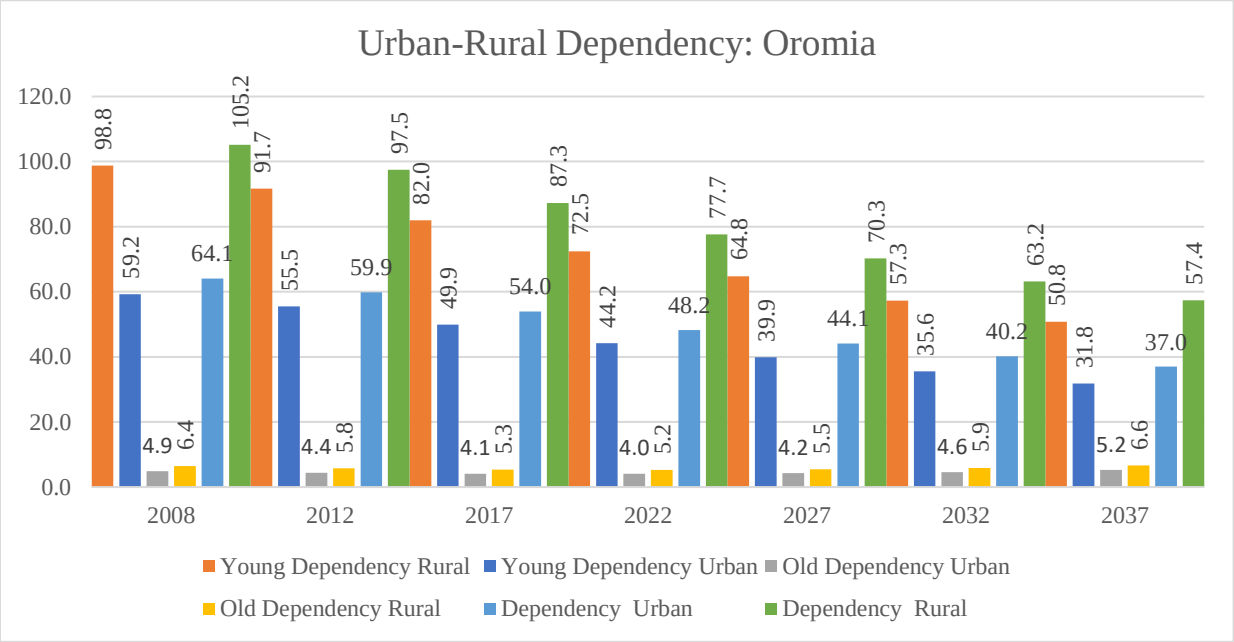
National-level studies also posit internal migration in Ethiopia is influenced by both personal characteristics and place-related factors. Independent of the reason for migrating, young and educated Ethiopians are more likely to migrate than their older and less-educated peers. In 2013, rural migrants were on average 10 years younger than rural non-migrants; they were also characterized by having twice as many years of education compared with non-migrant rural dwellers and were three times more likely to have attained secondary-level education (Bundervoet, 2018). Holding small sized-land and landlessness are also important drivers for migration (Dominiko, 2016). In addition to individual factors, places characterized by elevated levels of poverty and limited accessibility to roads provide a less conducive environment for migrants; in other words, credit constraints and high migration costs make rural-to-urban migration less likely (Bundervoet, 2018).

The most important driver of internal migration in Ethiopia is the search for employment. Migration between rural and urban areas has been explained because of wage differentials between the two areas (Harris and Todaro, 1970), as well as an overall strategy at the household level that helps to maximize the welfare of household members while reducing the risk of external shocks (Rosenzweig and Stark, 1989).

According to the United Nations Population Division, the increase in rural-urban migration is evidenced in the perceived disproportion of provision of infrastructural facilities which is not limited to social amenities and other socio-economic amenities to boost rural economic growth. This rural-urban migration to cities and suburban areas stimulates the growth in urban population and invariably affects urban agglomeration positively (Wei et al., 2016). Rural-urban migration is seen as the movement or relocation among rural dwellers to urban areas or cities for settlement. The migration can be consequent on limitations of economic opportunities in rural communities and the search for more meaningful livelihoods rooted in robust economic opportunities in the cities. More precisely, the search for better education, employment, transportation systems, communication, and trade and commerce do contribute significantly to increased urban populations (Ikwuyatum, 2016).

4.1.5 Rural -Urban Dependency Ratio: Oromia

Figure 4.6: - Rural and Urban Dependency



Source: Reproduced from CSA, 2007

The shape of this distribution shows that Ethiopia is characterized by an incredibly young population. Indeed, almost 42% of the total population is under 14 years of age, while the working-age population (those aged 15-64 years old) accounts for 55%. The nature of Ethiopia's population structure puts a greater burden on its working-age population. Thus, the working-age group will continue to support the group which is not yet in the labor market. The latter can be expressed as a dependency ratio, i.e., the population outside the labor market (or dependent) over the working-age population. In 2015, Ethiopia's dependency ratio stood at 82%; this value remains only slightly above neighboring Kenya (78%) but is significantly higher than countries such as Morocco (51%) and Viet Nam (42%), which are more advanced in terms of their demographic transition (EEA, 2020/21).

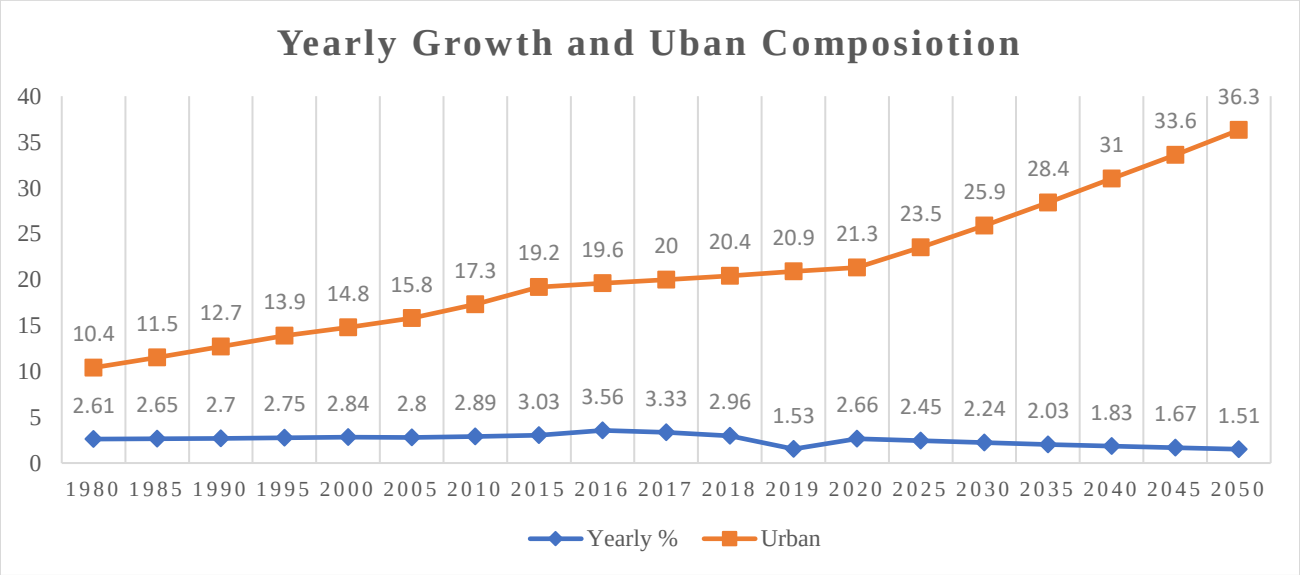
Based on the data presented in Figure 4.6, in rural areas of Oromia's national regional state, there are about 98.8 under 15 years old dependent on every 100 working men and women in 2008 which is significant. In alignment with this, the dependency ratio of younger boys and girls on working men and women is 59 to 100 in urban areas. This implies that in urban areas of the region, every 100 economically productive age groups are supporting about 54 dependents under 15 years old

boys and girls in 2008. However, there is no significant old people dependency ratio variation in the urban and rural areas between the same years i.e., on average 100 working men and women have had to support 5 to 6 above 65 years average adult. The number of young dependents has been declining since 2008 which was 98.8 and 59 dependents on every 100 working men and women in rural and urban areas, respectively. By the end of 2037 young and old people dependency ratio of the region will decline to 57 and 37 in rural and urban areas one-to-one. *This implies that the region will have a slight window of opportunity for demographic transition to reap the demographic dividend. However, the ratio of young dependency in rural areas of the region will remain higher (57 dependents for every 100 working men and women). This might be due to productive age group migration to urban areas, limited access and awareness of family planning and modern contraceptives, and a high fertility rate.*

A significant reduction in the number of children implies a reduction in the number of dependents, which in turn frees up resources for development and improvement in welfare. With lower fertility every year, the working-age population temporarily grows faster relative to the number of dependents thereby creating a window of opportunity for rapid economic growth. This window of opportunity can be harnessed if the right socio-economic policies are developed and investments made, making the demographic dividend a prospect. On the other hand, if this window of opportunity is not well-managed alongside the implementation of the right policies and investment it will lead to a missed opportunity to harness the benefits of the demographic dividend. In this case decline or low level of under 15 years old dependency ratio in urban areas contributes to the demographic dividend if the productive age group is productively employed typically the new entrants.

4.1.6 Ethiopia: Population Distribution and the age structure

Figure 4.7: - Urban Population and Yearly growth rate



Source: Reproduced from National Bank of Ethiopia, 2021

Figure 4.7 depicted that the yearly growth of the Ethiopian population including the Oromia National Regional Government has indicated a population continuous increment between 1980 which was 2.61 percent and 2.96 in 2018. However, from 2019 onwards including the projection until 2050 shows a continuous and slow decline in the percentage of yearly growth of 2.66 percent in 2020 and 1.5 in 2050. The data implies that despite there was and will be a decline in the birth rate still the fertility rate is and will be a contributing factor to population growth for the next few years. The expansion of the urban population will also demand infrastructure development to accommodate the lifestyle urban centers should provide.

People can only experience urbanization because of demographic dynamics. In other words, the makeup of a population can only changes from being mostly rural to being urban through the operation of mortality, fertility, and migration. With rare exceptions, however, migration and the economic factors that influence it tend to garner most of the focus. This is particularly true in the study of urbanization (and urban growth) in modern developing countries. There is a general inclination to regard migration as the major cause of urban expansion and to neglect the often large or even dominant contribution made by urban natural increase. There is also a tendency to consider rapid urban growth in isolation from the incidence of rapid population growth more generally (Preston 1979).

In pre-transitional circumstances, the crude death rate (CDR) in urban areas is extremely high. Infectious infections dominate the causes of death. These diseases thrive in towns, where people live at high densities and interact at comparably high rates. Moreover, the urban death rate is not just remarkably high, it is also larger than the urban crude birth rate (CBR). Therefore, the urban sector is a demographic "sink"—that is, in the long run, its population would not exist without rural-to-urban migration.

In practice, however, net rural-to-urban migration takes place throughout the demographic shift. Initially, such migration is essential for the urban sector to exist. Then, in the preliminary stages of the transition—when the urban sector is still small—it is the principal source of urban growth. Migration may also be the main source of urban growth toward the end of the demographic transition when the urban rate of natural increase is again low (or negative). Of course, mortality decline and natural increase in rural areas also generate various socioeconomic pressures—like reductions in the availability of cultivable land per person, and downward pressure on agricultural wages—that lead to an increase in the number of people who migrate out of the rural sector to live in the towns. Furthermore, there are reasons to anticipate that the net rural out-migration rate may climb as the demographic transition unfolds (Preston 1979).

The worldwide urban population is expected to increase to 6.7 billion by 2050, up from 4.4 billion currently. Africa is seeing the fastest urbanization, with the number of city dwellers predicted to quadruple in the next thirty years. Urbanization has immense potential to assist countries expedite the demographic transition and obtain demographic benefits if carefully managed. Fertility rates are significantly lower in cities; for example, women in Sub-Saharan Africa give birth to 1.5 fewer children on average than those in rural. Policies for inclusive urbanization can provide vital services to families, increasing well-being and quality of life and allowing fertility reductions. For example, children who live close to schools are more likely to finish their education, which means they have better prospects later in life and have fewer children themselves. Cities can also provide more job options than rural places, particularly for women. They are centers of social transformation that allow women to make independent decisions regarding their sexual and reproductive health (Berlin Institute for Population and Development, 2022).

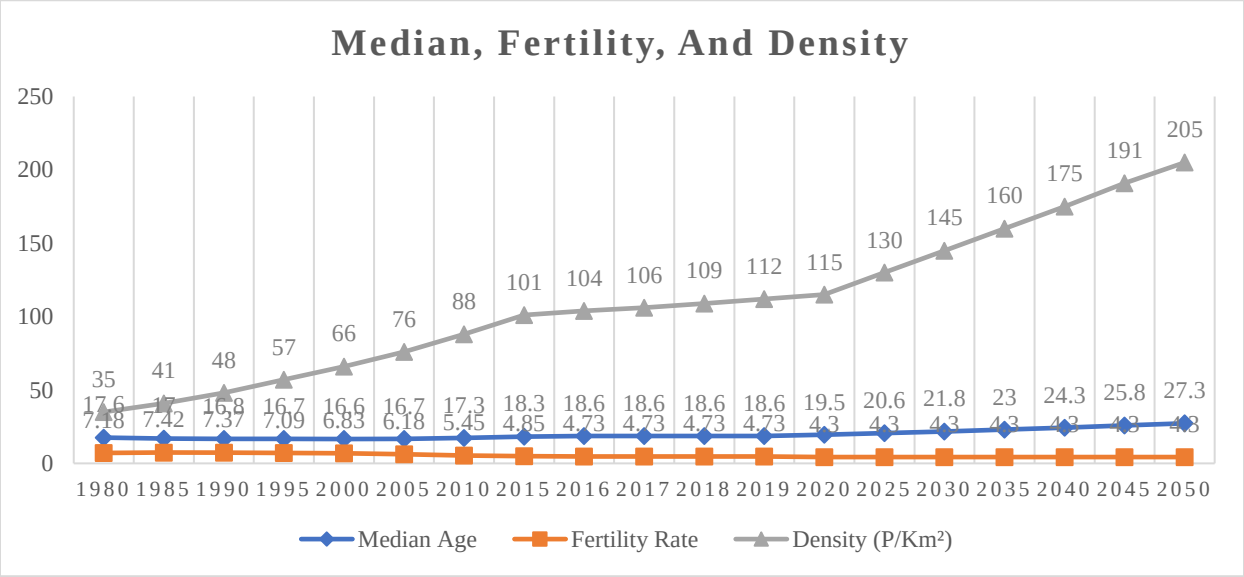
However, rapid urban population expansion is sometimes uncontrolled, and many households are left out of the benefits that cities bring. As a result, countries are frequently unable to capitalize on

urbanization's potential for demographic and socioeconomic development. One in every three urban residents in developing nations lives in informal settlements, commonly known as slums, without access to essential amenities. Women are overrepresented in slums and endure further marginalization. They are frequently harmed by poor sanitation and lack access to sexual and reproductive health services. Many women endure harassment and discrimination in public places, and their mobility is limited, making it difficult for them to get necessary health care. Few children attend school on a regular basis in many slums. They instead labor in the informal economy, selling commodities or providing low-cost services. They then marry younger, have fewer job possibilities, and have more children. As a result, informal settlements continue to have high fertility rates, putting additional demand on local governments to provide enough healthcare, education, housing, and jobs. As a result, sustainable urban design should prioritize inclusive services for all, particularly for the most vulnerable households, to hasten the demographic shift (Ibid).

In 1994, the Cairo Program of Action emphasized the issues posed by growing urbanization and urged governments to implement inclusive urban planning systems at the local level, thereby contributing to socioeconomic growth. Sustainable urbanization was also highlighted as a crucial driver of socioeconomic and demographic development in the 2016 New Urban Agenda. Furthermore, the 25th International Conference on Population and Development in Nairobi in 2019 highlighted the potential for incorporating SRH within Sustainable Development Goal 11, which calls for "Sustainable Cities and Communities." Similarly, the African Union's Agenda 2063 emphasized the link between urbanization, industrialization, social transformation, and economic development as critical to African countries' people-centered structural transformation.

4.1.7 Population Density, Median age, and Fertility: Ethiopia

Figure 4.8: - Median age, Population Density, and Fertility



Source: - Reproduced from National Bank of Ethiopia,

The data stipulated in the figure 4.8 shows that the median age of Ethiopian population have been declining between 1980 to 2000 fiscal year from 17.6 years average to 16.6. This reveals that the extent of the birth rate affects the proportion of median age proportion within the population. In alignment with this, the fertility rate also shows that there was a continuous increase between 1980 and 1990. The figure shows that fertility increased from 7.18 children per woman to 7.37 in 1990. On the contrary, the fertility rate has declined from 1995 (7.09 children per woman) to 2016 (4.73 children per woman). The decline has halted and remained steady between 2016 and 2019 (4.73 children per woman). And following 2020 there was and will be a flat and steady rate of fertility rate until 2050 (4.3 children per woman). However, there was a continuous increase in the median age of Ethiopia's population starting in 2005 which was 16.7 until 2020 the median age was 19.5. This increment will continue for the next three decades until 2025 as projected data dictum. The median age will be 27.3 by 2050.

The ratio of people to the natural resource base is most often discussed in terms of regional carrying capacity. It is manifested through food and water insecurity, or environmental degradation and pollution. Raising the productivity of the natural resource base, through technological or institutional innovations, can increase carrying capacity, but as Thomas Robert Malthus (1798) famously observed, this is an incremental process which cannot indefinitely outpace the

exponential tendency of unchecked population growth. Around the time Malthus wrote, global carrying capacity began a sudden and unprecedented expansion with the recruitment of fossil fuels and the globalization of agricultural commodities.

Having evolved in this time of plenty, modern economic theory is inclined to disregard natural resources as a limiting factor, relying on any form of income generation to provide access to all necessary resources through global markets. However, this strategy exposes the population to increased risk of external shocks, and forces activity to be export-oriented in an increasingly competitive market. The niches for densely populated, trade-dependent countries are already crowded. The strategy has worked well enough while overpopulation is localized, and other countries have surplus products of natural resources that they are willing to trade. Indeed, trade globalization has eased the population pressure in many countries in recent decades. During this time, many commentators argued that scarcity would always generate a workaround through innovation (Simon, 1981). But as humanity increasingly tests the planetary limits of resource capacity, including freshwater availability and the capacity to buffer changes caused by greenhouse gas emissions and other pollutants, carrying capacity is likely to become the main issue of concern once more.

For example, in Korea, the demographic transition occurred alongside rapid economic expansion and the changing of the socioeconomic structure from a rural agrarian to an urban industrialized society (Doo-Sub Kim, 2004). The dramatic and constant drop in fertility from 1950 to 1985 can be understood because of macroeconomic change functioning through choices made at the household (micro) level. After the mid-1980s, Korea's TFR may have converged to that of more developed countries due to parents' rational choice based on the cost-benefit calculation of bearing and rearing children, as well as parents' aspirations to improve their standard of living at the micro-level (Doo-Sub Kim, 2004). Parents began to prioritize the quality of their children over the quantity. According to Becker, Murphy, and Tamura (1990), investing in children as human capital is a rational choice given the high returns to education made feasible by Korea's developing economy and modernizing society.

According to the Korean Labor Institute, the changing fertility regime is reflected in a growing number of young men and women in their twenties remaining unmarried, as well as decreased marital fertility. Marriage rates among women under the age of 25 and males under the age of 30

fell dramatically between 1970 and 2004. Marriage rates for men and women aged 30 and up, on the other hand, have gradually increased throughout that time, but to a lower level. Over the last few decades, the average age for first marriage has steadily grown. It was 22.6 years for women and 26.7 years for males in 1972. In 2004, it had risen to 27.5 years for women and 30.6 years for males. Delayed marriage means that women have less time to bear children. As a result, unless age-specific marriage fertility grows, total fertility is predicted to fall.

In fact, according to several social polls, the young generation is not abandoning marriage entirely, but rather postponing it to advance their careers (Byun, 2004). Discrimination against married women, which is common in conventional male-dominated business cultures, has been a key impediment to the expansion of female labor force participation. The current tendency of young women to delay marriage reflects their behavioral response to this scenario in the labor market.

Although the trend toward later marriage may have a negative impact on future fertility levels, it may also have a positive impact on the labor force and economic growth by increasing the proportion of highly educated women in the workforce who can stay committed to their careers for a longer period. On the other hand, getting married later does not always imply having fewer children. The younger generation may catch up because, even if the marriage occurs so late, most couples are physically capable of having several children if they so desire.

According to Bloom, Canning, and Sevilla (2002), while population growth has a negative influence on per capita income (everything else being equal), this effect is offset by the positive effect of economic activity growth. Mason (2001) proposes a reverse causal mechanism as a counterargument. Rapid economic development and associated social change (modernization, urbanization, and behavioral changes) may have generated or accelerated demographic transition. However, when the two processes (economic development and population change) occur virtually concurrently in a brief period, it may be fruitless to attempt to properly allocate the causative flows.

The drop in fertility was preceded by a decline in mortality. The lag between the two caused a "bump" in births and population increase, known as the baby boom generation. The baby boomers matured into a big and young labor force, contributing to unparalleled economic expansion. According to Bloom, Canning, and Sevilla, the dividend could explain one-third of the region's economic growth. Rapid socioeconomic modernization and growth resulted in rapid changes in the fertility behavior of the generation, resulting in a sharp fall in fertility levels. In consequence,

declining fertility boosted economic growth by reducing dependency and welfare burdens and allowing for greater investment in human capital.

However, as Bloom, Canning, and Sevilla (2002) emphasize, the demographic dividend is not automatic. The opportunity may be lost if timely policy actions are not embraced and implemented correctly. In contrast, if a sound policy environment is created, the population dividend will be given through increased labor supply, savings, and human capital. The parts that follow show how the Republic of Korea profited from the demographic dividend.

4.2 Demographic Dividend: Health and Population Distribution

Human health is a critical component of any society or economic activity. As we can see in the current pandemic, the infectious character of the COVID-19 disease has interrupted numerous economic activities around the world, while its contagious influence has harmed global health conditions. Without healthy health, an economy loses its potential to create competitive products, which may impede economic progress. In general, when global health conditions are disrupted by a pandemic, a major global economic crisis may occur, as shown by the COVID-19 pandemic since 2020, a situation that may persist in the future (World Bank 2021). The current scenario will raise economists' understanding of the considerable positive effect of health on growth. However, prior to the pandemic, the health effect on growth was frequently the source of a lively debate among economists; this debate often arose because of several conceptual and methodological research problems, particularly the health-growth measurements and their heterogeneous effects in terms of size and direction across countries or regions. Endogenous growth theories state that economic growth is an endogenous product of an economic system (Romer 1997), and human capital is a primary source of endogenous growth. However, from an empirical standpoint, human capital is solely defined in terms of education, with little attention paid to the role of health in human capital (Bloom et al. 2004). Until recent studies in the 2000s, health was not recognized as an alternative measure of human capital. As a result, healthier workers are more productive and energetic, which leads to increased output.

A large body of empirical research has indicated that health, as measured by life expectancy, has a beneficial impact on economic growth (Sachs and Warner 1997a; Bloom et al. 2004; Suri et al. 2011). This is consistent with the view of health as a component of human capital that increases productivity. Nonetheless, Acemoglu and Johnson (2007) contend that the first-order effect of

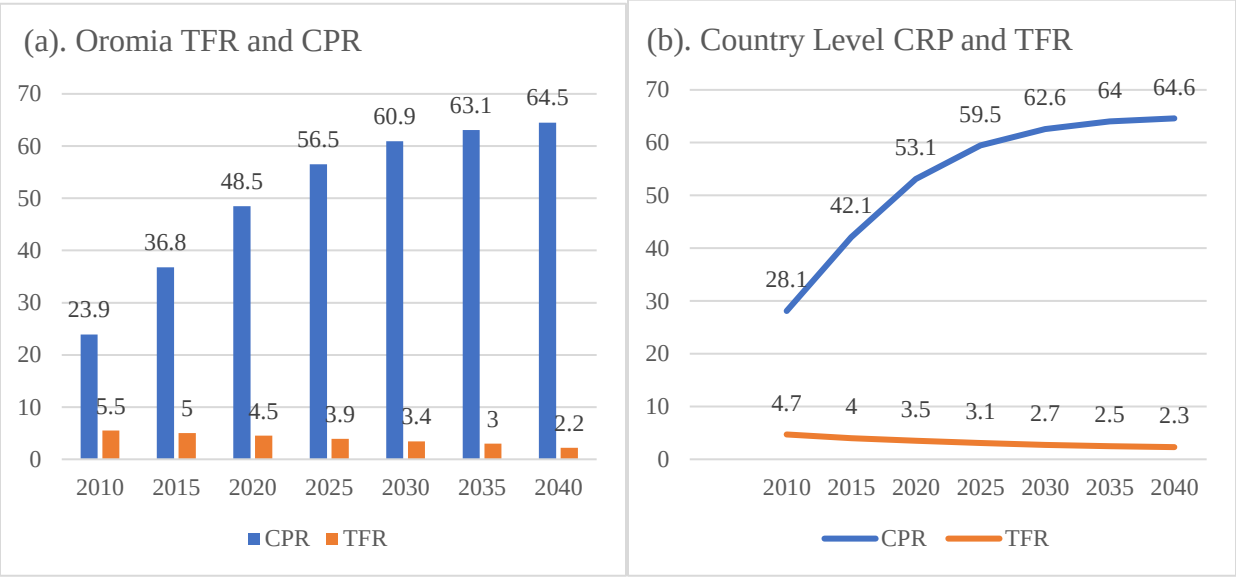
increased life expectancy is increased population growth, which initially increases capital dilution and then decreases income growth. While the decrease is eventually offset by increased economic activity as more people become productive, this compensation may not be sufficient if the benefits of increased life expectancy are limited.

Bloom et al. (2019) examined the several mechanisms via which health influences economic growth in both developing and wealthy countries. The key mechanism via which health influences economic growth in developing nations is demographic transition and the timing of sustained long-run economic growth. The rise in life expectancy has resulted in a demographic transition, in which human capital investments become more important as the working age increases (Ben-Porath 1967; Cervellati and Sunde 2013). The drop in mortality also causes parents to have fewer children, resulting in a more educated population and an economic-demographic transition. The demographic dividend then supports the transition to sustained growth. As the population becomes more productive (less youth and old-age dependency), investments in education, infrastructure, and health rise, transforming economic development into long-term growth.

The relationship between health and economic growth is more complicated in developed countries. The debate over whether health might stifle economic progress in industrialized countries revolves around two key issues (Bloom et al. 2018). The first is that health improves longevity, particularly in the elderly (Breyer et al. 2010; Eggleston and Fuchs 2012). Further longevity gains by the elderly may raise the old-age dependence ratio, resulting in a decrease in consumption. The productivity gains from improved health may not be sufficient to outweigh the elderly's high medical costs. The second is that large health expenditure shares in developed nations may have a negative impact on economic performance due to the disproportionate absorption of productive assets by 'oversized' health sectors (Pauly and Saxena 2012). While the reduction in chronic diseases may increase productivity, the longevity gains will disproportionately benefit the elderly, who are more economically inactive. Nonetheless, within developed economies, the benefits of even a minor increase in health would certainly outweigh the losses from reduced consumption (Kuhn and Prettner 2016).

4.2.1 Fertility Rate and Prevalence of Contraceptives: Oromia/Ethiopia

Figure 4.9: - Fertility and Contraceptives



Source: Reproduced from National Bank of Ethiopia, 2020/21

Family planning programs are one method of lowering fertility. Despite some claims to the contrary, evidence suggests that family planning programs can significantly reduce fertility, but only if they are well designed and implemented in relation to the cultural and social context.

Many demographers believe that high fertility rates are caused by supply constraints in contraception. They attribute a large part of the decline in fertility to the expansion of family planning programs (Cleland et al. 1994; Bongaarts and Sinding 2011). Some economists, on the other hand, argue that family planning has no independent effect on fertility and that desired fertility is important, along with its determinants, such as economic advancements, expansions in girls' education (Lutz and KC 2011), and greater economic opportunities for women. According to this viewpoint, all family planning does is align desired and actual fertility; for example, (Gertler and Molyneaux 1994) for an Indonesian study and (Miller 2010) for a Colombian study; both studies find that family planning accounts for an exceedingly small share of fertility decline. Providing family planning services, on the other hand, does more than only prevent births: a well-planned program can help shift family size standards and so affect desired fertility.

In general, just finding a negative relationship between the contraceptive prevalence rate and fertility does not imply that increasing the contraceptive supply will result in fewer births. Other

factors influence a woman's (or a family's) decision to use contraception and her ability to do so effectively. Cultural or religious beliefs may preclude the use of some or all contraceptives; husbands (or their mothers) may refuse to allow their wives to use contraceptives at all; fear of side effects can be a major impediment; and, of course, misinformation about proper usage can render them ineffective. These impediments are relevant to the observation that there are 200+ million women with an unmet need for family planning, which means they do not want to have children soon, are in a relationship with a man, and are at risk of becoming pregnant because they do not use contraception.

According to data acquired from the National Bank of Ethiopia, the national and regional prevalence of contraception is increasing (Oromia National State Government). However, the rate of access to contraceptive methods is increasing at decreasing rate, as there was a 13 percent increase in access between 2010 and 2015, but less than an 8 percent increase between 2015 and 2020, an 8 percent increase between 2020 and 2025, a less than 4 percent increase between 2025 and 2030, and the rate of growth will fall to less than 3 percent between 2030 and 2034, and less than 1.5 percent between 2035 and 204. In line with this, the fertility rate is expected to fall from 3.9 children per woman in 2025 to 2.2 children per woman in 2040 over the following fifteen to twenty years. Even though a variety of factors influence the relationship between dependable family planning and fertility rate drop, there is a trend that meeting unmet family planning needs helps to reduce fertility over time. Comparatively, the relative rate of access to contraceptive growth between the national and regional levels is similar. However, the fertility rate of Oromia's national regional state is less than the national fertility rate. (See Figure 4.9 (a and b).

Many demographers believe that if these women were given access to family planning services, many, if not most, would use contraception and their fertility rate would decrease. What seems critical here is that for a family planning program to be effective, it must be adequately designed and administered, which means it must effectively consider the specific situation in which it will be used. Experience and studies in West Africa, for example, suggest that providing family planning services alone may not be what appeals to families in high-fertility settings; in a study known as the Navrongo experiment in Ghana, family planning services were well integrated with community health services, and this integration appears to have been a key to success (Nyonator et al. 2005).

This investigation is noteworthy since it was a randomized study that discovered that the intervention reduced fertility by one kid per woman. The Matlab program, which was carried out in Bangladesh between 1977 and 1996, is another extremely significant piece of evidence in favor of the concept that family planning programs can reduce fertility. Participating villages in that initiative were randomized, with some receiving family planning services and others not. T. Paul Schultz, a Yale economist, has determined that "the family planning program is associated with a 10-15 percent decrease in fertility and population growth for two decades" (Schultz 2009). Economists such as Lant Pritchett view these findings as inapplicable to entire countries because the Matlab effort was so costly that it could not be applied to an entire country. That may be true, but Matlab shows that family planning programs can affect fertility.

FP investments have a high impact while also being cost-effective (Frost et al., 2014; Barot, 2017; Cavalcanti et al., 2020). At the same time, reducing FP aid would undermine global efforts to attain the SDGs (sustainable development objectives). There is widespread consensus that the SDGs cannot be met unless everyone has access to FP and reproductive health care. The FP program's purpose is to stabilize countries' populations to optimize the balance of population and resources, promote reproductive, maternal, and sexual health, and nutrition, and minimize abortions (Rana et al., 2019). FP also contributes to a lesser investment of resources in life events such as pregnancy, loss, abortion, and delivery costs. FP contributes to economic advancement in a variety of ways. Thus, a variety of studies have historically made a strong economic case for FP programs (Schultz, 1969; Miller, 2010; Canning and Schultz, 2012; Kohler and Behrman, 2014; Cavalcanti et al., 2020).

Studies suggest FP programs have been considered the second-best "buy" for global development after trade liberalization because of their multidimensional return on investment (ROI) and one of the highest cost-revenue ratios (Kohler and Behrman, 2014). As a result of FP programs, birth planning, and fertility decline, women's paid labor force participation increases and additional expenditure for children's education and health care decreases, allowing families to increase their income and reduce poverty (Campbell, 1968; Biggs et al., 2010; Darroch and Singh, 2011; Sonfield et al., 2013). The economic gains of the FP program and fertility drop are sufficiently multiplicative that each unit investment in the FP program yields more returns than it costs. Evidence from Bangladesh reveals that families who received FP and maternity and child health

(MCH) services through the program had better health outcomes, as well as higher incomes, higher levels of education, and greater asset accumulation. According to research from Kenya, FP interventions with a little government budget of 0.5% of GDP can deliver greater cost-effective benefits by boosting long-term living standards than policies that subsidize basic schooling (Cavalcanti et al., 2020). Thus, investment in FP can be a useful tool in reducing expenditure on adversities associated with childbearing and rearing, as well as provisions for treating MCH morbidities for households and the state (Joshi and Schultz, 2007; Schultz, 2009; Frost et al., 2014).

Demographic issues influenced Asian economic growth performance, particularly in East Asian countries, from 1960 to 1990 (Bloom and Williamson, 1998). According to the research, FP has been one of the most successful development interventions in the last 60 years. It not only reduces fertility at the aggregate level in society, but it also encourages the long-term development of healthier and wealthier families (Bloom et al., 2001; Ashraf et al., 2013). Furthermore, fertility decline and the resulting demographic changes impact economic growth via labor supply, human capital accumulation, women's empowerment, and savings (Mammen and Paxson, 2000; Doepke, 2004; Mason et al., 2010). Increases in the working-age population improve per capita income since worker productivity remains constant and the number of juvenile dependents decreases (Lee et al., 2000; Bloom et al., 2010, 2007; Mason et al., 2010). Fertility decline is also connected with a reduction in additional costs for children's education and health care, allowing families to raise their savings, resulting in greater investments, income, and poverty reduction (Darroch and Singh, 2011).

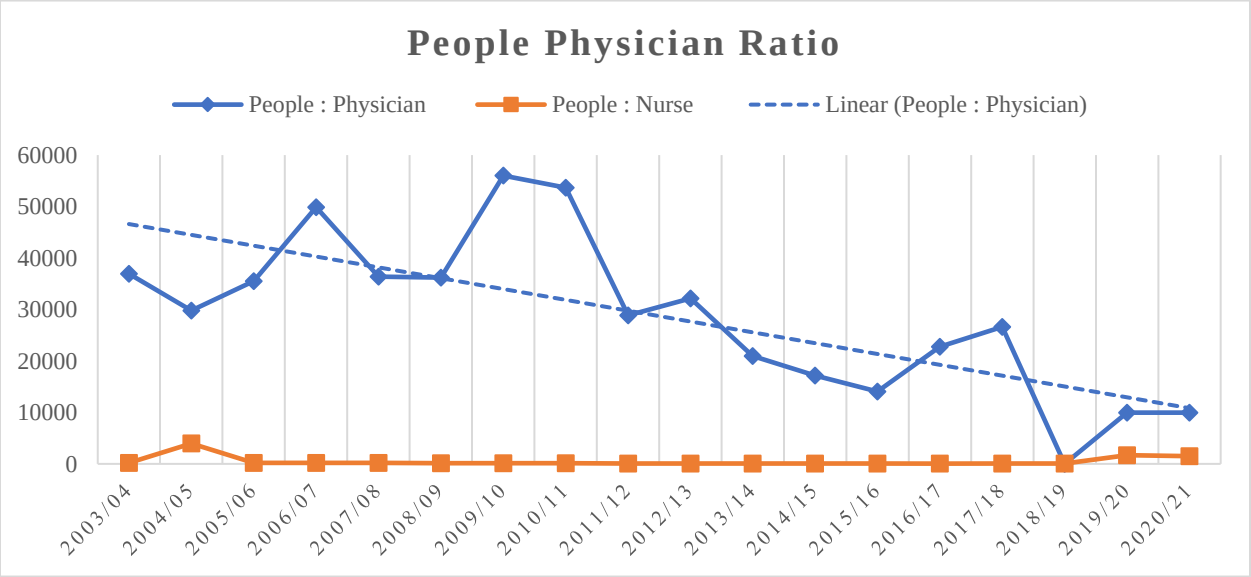
In underdeveloped nations, evidence on the returns of FP programs and fertility drops has been limited. A lack of information on the cost-effectiveness of the FP program has also led to a decline in political interest in developing countries in investing in the core FP program, particularly since the late 1990s (Goli et al., 2020). Countries that have achieved or are on their way to achieving replacement level fertility, in particular, are gradually reducing funds for their FP programs, despite the fact that a large proportion of the population in the reproductive age group has an unmet need for FP to avoid unplanned pregnancies, abortions, and reproductive morbidities (Barot, 2017; Rana and Goli, 2018).

This means, when implemented in a way that is appropriate to local norms and circumstances, family planning programs can reduce fertility rates, in part through lowering desired fertility. Fewer children will be born as desired fertility declines and contraception becomes available. When the previous, larger cohort of children reaches working age, they will form a large working-age cohort. If working-aged people are healthy and well educated, and if policies are in place to ensure that potential employees are productively employed, the working-age cohort can produce more (per worker and per person) than in the past, raising revenue per capita. Furthermore, because people of working age save more than people of other ages, the national savings rate may rise. Extra savings can be channeled into new investments, boosting economic growth even further. This entire sequence of events begins with lower fertility, which can be aided by carefully planned family planning programs that are sensitive to local circumstances and give contraception to those who desire it. This is a powerful chain since increased contraceptive use has the potential to increase wealth.

4.2.2 Access to Healthcare Services: People Physician Ration

The impact of wise investments and successful interventions in Africa is becoming clear. However, the high disease burden combined with limited healthcare resources remains a daunting challenge. The most serious threats are HIV/AIDS, tuberculosis, and malaria. The growing burden of morbidity and mortality from Noncommunicable Diseases (NCDs) is becoming apparent. Chronic diseases are becoming more common and are associated with demographic, behavioral, and social factors. Disease loads and healthcare delivery are influenced by socioeconomic factors. Lifestyles are changing, and urbanization is increasing. The prevalence of hypertension, stroke, diabetes, chronic respiratory disorders, and substance misuse is increasing. Protein, caloric, and micronutrient malnutrition is worsening in many nations, contributing to increased illness and mortality. Dietary changes and inactivity are causing the growth of lifestyle chronic diseases their precursors such as obesity, insulin resistance, and metabolic syndrome, learning delivery.

Figure 4.10: - People Physician Ratio



Source: Reproduced from National Bank of Ethiopia, 2020/21

Ethiopia, like other Low- and Middle-Income Countries (LMICs), suffers from an extreme lack of health workers at all levels, with rural areas, where the bulk (85%) of the population lives, being particularly chronically under-served (Serneels et al. 2010). Taking population figures into consideration, Ethiopia's health worker-to-population ratio reveals a substantial urban bias, particularly among higher-level health professionals. The situation is especially severe in agrarian and pastoralist areas (Feysia et al. 2012; FMoH 2010). For example, the physician-to-population ratio in Gambella, Oromia, and SNNPR regional states was reported to be 1: 27,357, 1: 56,645, and 1: 57,059, respectively. These statistics are substantially below the international standard (1:10,000) and far below the 1:6,062 ratios for Addis Abeba (FMoH 2013a; FMoH 2013b).

The information in Figure 4.10 depicts the pattern of people-physician (doctors and nurses) ratios from 2003/4 to 2021/21. The graph demonstrated that the ratio decreased, although with cyclical difficulties. The ratio of people to doctors increased in 2006/7, following a dip from 2003/4 to 2005/6. A similar pattern was seen in 2009/10, 2012/13, 2017/18, and 2019/20. The maximum people-to-doctor ratio was 1:56013 and the minimum was 1:9977. However, since the 2005/6 fiscal year, the average person-to-nurse ratio in the region has been 1:494.

Globally, there is a shortage of health workers, and a lack of competent personnel impedes job creation in the health industry (WHO, 2016). Investment in health systems, including the health

workforce, fosters economic growth through a variety of channels, including economic production, social protection and cohesion, innovation, and health security (WHO, 2016). The health sector benefits the economy by creating jobs, investing in infrastructure, and purchasing medical supplies (M. P. Kieny, H. Bekedam, D. et al., 2017). According to WHO (2017), recent estimates of the number of physicians per 1000 people in South Africa were 0.77 and 0.2 for nurses and midwives. However, these ratios obscure the disparities between the private and public sectors and between urban and rural areas (Lloyd B., Sanders D., Lehmann U., 2010).

It is critical that adequate and relevant resources are allocated based on demand, i.e., the disease burden per region, and that they are mobile, i.e., physicians are responsible for health services in geographical areas rather than being assigned to specific hospitals, especially in rural areas with long distances between hospitals. This benefits patients since they are treated appropriately and make better use of physician resources, which are limited and provide an important service. Investment in decent health sector jobs strengthens social protection systems, for example, in morbidity, incapacity, unemployment, and old age; and provides financial protection against lost income, out-of-pocket payments, and unexpected disastrous health expenses, supplies (M. P. Kieny, H. Bekedam, D. et al., 2017).

Nurses and midwives are the foundations of healthcare delivery in Africa, as they constitute the largest group of healthcare workers (WHO, 2006). Cunningham C., Brysiewicz P., et al. (2017) estimate that 620 000 nurses and midwives are needed in Sub-Saharan Africa, a region with 11% of the global population, 24% of the overall disease burden, 67% of global HIV, 3% of all healthcare workers, and 1% of global health expenditures, reflecting a clear imbalance of healthcare human capital resources given the disease burden.

In the underserved regions of Afar, Somali, and Benishangul Gumz, the health worker density (doctors, nurses, and midwives) ratio is 0.5 for 1000 population (FMoH 2013a), which is four times less than the WHO standard for developing countries to achieve a minimum level of key health interventions (2.3 for 1000).

A nationwide facility-based assessment of the pharmacy workforce in Ethiopia found that pharmacists were unevenly dispersed across regions. For example, in the Afar regional state, a rural and neglected region, the density of pharmacists per 100,000 inhabitants was 0.66, compared to 29.88 in Addis Ababa (Gebretekle & Fenta 2013).

Even though 96% of Ethiopians live outside the capital and 90% of public hospitals are in regional states (Berhan 2008), half (45.9%) of pharmacists work in Addis Abeba. This suggests that the bulk of the country's health institutions were operating without pharmacists (Gebretekle & Fenta 2013).

The country's available health workforce is likewise not evenly dispersed among regions. For example, of the 2923 physicians (general practitioners and specialists) listed as working in the public sector in the 2012/13 fiscal year, almost 20% worked in Addis Abeba, the capital, which is home to fewer than 4% of the population (CSA 2008). Outside of the capital, physicians work in large regional cities (FMoH 2008).

This unequal distribution of health staff can contribute to significant differences in health outcomes between rural and urban populations. Births were one example of this. According to the 2011 Ethiopian Demographic and health survey (EDHS), just 4% of rural births were attended by qualified people, compared to 51% in urban regions (CSA 2012; Geresu et al. 2013), demonstrating a significant gap in the services available to rural and urban women.

Another indicator that illustrates the difference in service coverage between urban and rural areas is the number of deliveries by cesarean section. According to the 2011 DHS data, the rate of cesarean section was less than 2% in seven of the eleven regions, whereas it was 20% in Addis Ababa (CSA 2006; Gessessew et al. 2011). There are also considerable differences in under-five child death rates between rural and urban settings, with 83/1000 and 114/100, respectively (FMoFED 2012).

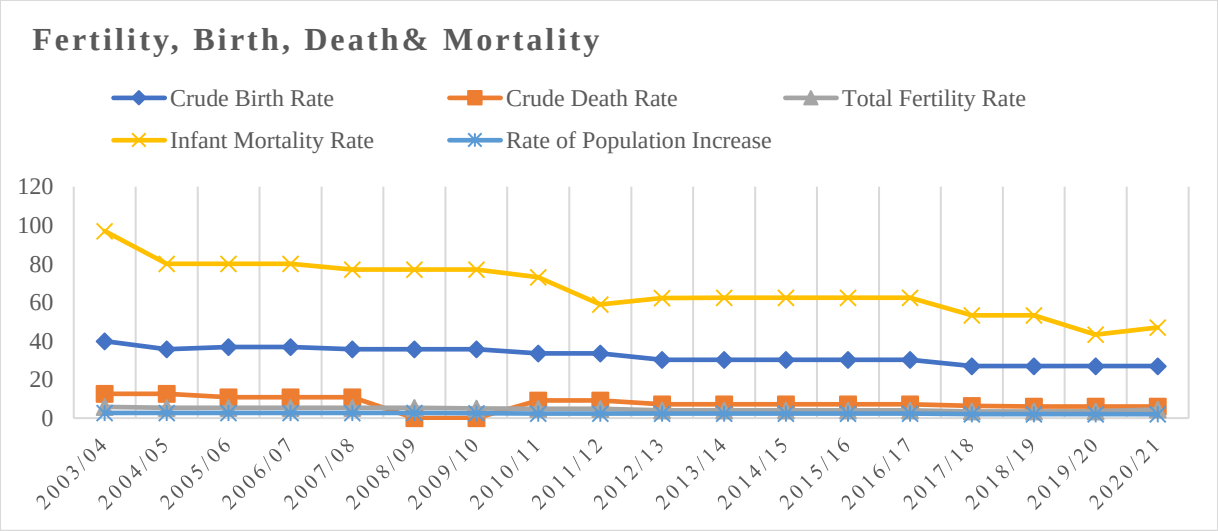
There are a lot of push and pull factors contributing to the low level of the health workforce in remote and rural areas (Arajo & Maeda 2013). Push factors are those that occur within the industry, driving professionals to leave. These include low pay, poor incentives, poor working conditions, insufficient resources for effective work, a heavy workload, poor human resource management, and limited or no training and educational opportunities (Naicker et al., 2009; Getie et al., 2013). Pull factors, on the other hand, are purposeful and/or unintended measures that attract health professionals away from government services. These include higher pay, higher incentives, better working conditions, better work resources, a good career structure, and good education and training opportunities (Naicker et al. 2009; Ture 2008). Although little research has been conducted to determine what factors drive the health workforce from rural settings, in Ethiopia,

the causes of low levels of health workforce in remote and rural areas include unattractive local environment, poor motivation and retention schemes, work-related factors, individual factors, and organizational environment.

Various factors contributed to the prevailing problem as studies shown, insufficient motivation and retention mechanisms (Abraham & Azaje 2013; Getie et al. 2013); a person's social background, age, gender, education, values, and beliefs, (Araújo & Maeda 2013); doctors working in an urban public facility receive more training, frequent formal evaluations, daily checks of presence, and monitoring from clients (Serneels et al. 2010); within health facilities, there is limited human resources management capacity for performance planning, regular supportive supervision, and constructive feedback to improve health workers performance (FMoH 2014; Getie et al. 2013); poor living conditions, including staff accommodation, schools and qualified teachers in remote rural areas (Ture 2008); organizational arrangements, management support and availability of equipment (WHO 2004; Araújo & Maeda 2013).

4.2.3 Demographic Transition: Fertility-Mortality Interaction

Figure 4.11: - Fertility Mortality Linkage



Source: - Reproduced from UNICEF, 2023

The Figure 4.11shows that the data obtained from the national bank of Ethiopia reveals the infant mortality rate, crude birth, and death rate, rate of population growth, and total fertility rate of Ethiopia between the 2003/4 and 2020/21 fiscal years. The data showed a significant decline in

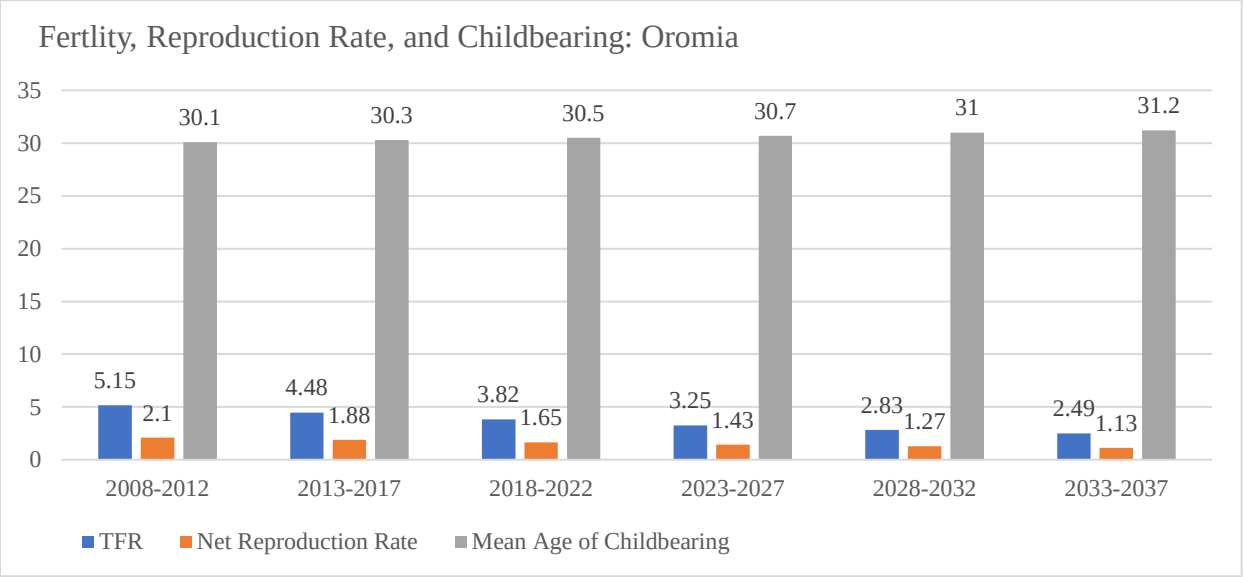
infant mortality rate from 97 per 1000 children in 2003/4 to 43.3 per 1000 children in 2019/20. Though there was a slight increment to 47 per 1000 children in the 2020/21 fiscal year.

The number of births in a country depends on the average number of births per woman of childbearing age and the number of women in this age range. If the number of women of childbearing age is increasing, the number of births can increase even if the number of births per woman is decreasing–a phenomenon termed as "population momentum." The age of childbearing in the region has been 30.1 years on average from 2008 to 2012 and will be about 31.2 years on average between 2032 and 2037. The total fertility rate (TFR), is the average number of lifetime births per woman (or more precisely, the number of births a woman would have in her lifetime if at each age she experienced the age-specific fertility rates of that year), is a measure of fertility that is not affected by the number of women of childbearing age in the population. The TFR (Total Fertility Rate) is thus considered a better measure than CBR for comparing fertility levels between countries or time periods. The data obtained from CSA (2007) depicted that the fertility rate of Oromia National Regional State was about 5.15 between 2008 and 2012 and will decline to 2.49 between 2033 and 2037 (see Figure 4.9 (a)).

During the demographic transition, sharp declines in fertility lead to substantial changes in a population's age structure. Smaller birth cohorts decrease, youth dependency ratios, and mechanically increase output per capita if output per worker and the labor force participation rate of the working-age population remain unchanged. This generates a demographic dividend. In developing societies mortality rates decline followed by a fall in fertility rates, inducing a change in the age structure. As a result of declining population growth, there is a bulge in the working-age population and a shrinking dependent population that can allow for faster rates of economic growth when combined with effective policies and markets.

4.2.4 Reproduction rate and Age of Child Bearing

Figure 4.12: - Age of Child Bearing and Reproduction rate



Source: - Reproduced from CSA, 2007

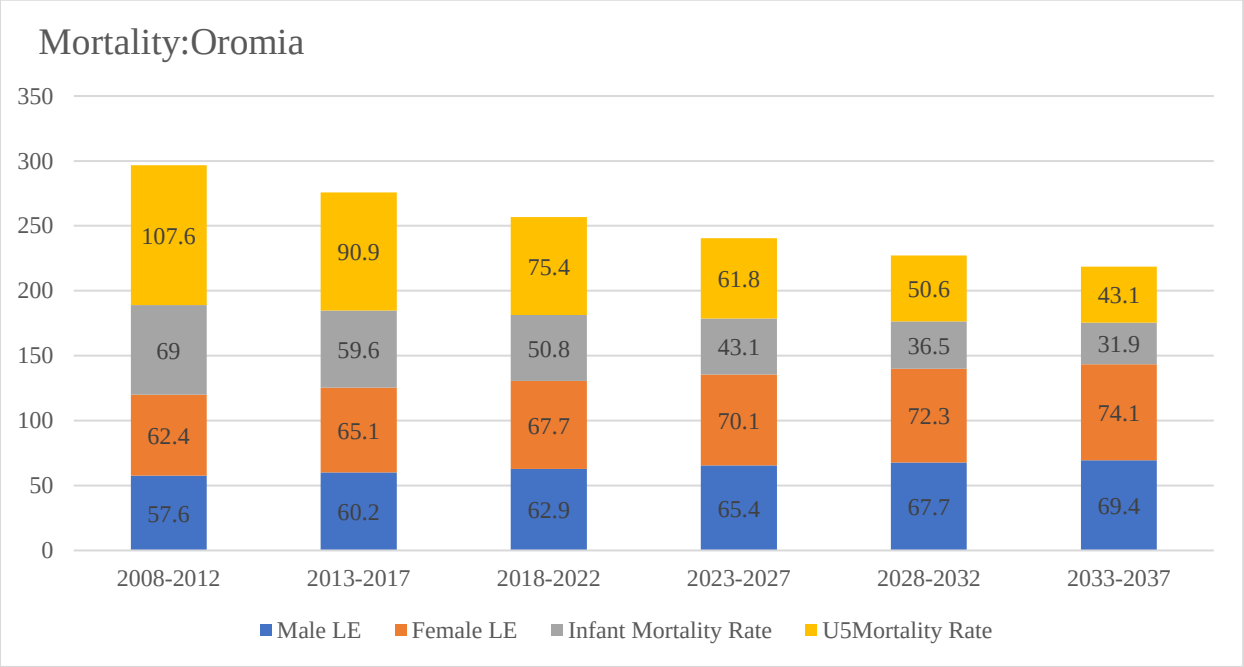
Numerous provisions in the Oromia regional legal framework protect women's rights and promote gender equality. Gender equality activities, such as increasing women's economic empowerment and girls' education, are included in Oromia's sectoral policies. Nonetheless, there are serious concerns about gender equality in the region. Oromia Regional State, like the rest of Ethiopia, has a patriarchal society in which men wield major influence in both private and public life. This social structure shapes cultural norms, customs, and traditions, and it has ingrained gender stereotypes about women's and men's roles and duties in the household and in society. Women and girls have long carried out their household tasks, which are frequently regarded as inferior. Because women and girls are labeled as nurturers and caregivers, childcare responsibilities frequently fall solely on their shoulders.

According to the 2016 EDHS, in Oromia, 35% of women (aged 15-49) decide on their first marriage on their own, whereas 61% of women say their parents decide on their first marriage. Both rates match the national average (EDHS, 2016). There is an alarmingly high rate of girls/women dropping out of school after marriage, as well as a high prevalence of underage marriage. In Oromia, 84 percent of women (aged 15 to 49) drop out, the highest rate in the country. Only 27% of females who were enrolled in school at the time of their marriage remained enrolled one year later (Gage, 2009). When asked why they dropped out of school, 71 percent of women

(one of the highest percentages in the country) said they were too occupied with family life. In comparison to other regions, the percentage of girls (ages 15-19) who had begun childbearing was 17 percent. This comparatively high percentage corresponds to a low rate of married Oromo women utilizing contemporary contraceptive methods (29%) compared to a national average of 36%) (Ibid). Another reason women dropped out of school was because their partners refused to allow them to finish their education (19%) (Ibid).

4.2.5 Mortality Rate: Oromia National Regional State

Figure 4.13: - Mortality Rate



Source: - Reproduced from CSA, 2007

The data obtained from CSA (2007), shows that infant mortality rate of the region has been declining since 2008 which was 69 per 1000 children; the rate of child mortality will decline to 32 per 1000 live children by 2037. Under five mortality of the Oromia regional state has significantly declined since 2008 (107.6 children per 1000) to 43 under five children per 1000 lives by the end of 2037.

This interpretation of the mortality-fertility constructive collaboration is founded on two extremely general concepts of historical reality that Omran and Notestein share with many other historians. For one thing, historians have never known of a society in which fertility was high and mortality was low, or mortality was high, and fertility was low, except in times of epidemic or economic or

political stress, for brief periods of time, or among specific historical sub-populations (Wilson, T. W., & Grim, C. E., 1991). In most cases, mortality and fertility have ended up adjusting to each other efficiently to maintain reasonable rates of population expansion. Furthermore, during the demographic transition, elevated levels of fertility and death were replaced by moderate levels. A drop in mortality, with more children living beyond infancy, would have been the initial catalyst for the transition. Faced with this fact, families made the option to prioritize individual liberty over group expectations, resulting in reduced reproduction. People's willingness to embrace new techniques when confronted with new realities was influenced by the entire backdrop of social, economic, and cultural modernization, but the point of departure would appear to have been an incipient mortality transition. Prior to the nineteenth century, population growth rates were low. Within that framework, no matter how much society modernized, how literate women were, or what faith a person held, it made little sense to limit completed family size. The only element that might change this reproductive equation (strategy) was mortality, which could and did vary regardless of family tactics or couples' preferences. It is difficult to conceive of the demographic shift, especially in its initial stages, without some form of change in mortality. However, empirical study findings on this topic have frequently been unclear and conflicting. According to Francine van de Walle declared "At the end of this quest, we cannot report that the historical evidence confirms that declines in infant mortality led to declines in fertility" (van de Walk, F. (2017); Knodel discovered, spousal fertility dropped before child mortality, and that mortality levels were only very marginally connected to fertility in most situations (John E. Knodel, 1974). 'It is difficult to argue that the decline in infant mortality was one of the variables that contributed to the beginning of the marital fertility transition in Belgium' (Daelemans, F., 1981). Similar circumstances appear to have prevailed in Italy and Portugal (Massimo Livi-Bacci, 1971).

Unless the spouse dies, overall mortality should have only a minor and indirect effect on fertility within the marriage. The impact of mortality will be greatest during the earliest years of life since it limits the number of children who survive past the most perilous years of their lives. Childhood mortality could affect fertility in three ways, one directly and the other two through rational choice. Early and foremost, the death of a child during the early months of life could not help but have a fertility-boosting effect, because infant deaths ended breastfeeding and left mothers without its fecundity-inhibiting benefits (Jeroen K. van Ginneken, 1978). However, it is uncertain how strong this effect might be and how long it takes to manifest. The '**replacement effect'** is thought to be a

second approach for families to compensate for higher-than-expected mortality (Vallin, J., & Lery, A., 1978). There is a concerted effort here to replace a lost child to fulfill the target number of surviving children. This influence was highly unlikely to be particularly substantial in 'natural fertility' regimes, owing to large and fluctuating levels of childhood mortality, which provided little room for choice. However, when mortality decreased and became steadier, and fertility began to be managed, this process may have grown more significant. Any replacement impacts should be obvious in the years following the death of a child. The third method that childhood mortality influences fertility is through rational choice. It is like the replacement effect but works in the opposite direction. Parents have always had specific reproductive goals in mind and were aware of too many or too few children (Reher, D., 1995). Their ability or desire to act on reproductive outcomes was severely limited in pre-transitional mortality regimes. However, when juvenile mortality fell significantly, more parents began to have 'too many' surviving children. By the time they learned this, their two alternatives for directly reproducing were to limit the number of pregnancies they would have or to halt them entirely. This kind of awareness appears to have motivated the parity-specific sorts of fertility limitation that appear to have been so prevalent in Europe during the demographic transition (Coale, A. J., 2017). However, this effect occurred after a significant lag. In other words, a mother could not be assured she would have many surviving children until a certain number of them (say, three or four) survived early childhood. In other words, a mother could not be assured she would have many surviving children until a certain number of them (say, three or four) survived early childhood. The reproductive period at the time, any fertility control took the form of parity-specific limiting or discontinuation. Childhood mortality was not uniform, responded differently to diverse risk contexts, and interacted differently with fertility.

According to the mortality experience of several European countries in the late nineteenth century, mortality between one and four years comprised between 22 and 45 percent of all deaths of children under five (Reher, D.,1995). Using just the mortality of children under the age of five is risky because it only contains a portion of the picture (Matthiessen, P. C., & McCann, J. C, 1977). Furthermore, there are grounds to infer that the onset and rate of mortality drop for babies differed significantly from child mortality (Eloke, I. E., 1999). Child mortality appears to have been the first to shift, followed by infant mortality often two or three decade later (Galloway, P. R., Hammel, E. A., & Lee, R. D., 1994). Once the fall began, child mortality fell faster everywhere,

resulting in a progressively younger age structure of childhood death over the duration of the epidemiological shift. Children's mortality (aged one to four years) was not always the result of the same disease environment as neonatal mortality. The main distinction here is that newborns frequently died of congenital or birth problems, and in most cases, lactation limited their exposure to food-related diseases. Older children and infants above the age of six months, on the other hand, were more vulnerable to infections such as measles or smallpox, as well as digestive system ailments associated with the entire teething and weaning process. Newborn mortality reductions were significantly associated with newborn feeding and care practices, as well as the nutritional health of both the mother and the child. This was not always the case with older children, where environmental issues were more prevalent. The factors that contributed to the drop in infant mortality were comparable but not identical to those that contributed to the decline in child mortality, and there is no reason to expect the declines to be equal in timing or intensity. While considerable work remains to be done to understand different risky environments during childhood, the historical record provides ample evidence that the process of decline itself was not universal.

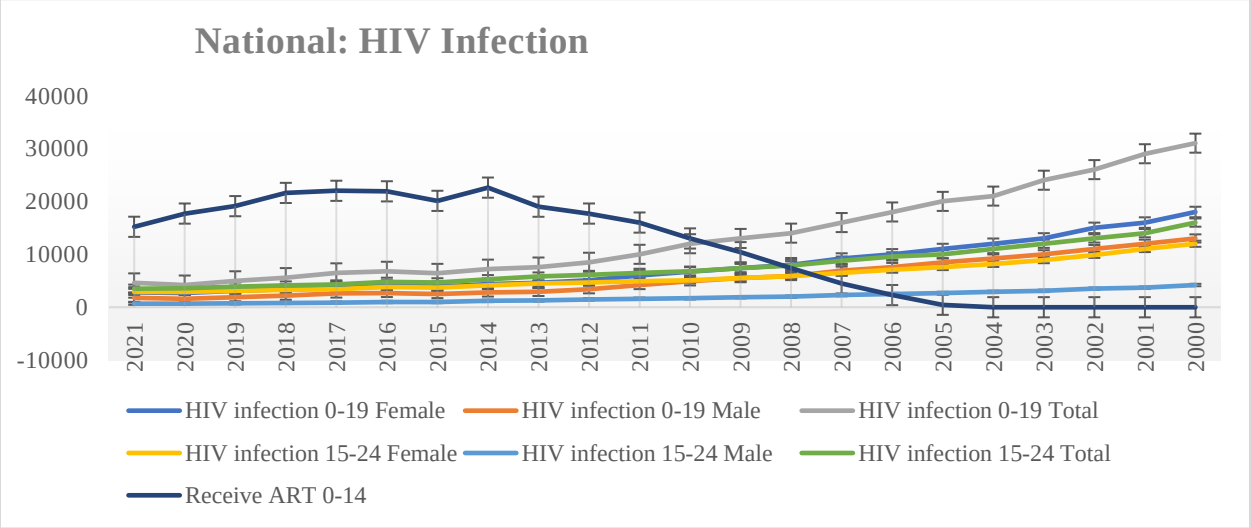
4.2.6 HIV Infection Prevalence

Human immunodeficiency virus (HIV) infection continues to be the primary cause of illness and mortality worldwide (UNAIDS, 2017). Gender inequality and inequity have exacerbated the epidemic, resulting in violations of women's reproductive rights (UNAIDS, 2017; Wang H, Wolock TM. et al., 2015). Unequal power relations, sexual coercion, and violence are common experiences for women of all ages, and they have a variety of detrimental impacts on female sexual, physical, and mental health, predisposing to HIV infection. HIV/AIDS infection demonstrates the destructive repercussions of gender discrimination on human health and the socioeconomic structure of society (UNAIDS, 2017, 2012).

Globally, an estimated 36.7 million individuals were living with HIV by the end of 2016, with women accounting for 17.8 million (51.6% of adults) (UNAIDS, 2017; Joint United Nations Program on HIV/AIDS, 2017). The difference in the number of new HIV infections between men and women is more prominent at younger ages, with new infections among young women (aged 15-24 years) being 44% higher than among males in the same age group (Wang H, Wolock TM., et al., 2015; UNAIDS, 2017). Women accounted for the majority of the 1.8 million new HIV

infections and 1 million AIDS-related deaths by the year (UNAIDS, 2017; Joint United Nations Program on HIVAIDS, 2017).

Figure 4.14: - Prevalence of HIV-AIDS Infection



Source: - Reproduced from UNICEF, 2023

The national HIV infection data obtained from Unicef (March 2023) showed that the youth age group (15-24) males infected with HIV significantly declined between the 2000 and 2021 fiscal year, from 4200 in 2000 to 680 in 2021. Despite this, the same trend works for female counterparts which declined from 12,000 in 2000 to 3500 in 2021. However, the data dictum that the prevalence of HIV among youth (15-24) years and females is three-fold higher than their male counterparts. In addition, the prevalence of HIV infection between ages 0-19 has declined substantially from 2000 (which was 31,000) to 2021 (accounted for 4600). However, the prevalence of HIV among females aged 0-19 was higher than their male counterparts.

The study by Gelaw B, Dessalegn L., et al. (2022), revealed that the highest prevalence of HIV treatment failure was observed in Addis Ababa, 15.92 followed by Oromia region, 14.47 whereas the lowest prevalence was identified in SNNPR with a prevalence of 3.03. A study done by Girum T, Wasie A, Lentiro K. et al., (2018), dictum that in 2016, there were 710,000 (570,000- 880,000) HIV-positive persons in the general population. Of them, 91.5% (650,000 cases) were among adults aged 15 and up. Adult females were responsible for 400,000 (61.5%) of the 650,000 adult HIV cases. Adolescent females (ages 10-19) and young women (ages 15-24) accounted for 52.3% of the 67,000 cases and 57.5% of the 87,000 cases, respectively. The overall prevalence of

HIV/AIDS is 1.1% (0.8-1.3%) among all persons aged 15-49, with men having a prevalence of 0.8% (0.6-1%) and women having a prevalence of 1.3% (1-1.7%).

The same study depicted that there were 26,000 (17,000-36,000) new infections among adults (15+) in 2016. Adult women accounted for 61.5% of the incidence in this age group. Similarly, women accounted for 2000 of the 2700 (1000-5600) new cases among teenagers and 6000 of the 8700 new cases among young people. Specifically, women accounted for 74% of new infections among adolescents and 68% of new infections among young people. This implies not only women are affected by HIV prevalence but also most affected are adult or economically active age group (15 plus) which endanger demographic transition in the country and regional government as well.

The annual number of HIV cases (total prevalent cases) among adults (age 15+) has increased significantly in the first decade since 1990. During that time, the number of HIV cases among women and male adults increased by 24 and 20% per year, respectively. In the second decade, when HIV rates began to fall sharply, there was a 41.5% drop in female cases from a peak of 650,000 in 1999 to a low of 380,000 in 2010 and a 41% drop in male cases from a peak of 390,000 to 230,000 in the same year. HIV prevalence in women and men fell by 72.4 and 71.5%, respectively, from a peak of 4.7 and 2.8% in 1998. However, after decades of remarkable decline, the number of HIV cases has begun to rise again, by 5% among adult women (age 15+) and 8.7% among adult men (age 15+) since 2010. The number of new infections (number of incident cases) also doubled in 8 years, from 7500 instances in 2008 to 16,000 in 2016, and from 4700 to 10,000 in women and males, respectively.

The "feminization" of the HIV pandemic is especially visible in Sub-Saharan Africa, which had 76% of all HIV-infected people, 76% of all new HIV infections, and 75% of all HIV/AIDS-related fatalities in 2015 (UNAIDS, 2017; Wang H, Wolock TM. et al., 2015). Women continue to face an unacceptably substantial risk of HIV infection in such high-prevalence areas. Women make up 56% of the overall number of HIV-positive people (6.1 million) in Western and Central Africa, and 59% of the 19.4 million HIV-positive people in Eastern and Southern Africa (UNAIDS, 2017).

The global HIV/AIDS epidemic is impacting more women than males, and the number of women living with the infection outnumbers men by a sizable proportion (Wang H, Wolock TM, Carter A, Nguyen G., et al., 2016 United Nations Joint Program on HIV/AIDS (UNAIDS)). In many communities, women and girls are among the most vulnerable groups to HIV infection (UNAIDS,

2017, Joint United Nations Program on HIV/AIDS (UNAIDS), Sanders R., 2010). The increased vulnerability to virus acquisition, combined with limited access to treatment and care, increases the risk of mortality in women. Thus, socioeconomic, cultural, and biological factors increase women's vulnerability and limit access to HIV care (Madkan VK, Giancola AA., et al., 2006, Jonathan M., 2001, Beegle K, Ozler B., 2007; Bandali S., 2011).

Despite the fact that the Ethiopian national HIV prevention and treatment program has made significant progress in addressing the HIV epidemic and preventing many more new infections and AIDS-related deaths through early diagnosis, treatment, and care, HIV remains a public health problem in the country, and the number of people receiving care is lower than expected (Ethiopian Public Health Institute, 2017; Federal HIV/AIDS Prevention and Control Office, 2013). Furthermore, the gender disparity in the epidemiological trend of HIV infection and treatment is a major concern (FDRE, 2014; Sanders R., 2010).

In Ethiopia, where HIV is characterized by a low-intensity mixed pandemic and self-sustaining transmission, women account for 433,763 of the projected 718,500 HIV cases in 2016 (representing 60% of all HIV infections) (Ethiopian Public Health Institute, 2017). Similarly, females accounted for 58% of new infections and 57% of AIDS-related deaths (Ibid). It is also proven that women bear a greater disease burden (UNAIDS, 2017; Ethiopian Public Health Institute, 2017; Sanders R., 2010). Ethiopia established its ART program in 2003, and a free ART service was provided in 2005 in accordance with WHO (World Health Organization) guidelines (Ethiopian Public Health Institute, 2017; FDRE, 2014).

Aside from accounting for 51% of the national population, adult females accounted for 61.5% of HIV cases among adults aged 15 and up (Ethiopian public health institute, 2017; UNAIDS, 2017). Global AIDS surveillance in 2017-UNAIDS database, 2017). Adolescent females (ages 10-19) and young women (ages 15-24) accounted for 52.3 and 57.5% of cases, respectively (Ethiopian Public Health Institute, 2017, WHO, 2016). Adult women have a 1.62 times higher HIV/AIDS prevalence rate than men (WHO, 2016, UNAIDS). Global AIDS surveillance in 2017). Similarly, adult women accounted for 61.5% of all adult incidence, 74% of new infections among adolescents, and 68% of new infections among young people (WHO, 2016; UNAIDS database, 2017; UNAIDS database, 2017).

The gender gap in Ethiopia is significantly greater than the world and regional averages. Women made up 51% of all adults living with HIV globally in 2015, with young women accounting for 60% of their age group (UNAIDS, 2015). The disparity was significantly worse among newly infected cases, accounting for 61.5% of new infections in Ethiopia (UNAIDS. Global AIDS monitoring, 2017). In the same year, women accounted for only 47% of new adult infections globally (UNAIDS), Global AIDS Surveillance, 2017, UNAIDS, 2015).

In addition, they account for a larger proportion of HIV cases (UNAIDS, 2017). Meanwhile, women have less access to care and treatment (Wang H, Wolock TM, et al., 2015; UNAIDS, 2012). Women's access to HIV care and treatment is hampered by the social and familial load they bear, as well as gender differences that are typical in most poor countries (UNAIDS, 2017; Nicastri E, Angeletti C, Palmisano L., 2003; Hawkins C, Chalamilla G, Okuma J, et al., 2011). Thus, differences in treatment access, time of presentation, biological differences in disease progression, and immunological response between men and women may impose a difference in disease progression, with women carrying the highest risk of AIDS-related complications (Sanders R., 2010; Hawkins C, Chalamilla G, Okuma J, et al., 2011).

In 2016, there were 18,000 AIDS-related fatalities among adults (aged 15 and up), accounting for 90% of the total 20,000 AIDS-related deaths among the general population. Adult women accounted for 61% (11,000) of all deaths. Adolescent females (ages 10-19) and young women (ages 15-24) accounted for 48% of the 2500 deaths and 50% of the 2400 deaths, respectively. In general, AIDS-related deaths in these age groups account for 27% of total AIDS-related deaths among adults of both sexes. Adult AIDS-related deaths peaked in 2004 with 75,000 deaths. Since then, it has significantly decreased in succeeding years, reaching 18,000 deaths in 2016, a 76% decrease from the highest documented AIDS-related death in the age group. In twelve years, the number of women dying from AIDS-related illnesses has decreased by 76%, from 46,000 in 2004 to 1100 in 2016. Males experienced a similar rate of drop, falling from a peak of 29,000 deaths to 7000 deaths during the same period. However, the rate of decline in AIDS-related mortality among adults has been consistent since 2012, with only a 1% decrease (Girum T, Wasie A, Lentiro K., et al., 2018).

A study by Lakew Y, Benedict S, et al. (2011) showed that those individuals who had attended primary education and secondary and higher education had 1.11 to 2.36 times higher odds to have

HIV infection compared with those who had no formal education. The probabilities of having HIV infection were higher among adults who had multiple lifetime sexual partners than individuals with only one-lifetime partner. Compared with adults in the age group of 45– 49 years, those adults in the age group of 15–19 years had fewer probabilities of having HIV infection. However, adults in the age groups of 25–29, 30–34, and 35–39 years were more likely to have HIV infection compared with adults in the age group of 45–49 years (1.15 to 2.52 times higher), (1.32 to 2.91times higher) and (1.42 to 3.07), respectively.

This reveals that the presence of HIV among the economically active or producing age group exacerbates the excessive dependence ratio burden imposed by the dependent age group. This will impact the demographic transition and postpone the ability of regional and national governments to reap the economic benefits of the demographic dividend. Between 2008 and 2037, the average dependency ratio of young people in economically productive age groups is 77.3 per 100 working men and women. In 2008, the highest young age dependency was 92.7, and by 2037, the minimum will be 47 young dependents for every 100 working men and women (see Figure 4.6). As a result, young dependency was and will be higher in rural areas of the region than in urban areas; in rural areas of Oromia National Regional State, 98.8 young people were dependent on every 100 working men and women in 2008, and 58 young dependent by the end of 2027, whereas in urban areas, the maximum young dependent was 59 in 2008, and a minimum of 31.8 dependents on every 100 productive age group in 2037 (See figure 4.6).

The same study also dictums that among the occupational categories, daily laborers had statistically substantially lower odds of having HIV infection compared with non-working individuals (0.35 to 0.87 times higher) (0.35 to 0.87 times higher). However, merchants had higher odds of having HIV infection compared with those individuals who were not-working (1.30 to 2.43 times higher) (1.30 to 2.43 times higher). The odds of having HIV infection among females were higher compared with male counterparts (1.44 to 2.63 times higher than males) (1.44 to 2.63 times higher than males). This implies that economically active and engaged in productive economic activities are less susceptible to HIV infection than adults less involved in economic activities. Thus, employment opportunities among the adult population not only fillip economic growth but also vulnerability to HIV infection also will decline. In addition, the spread of HIV among the merchant community also exerts a negative impact on the economy.

The highest prevalence of HIV was found in the Gambela region which could be attributed to the higher prevalence of traditional practices such as polygamy and levirate marriage (Molla A, Gelaw B., et al, 2013). It could also be explained by male circumcision being least practiced though it has proved protective effect on HIV infection (Halperin DT, Bailey RC., 1999; Szabo R, Short RV., 2000). The case of Addis (Finfinne) is different and one of the reasons is the city contains a large segment of commercial sex workers of several types (Family Health International, 2002). Furthermore, the city is a rapidly growing city that attracts diverse types of tourists which, in turn, may contribute to the HIV epidemic. Evidence showed that tourism has an effect on addictive substances and drug use Guilamo-Ramos V, Lee JJ., et al., (2015), and it is associated with higher odds of HIV infection (Vlahov D, Robertson AM., et al., 2010). The geographic proximity and the in-and-out of commuters also make Oromia's surrounding towns vulnerable.

Furthermore, transgenerational and transactional sexual practices are very common in places of Dukem and Bishoftu towns which are found nearby Finfinne (Melkamu Y., 2007). Dire Dawa administrative city also has a high prevalence of HIV which could be attributed to the fact that the town has been serving as a rest center for truck drivers from Djibouti port. A population group that has higher than average HIV prevalence when compared with the general population is labeled as the most at-risk population (MARPs). Accordingly in this study, those occupational groups including merchants, mobile workers, service workers, and construction and engineering workers might be additional MARPs in addition to the previously described populations in Ethiopia. All these workers are working and crossing through Oromia, and this makes the region highly susceptible.

4.2.6.1 HIV and demography interaction

Meekers and Calves (1997) identified union formation and childbirth as key demographic events in the family and household life cycle (van Imhoff, Kuijsten, Hooimeijer, & van Wissen, 1995). The effects of HIV and AIDS are expected to have the following effects: (a) union formation (age at marriage or first cohabiting union, union, and subsequent re-marriage/partnering); (b) union instability (widowhood, divorce, or separation); and (c) fertility (fecundity, fertility decisions, and widowhood). Understanding the complicated interrelationships between HIV and AIDS and these demographic processes, however, is made more challenging in many parts of Sub-Saharan Africa, where fertility and marriage decreases were already underway prior to the onset of the HIV epidemic (Locoh, 1988).

Early HIV pandemic qualitative research in Uganda and Tanzania revealed that young people may be delaying marriage, undergoing HIV testing before marriage, or remaining unmarried due to HIV worries (Lugalla et al., 2004; Mukiza-Gapere & Ntozi, 1995; Ntozi, 1997). However, while subsequent empirical studies have examined the relationship between marital status and HIV risk trajectories (Boerma, Gregson, Nyamukapa, & Urassa, 2003; Mermin et al., 2008), no studies have examined the relationship between HIV and AIDS attitudes and experiences and delayed age at first marriage or remaining unmarried. In contrast, there is considerable evidence that HIV and AIDS increase the probability of union instability, such as divorce and separation, and widowhood (Boerma et al., 2002; Floyd et al., 2008). A longitudinal study of married couples in rural Malawi found that the proportion of widowhood was three times higher among partners of HIV-positive men and women than among partners of HIV-negative people (Floyd et al., 2008).

There are conflicting study implications of HIV prevalence on demography. Researchers expected that women and men at considerable risk of HIV infection would prefer to accelerate childbearing to satisfy their fertility objectives (Gregson, 1994; Temmerman et al., 1994). However, empirical data on HIV and fertility trends do not support this. Instead, HIV has been shown to reduce fertility in HIV-infected people, and to a lesser extent in the general population in high-prevalence countries (Heuveline, 2004). Many factors have been shown to contribute to reduced fertility in HIV-infected people, including biological effects on the fecundity of HIV-infected women (Ahdieh, 2001; Gregson, Zhuwau, Anderson, & Chandiwana, 1997; Ronsmans & Graham, 2006; van Leeuwen et al., 2007; Zaba & Gregson, 1998); and the indirect effects of reduced sexual activity and new partners. Lewis, Ronsmans, Ezeh, and Gregson (2004) discovered that fertility was lower among HIV-infected women than HIV-uninfected women, apart from those aged 15 to 19. The pressure of sexual debut on pregnancy and HIV infection resulted in greater fertility rates among HIV-infected women (Lewis et al., 2004).

HIV and AIDS are thought to increase the risk of household dissolution and migration via several pathways, including (a) adult death (death of the last adult member or death of a household head, main income earner, and primary caregiver); (b) economic vulnerability due to increased costs/reduced income (household members disperse either through migration or joining other households); and (c) widowhood and survival (surviving partner joins another household).

To study the impact of HIV and AIDS on household breakup and migration, longitudinal data are required (Hosegood et al., 2007b; Booysen & Arntz, 2003). Hosegood, McGrath, Herbst, and Timaeus (2004) and Urassa et al. (2001) found comparable results using demographic surveillance data in two high HIV prevalence communities in Tanzania and South Africa. They discovered no link between the risk of household breakup and whether a prime-aged adult's cause of death was AIDS or non-AIDS. However, households that had multiple adult deaths in the previous two years were more likely to dissolve. In Tanzania, household breakup dramatically increased if a male family head died, particularly a younger head (60 years) (Urassa et al., 2001).

4.2.6.2 HIV Infection and ART (Antiretroviral Treatment): 0-19 year average

Acquired immune deficiency syndrome (AIDS) is a viral disease caused by the human immunodeficiency virus (HIV) that weakens the immune system and makes the body susceptible to opportunistic infections (Kliegman SG, Blum, et al., 2020). The Human Immunodeficiency Virus (HIV) pandemic affects many parts of the world population (Cohen MS, Hellmann N., et al., 2008). In 2018, approximately 37.9 million people were living with HIV worldwide. Of these, around 1.8 million were children (age <15 years) (UNAIDS, Global HIV and AIDs Statistics, 2019). In Ethiopia, 56,514 children were living with HIV in 2018 (Addis Ababa HIV projections, 2018). This year, 23.3 million HIV-positive people were gaining access to antiretroviral therapy (ART) globally (WHO, 2019).

The magnitude of HIV prevalence between the age of 0-19 has also declined since 2000; the data stipulated in the figure (see figure 4.14) depicted that there was a flat decline in the incidence of HIV among young dependents aged 0-19 from 31,000 in 2000 fiscal year to about 4600 in 2021. However, access to ART (antiretroviral) treatment among the young dependent age group was zero in 2000 even though the prevalence was 31,000 including the age group of 15-19 years average. The number of young dependents (0-14) who received ART treatment in the 2014 fiscal year was the highest, which was 22,600.

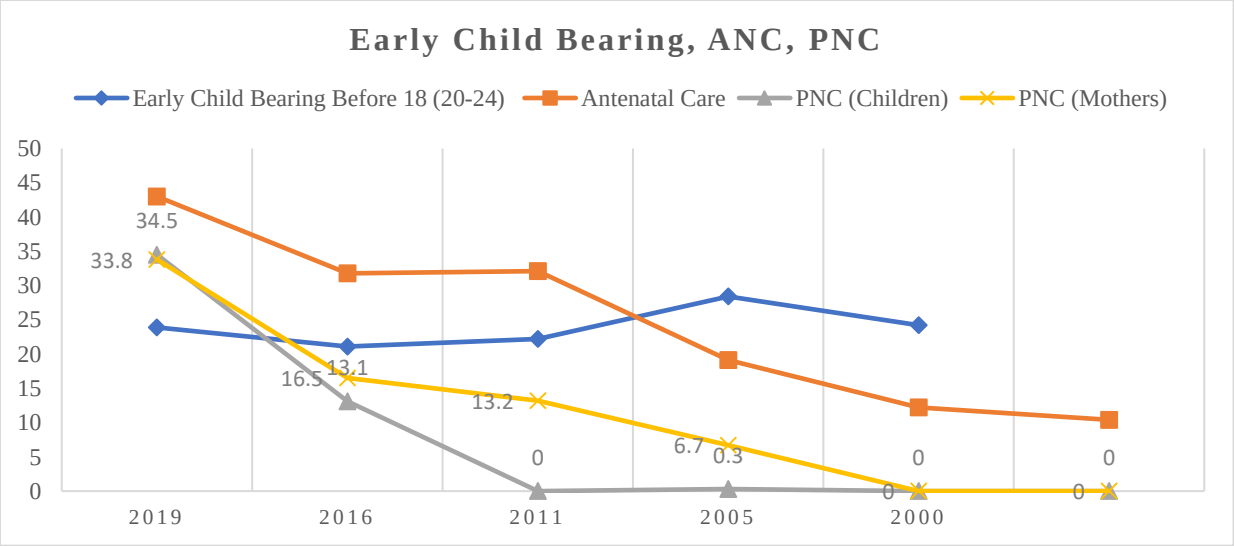
Antiretroviral therapy (ART) is crucial to decrease the progress of HIV/AIDS by suppressing viral replication which in turn reestablishes the immune function of HIV-infected individuals (Ministry of Health, 2014; Global Health Monitoring, 2017). In addition, ART can minimize the risk of HIV transmission (Granich R, Crowley S., et al., 2010; Hull MW, Montaner JS, 2013). However, maintaining long-term adherence levels, viral load suppression, and prevention of treatment failure

(TF) remains a serious challenge for HIV-infected children (Judd A, Lodwick R., et al., 2016). Even if ART is not curative medicine, it reduces the risk of HIV-associated morbidity and mortality (Quinn TC., 2008).

HIV-positive children with poor ART adherence levels were more likely to experience treatment failure. After ART is started for HIV-infected individuals, it should take for life long without any interruption. If the drug is not taken daily, on time, and regularly, patients are at higher risk of drug resistance to viral strain. It is widely agreed that good ART adherence has a positive impact on the suppression of viral replication and improves clinical as well as immunological outcomes which in turn helps to minimize the risk of HIV drug resistance (Endalamaw A, Tezera N., et al., 2018). Approximately 11.3% of HIV-positive children have poor ART adherence levels which are continued to be a devastating clinical challenge in Ethiopia (Okoye AA., Picker LJ., 2013).

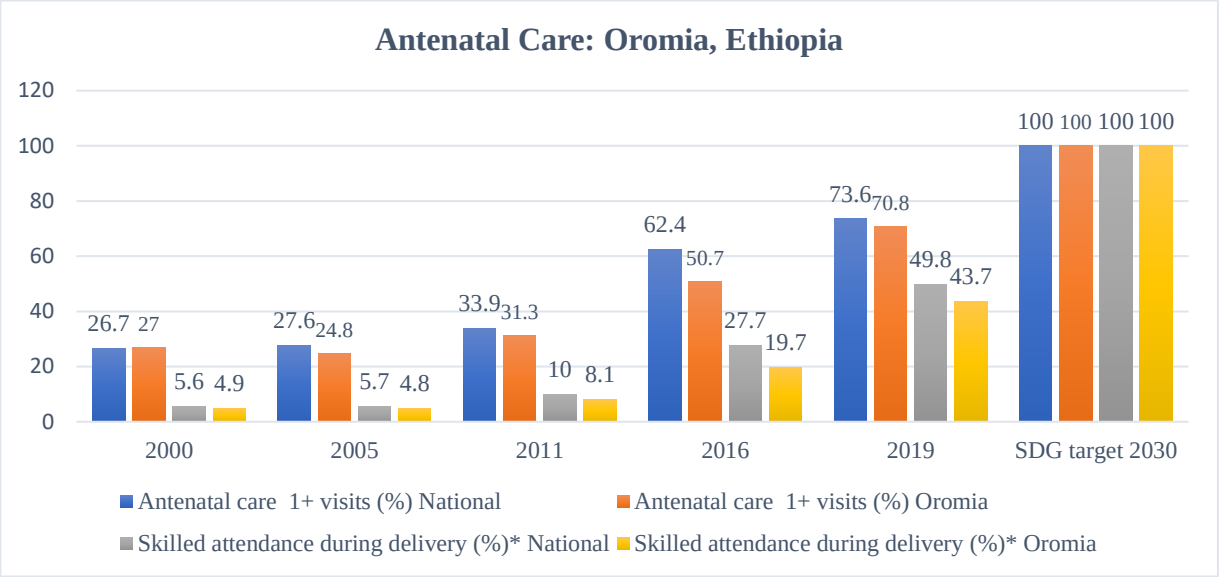
4.2.7 Early Child-Bearing and Maternal Care

4.15: (a). - Child Bearing and Maternal Care



Source: - Reproduced from UNICEF, 2023

Figure 4.15: (b).



Source: - Reproduced from EDHS, 2016

The maternal health care services a mother receives during her pregnancy and at the time of delivery are important for the mother and her child's well-being. Antenatal care (ANC) is an essential component of maternal and child health services. Pregnancy-related complications are a leading cause of death among women in their reproductive ages in developing countries. Proper antenatal care check-ups and delivery under safe and hygienic conditions can significantly lessen the risk of maternal morbidity and mortality and neonatal deaths. The importance of maternal health services in reducing maternal and infant morbidity and mortality has been emphasized in a number of studies (Ebrahim G., 1982; Rosenfield A, Maine D., 1985; Herz B, Measham A., 1987).

According to the data shown in Figure 4.15 (a) the percentage of women between the ages of 20 and 24 who had children before the age of 18 fell from 24% to 21% over a 16-year period, implying that there was no significant improvement in postponing childbearing to later in life. The region's average childbearing age was and will be 31 years (CSA, 2007) (see Figure 4.15a and b).

As the figure showed, the percentage of antenatal care with more than one visit to a health professional was 26.7 percent and 27 percent in 2000 for the national and Oromia regional governments, respectively. The percentage of Oromia regional government antenatal care was slightly greater than the percentage of the national government. However, since 2005 and in subsequent fiscal year (2011, 2016, and 2019) the percentage was higher for the national

government in comparison to Oromia's percentage of antenatal care. The data obtained from EDHS depicted that the percentage of antenatal care for the national government was 27.6 percent in 2005, 33.9 in 2011, 62.4 in 2016, and 73.6 in 2019. Nonetheless, Oromia national regional state antenatal care was 24.8 in 2005, 31.3 in 2011, 50.7 in 2016, and 70.8 in 2019. The data show a decline in the percentage of visits between 2000 and 2005 from 27 percent to 24.8 percent in the Oromia region. However, there was a significant improvement between 2016 (50.7%) and 2019 (70.8%).

Studies suggest there is a substantial difference between the kind of family and ANC service attendance. Almost 55% of women in nuclear families received antenatal care, compared to 40.4% of women in joint families. Women in joint families, on the other hand, were more likely than women in single households to attend regular ANC services. As a mother's level of education rises, so does her use of antenatal care services. Women with higher education were twice as likely as women with little education to receive prenatal care. This suggests that contrary to the findings of (Simkhada et al., 2008), education is a determinant factor in the utilization of ANC services. Women with lesser education were more likely to attend irregular ANC services than those with higher education. As a result, educating women or girls increases the likelihood of maternal health desire.

Furthermore, a study conducted in Nepal discovered a statistically significant relationship between age at first pregnancy and utilization of ANC services. As the age of the first pregnancy rises, so do the odds of receiving ANC services. Women with low age at first pregnancy made up 16.7% of those receiving ANC services. When the age at first pregnancy was 31 years or older, the figure jumped to 85.7% (Pandey S, Karki S., 2014). Antenatal care is especially linked to birth order. Similarly, in this study, women with lower parity were more likely than women with higher parity to receive ANC services, which is consistent with the findings of other studies (Woldemicael G, Tenkorang EY., 2010; Bhatia JC, Cleland J., 1995; Simkhada B, Teijlingen ER. Et al., 2008; Obermeyer CM, Potter J., 1991).

The same survey depicted that, there was a considerable disparity in the use of antenatal care services between women in service and women in agriculture. 81% of women in the service sector received antenatal care, compared to 34.7% of women in agriculture. Women in waged labor and service were more likely than other occupations to attend regular ANC services, contrary to the

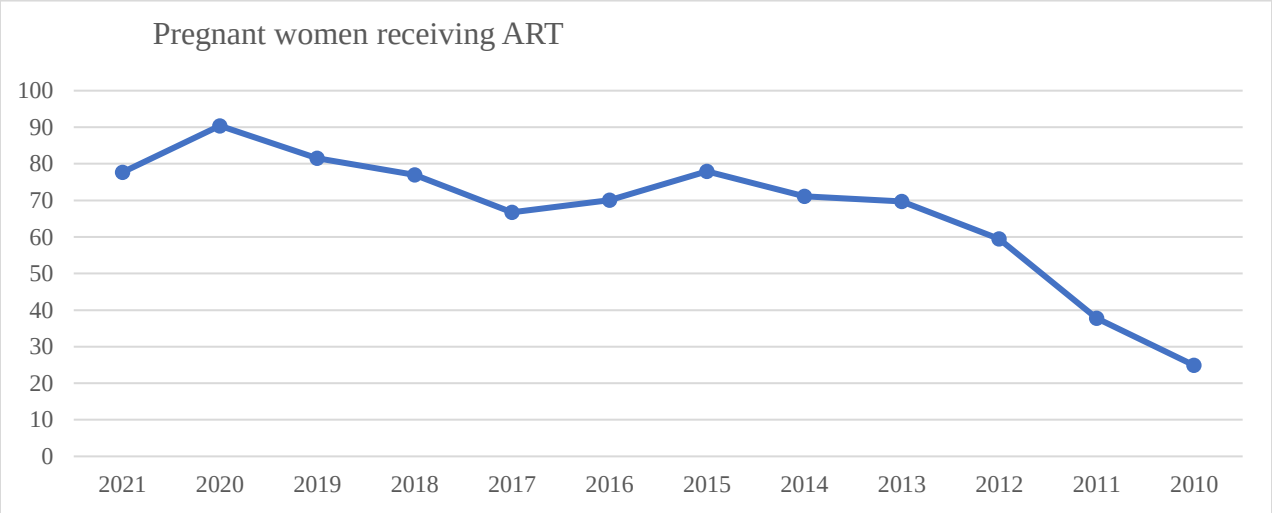
findings of Gubhaju (2001) and Gill et al. (2007). Like Islam et al. (2011) and Gebreselassie (2008), a significant association was observed in this study when looking at the percentage of women receiving ANC service based on their husband's occupations. Women from high-income families were three times more likely to receive ANC services than women from low-income families. Previous research has found that women with lower incomes attend fewer ANCs than those with higher incomes (Bhatia JC, Cleland J., 1995; Bloom SS, David W, Gupta MD., 2001; Navaneetham K, Dharmalingam A., 2002; Anwar A, Iqbal TM, Japhet K., et al., 2005; Onasoga OA, Afolayan JA., et al., 2012; Gill K, Pande R, Malhotra A. 2007; Hadi A, Gani MS., 2005).

In terms of the percentage of women who attended skilled delivery in 2000, the figures were 5.6 and 4.9 percent in the national and Oromia national regional states, respectively. Since then, the trends have risen to 49.8 and 43.7 percent at the national and Oromia national regional state levels, respectively. This graph illustrates that the amount of skilled delivery attendance delivery is greater at the national level than in the region. Furthermore, for two decades, the percentage of skilled attendants in Oromia's national regional state has been lower than the national percentage. The percentage of skilled attendant delivery for both national and regional government levels is striving to reach the SDG 2030 goal of 100%. Given the current percentage, achieving development goals will necessitate a significant commitment from actors.

4.2.8 ART treatment: Pregnant Women

In the globe, women account for half of those infected with HIV/AIDS, and pregnancy-related complications are the leading cause of death among women of reproductive age (UNAIDS, 2018). In 2016, an estimated 0.4 million women in Ethiopia were living with HIV, and 77% of pregnant women with known HIV status got antiretroviral therapy for the prevention of HIV mother-to-child transmission (PMTCT) (UNAIDS, 2014; WHO, 2019). Many HIV-positive individuals want to have children and need safer conception services to help them achieve their objectives while minimizing the risk of HIV transmission to partners and children (WHO, 2015).

Figure 4.16: - Antiretroviral Provision and Access



Source: - Reproduced from UNICEF, 2023

The ten years of data stipulated in Figure 4.16 shows the trend of antiretroviral (ART) treatment received by pregnant women from the 2010 fiscal year to 2021. The trend of national-level ART treatment provided increased from 24.9 percent in 2010 to 77.7 percent in 2021.

Most new HIV infections in children globally occur in children born to HIV-positive mothers, who contract the virus from their mothers. (Meseret Maru, S A., 2017). Women with HIV have numerous pregnancies not because of ineffective contraception, but because they want to have multiple children. However, HIV-infected women's desire to have children in the future has important implications for HIV transmission to sexual partners and newborns (Yoo Hyunsuk, L J, Yim Jae-Joon, et al., 2018; Calvert C, C R., 2013). When deciding whether to have children, HIV-positive people in Africa must consider extra factors. These include the risk of HIV transmission from mother to child and the chance that one or both parents will die before the child reaches adulthood (Tamil Kendall, Isabella D., 2014).

According to a study performed in Ethiopia, a considerable number of PLWHA want to have a child now or soon, and the number of children desired in the future ranges from 1 to 6 (Menberu G, Alemseged Fessehaye a, et al., 2010). Even though it is their right to have children, women on ART are prevented from becoming pregnant because giving birth to an HIV-positive mother may result in HIV-positive children. Maternal mortality due to HIV and pregnancy complications can be remarkably high if appropriate maternal care is not provided. When compared to no full-term

pregnancy, the risk of death from tuberculosis or AIDS rose 1.48-fold, 1.76-fold, and 1.59-fold, respectively (Maru Meseret, S A, Alemayehu Bekele, 2017; Hyunsuk Yoo JL, Yim Jae-Joon, et al., 2018). Pregnancy among HIV-positive women in Ethiopia was found to be 49.2 per 1000 person-years (Nancy Smee AKS, Stranix-Chibanda Lynda, et al., 2011).

HIV/AIDS, when combined with pregnancy, has an impact on the increase in the number of adult mortalities, which has increased the dependency ratio (the ratio of the dependent population under 15 years old to the working population); a higher ratio means that a worker has more people to support. The investment made in this age group's education and training would be lost. These fatalities also severely impact the afflicted families because the people dying are raising small children, resulting in many orphans.

AIDS also significantly influences baby and child mortality among children under five. Because most children who are infected by their mothers during pregnancy, childbirth, or breastfeeding develop AIDS and die before the age of five, the proportion of infected women has resulted in many cases of pediatric AIDS through mother-to-child transmission. According to UNAIDS (2002), AIDS has increased under-five mortality by 20-40% in Sub-Saharan Africa.

According to UNAIDS (2002), the average life expectancy in Sub-Saharan Africa is now 47 years, compared to 62 years before AIDS. One of the consequences of adult mortality is an increase in the number of orphans, which leads to an increase in the degree of fostering. According to UNAIDS (2002), the number of children aged 0-14 orphaned by AIDS in Sub-Saharan Africa in 2001 was 11 million. This will leave young dependents without parents and exert old dependents with unbearable burdens.

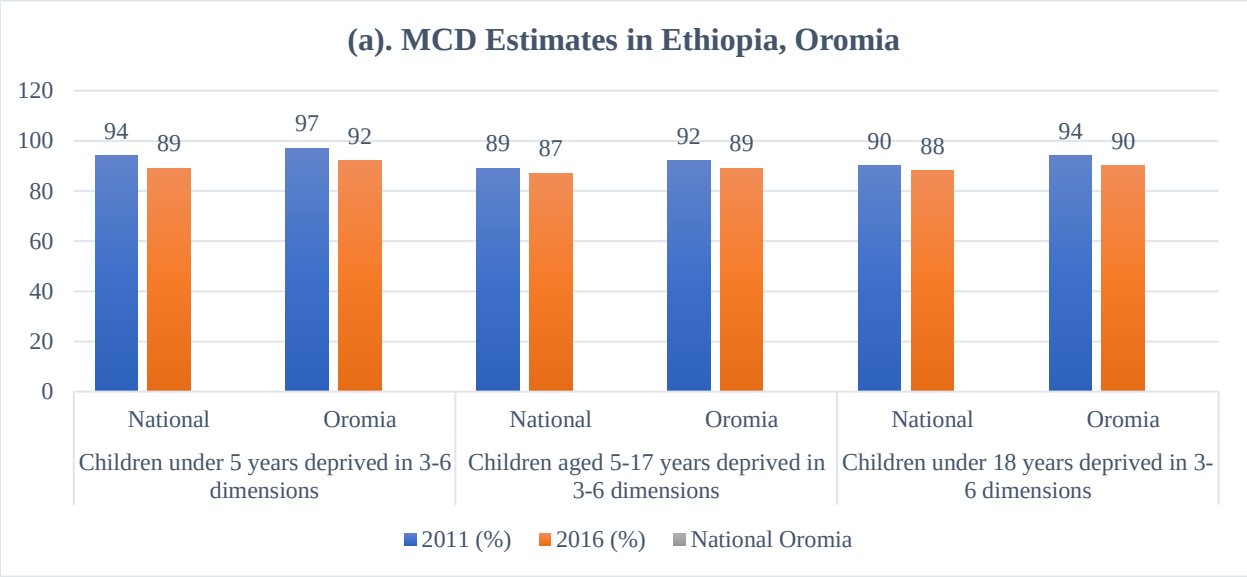
Fostering has always been one of the adaptive mechanisms used in the region to deal with disruptions caused by high adult mortality and other life uncertainties. The extended family system tends to ease the burden generated by the death of the household's breadwinner. Previously, in most cases, the children left behind were cared for by other relatives, often grandmothers, and this practice is still in place. Adolescents may oversee houses if both parents have died from AIDS. This scenario is expected to deteriorate since orphans who are left behind will have no grandparents to care for them. Children who are left behind may be forced to drop out of school or sell home assets or sex to support younger siblings, increasing their risk of HIV infection. This scenario is likely to deteriorate as the disease spreads.

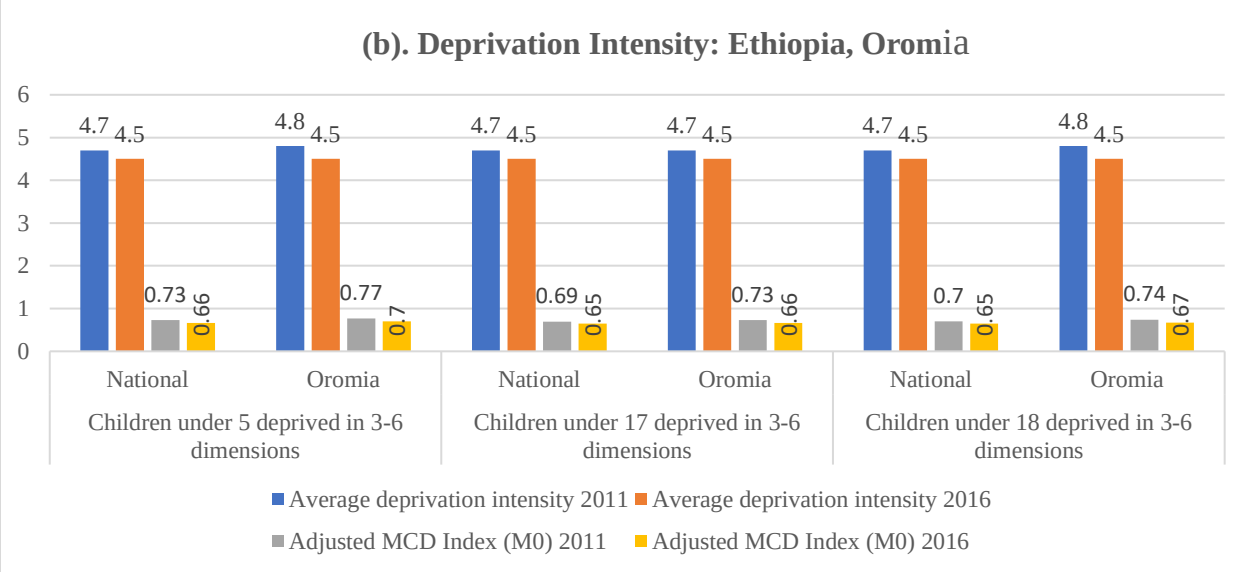
Furthermore, HIV can cause lower fertility in infected individuals, resulting in a reduction in fertility at the macro level. Fertility declines in HIV-infected women are caused by both behavioral (voluntary) and biological (involuntary) alterations. Voluntary fertility control includes postponing sexual activity and marrying at a later age, reducing sexual activity and remarriage, and increasing marital breakup. Involuntary fertility reduction comprises a lower pregnancy rate, an increase in abortions/fetal mortality, and an increase in widowhood. Individual women's fertility, on the other hand, may increase as couples consciously seek to enhance fertility in reaction to high mortality for fear of not living through the normal reproductive lifespan. They may also wish to replace deceased children or to generate many children to ensure that some survive the AIDS mortality rate, hence raising the average number of children per woman. However, many people at the national or regional level are unaware of their HIV status, making a reduction in fertility unlikely, especially in societies that value childbearing.

4.2.9 Multidimensional Child Deprivation

Oromia, like most other areas in Ethiopia, has a high rate of multidimensional child deprivation (MCD); 90 percent of children under the age of 18, or 15 million in absolute numbers, are deprived of an average of 4.5 essential needs, services, and rights (see Figure 4.17a). Because of the high MCD incidence, deprivation intensity, and big child population, Oromia contributes the most to Ethiopia's adjusted MCD index (M0), at 43 percent. The MCD rate among children under the age of five (92%) is higher than the national norm (89%), as is the rate among children aged five to seventeen. (89 percent compared to 87 percent, respectively). Between 2011 and 2016, the MCD rate fell slightly, from 94 percent to 90 percent, deprivation severity fell from 4.8 to 4.5 out of 6 dimensions, and the adjusted MCD index fell from 0.74 to 0.67 (see Figure 4.17b).

Figure 1.17: - Multidimensional Child Deprivation



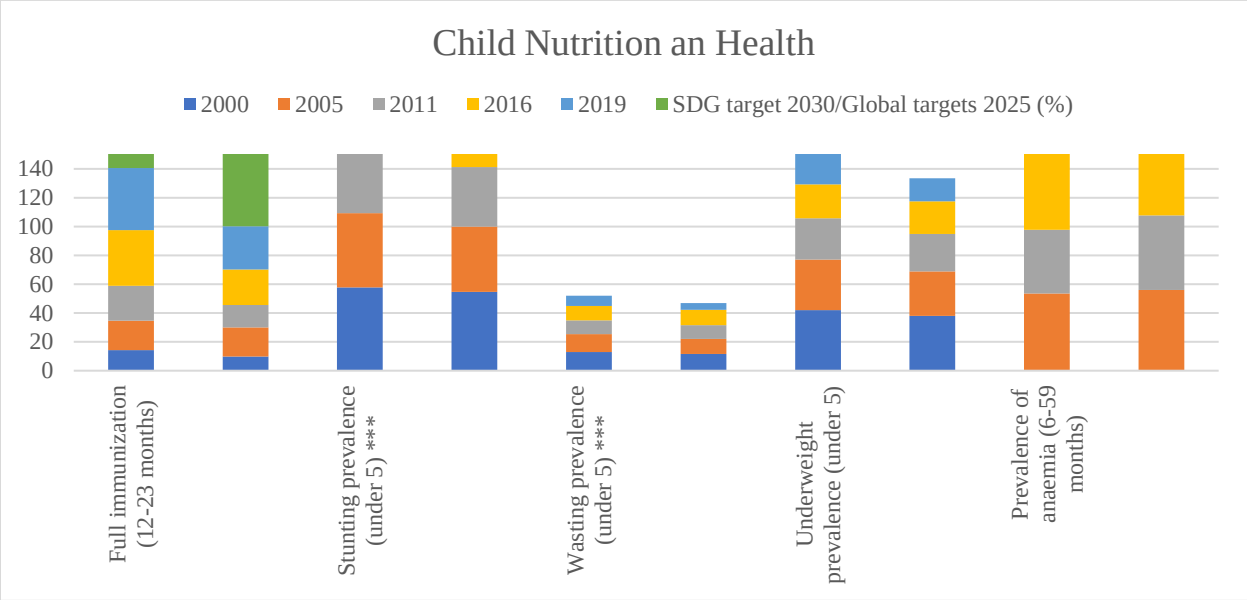


Source: CSA and UNICEF, MCD in Ethiopia, First National Estimates, 2018

Children in Oromia are more prone than the national norm to be deprived of basic needs and services. Analysis of deprivation count and distribution reveals that less than 1% of children under the age of 18 in Oromia are not deprived in any of the six categories of deprivation studied, while the national average is 1.3 percent. The disparity grows with the number of deprivations: 45 percent of minors under the age of 18 in Oromia are deficient in five to six dimensions, compared to 43 percent on average in Ethiopia (Figure 4.17b).

4.2.10 Child Nutrition and Health Indicators

Figure 4.18: - Child Nutrition and Health



Source: Ethiopia and Oromia region, 2000-2019

Only 55 percent of infants under 6 months are exclusively breastfed[2], and 77 percent initiated breastfeeding within one hour of birth. Only 9 percent of children aged 6-23 months meet the minimum permissible dietary standards, 18 percent of children have an adequately diverse diet, 27 percent of children have iron-rich food and 42 percent have Vitamin A-rich food. About 38 percent of children aged 6-59 months received a Vitamin A supplement over the six months preceding EDHS. About 30 percent of expectant women receive iron folic acid during ANC and 3 percent receive it for more than 90 days.[3]

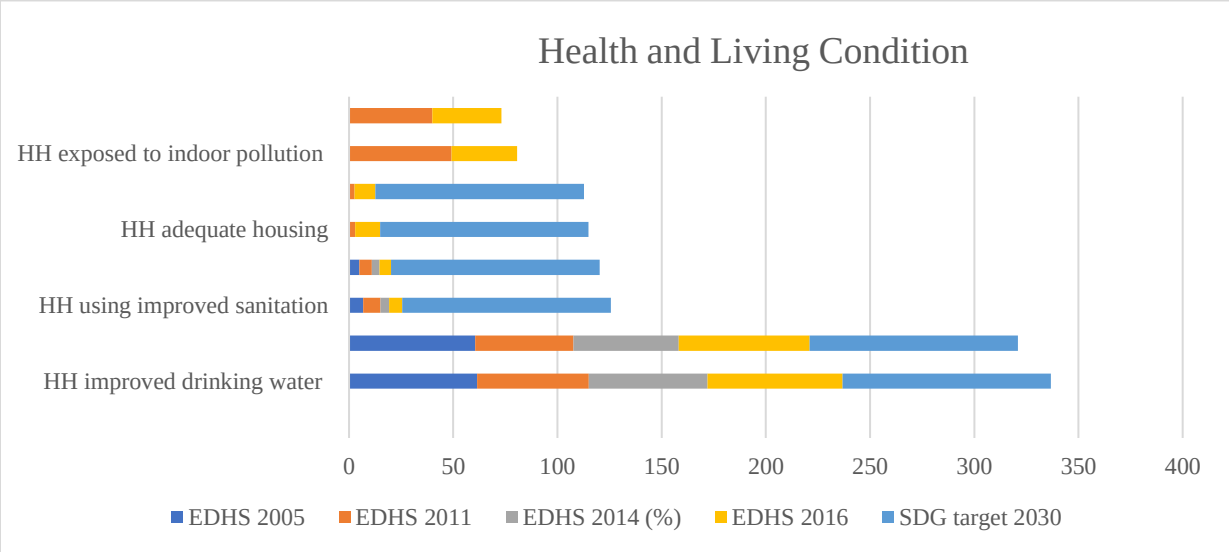
One of the main contributors to the high stunting rate is a lack of availability and access to diverse foods, a lack of access to fortified foods, and a lack of understanding of the significance of a diverse diet (cultural/knowledge). Because of their heightened vulnerability, 35% of households are food insecure and suffer from high rates of malnutrition on a regular basis.[4] Childhood diseases such as diarrhea are caused by a lack of access to fundamental sanitation and poor hygiene practices. This, combined with limited access to treatment, significantly adds to malnutrition. Other socioeconomic and political factors that contribute to undernutrition include widespread poverty, limited employment opportunities, poor infrastructure, high population pressure, low education levels, insufficient access to clean water and sanitation, high rates of internal displacement, and insufficient access to health services.[5]

The existing multi-sectoral coordination to decrease stunting is still in its initial stages. Coordination is lacking in each of the signatory sectors due to a lack of awareness, frequent turnover of focal people and management, a lack of accountability and responsibility, and a lack of nutrition structures. The nutrition information infrastructure is also lacking in terms of data collection, analysis, and decision-making.

To improve nutritional and health outcomes for children under the age of five, a multi-sectoral strategy and interventions are required. According to a deprivation overlap analysis, 58% of children under the age of five are concurrently deprived of nutrition, basic health services, and sufficient sanitation. An extra 16% are deprived of both health and sanitation, while 12% are deprived of both nutrition and sanitation, and less than 1% are not deprived in any of these three categories. The overlap between nutrition, health, and water reveals similar findings, with 40% of children lacking all three basic needs and services. Only 5% of children under the age of five are not deprived in either of these categories.

4.2.11 Household's Health: Water, Sanitation, and Indoor pollution

Figure 4.19: - Household's Sanitation and Indoor Pollution



Source: EDHS, 2016

According to the 2016 EDHS, 63 percent of households use improved drinking water sources in Oromia compared to the national average of 65 percent.[6] At the national level, in rural areas, 57 percent of households use improved drinking water sources versus 97 percent of urban households. About 17 percent of water sources in Oromia are piped. In Oromia, 28 percent of households spend

more than 30 minutes bringing water to their houses compared to the national average of 32 percent showing progress in water infrastructure and the availability of water sources since 2011 (Table 8). As elsewhere in the country, women and girls are mostly responsible for fetching water.[7] The availability and sufficiency of drinking water are 76 percent for both indicators.[8]

Despite efforts by the regional government and partners to carry out water supply projects, the sustainability of water services is a concern. The non-functionality of water supply is high, especially with motorized schemes, because of the depletion of groundwater and over-use of schemes. This is due to the dry season, drought, and the increased needs of the growing population and livestock.[9] There is a lack of spare parts, poor design and maintenance, and insufficient post-construction support.[10]

Inadequate water supply compounds limited awareness of hygiene and sanitation, and a lack of improved toilets. These are key factors in low sanitation and hygiene coverage and are associated with children's nutritional, developmental, and health outcomes.

Figure 4.19 shows that the rate of households using improved sanitation facilities is improving at a slow pace. The rate of households using an improved toilet facility that is not shared with other households is about 6 percent for both Oromia and the Ethiopian average. Households in urban areas are more likely to have access to improved sanitation (20 percent at the national level) compared to households in rural areas (3 percent at the national level).

According to the 2016 EDHS, 51 percent of households in Oromia have a place for washing hands (3 percent fixed and 48 percent mobile), which is under the national average of 60 percent. Only 12 percent of these households have water and soap.[11] One factor that hinders hand washing is people's limited knowledge about the critical times when hands should be washed. Only 11 percent of women and 10 percent of men in Oromia knew that hands should be washed before breastfeeding/feeding a child, while 13 percent and 8 percent of women and men, respectively, knew that hands needed to be washed after cleaning a child's bottom after defecation. Less than half, 44 percent, of women and 48 percent of men know that hands should be washed after defecation (UNICEF & DAB, 2017, p.34-45).

Children and adults are susceptible to other health risks in their homes, due to inadequate housing conditions and indoor pollution from the use of solid fuel for cooking inside the house. Only 10

percent of households in the Oromia region, compared to the national average of 12 percent, live in dwellings constructed with adequate material that can protect them from adverse weather conditions and health and structural hazards. Progress in this area has been slow since 2011 (Table 8). In nearly one-third of households in Oromia (33 percent compared to 31 percent at the national level) cooking is done inside the house with solid cooking fuel. This exposes children and adults to several health risks, such as acute respiratory infections. Improvements in this indicator since 2011 have been slow (Figure 4.19).

Any interventions aimed at improving the well-being of children in the Oromia region should use a multi-sectoral approach. Approaches should include all components of WASH, improvements in housing conditions, and raising awareness about their importance. In addition to deprivation overlaps between water, sanitation and health, and nutritional outcomes in children under 5 years, analysis shows that there is a high overlap in deprivation between water, sanitation, and housing for all children. Fifty percent of children under 18 in the Oromia region are simultaneously deprived of an improved and/or proximal drinking water source, adequate sanitation, and adequate housing conditions, while an additional 37 percent are deprived of adequate sanitation and housing. Only 3 percent of these children are not deprived of either of these basic needs (Figure 4.19).

4.3 Human capital development with context of harnessing demographic dividend

Education, training and skills development are the cornerstones of developing a globally competitive and productive workforce that is required to harness the demographic dividend (Brewer, 2013),

As mentioned, by Brewer, (2013), effective skills development requires a holistic approach, with the features describing; like Continuous and seamless pathways of learning starting with pre-school and primary education that adequately prepares young people for secondary and higher education and vocational training; that provides career guidance, ***labor market information***, and counseling as young women and men move into the labor market; offers workers and entrepreneurs opportunities for continuous learning to upgrade their competencies and learn new skills; Development of core skills including literacy, numeracy, communication skills, team work and problem-solving, entrepreneurial and other relevant skills; Development of professional, technical and human resource skills to capitalize on or create opportunities for high-quality or high-wage jobs; Portability of skills, based firstly on core skills to enable workers to apply knowledge and experience to new occupations or industries and secondly, on systems that codify, standardize, assess and certify skills so that levels of competence can be easily recognized by social partners in different labor sectors across national, regional or international labor markets;

Moreover, effective skills development requires enabling workers to attain decent work, manage change and adopt new technologies. Though all levels of education are interdependent and should be addressed holistically, evidence shows that, tertiary education provides a greater impact on economic growth than lower levels of education attainment (Barro & Lee, 2013; Oketch, McCowan, & Schendel, 2014).

Thus, for a country to harness the demographic dividend, it is not only has to experience a change in age structure that results in more people in the working ages; but the potential skilled labor force has to be well-educated and highly skilled and competent in the labor market to harness the demographic dividend of a given nation in line of human capital development.

Ethiopia has made significant walks in access of educational attainment since the emergence even though assuring the quality of education has been raised as the main challenges in generating skilled and competent human capital to bring sustainable human capital development.

As mentioned by, UNICEF (2021/22) report, the education sector in Ethiopia operates within a decentralized system of government**.** Regional governments are responsible for the administration and management of general education (secondary and lower levels of education), as well as teachers' training programs and institutions. The Federal Ministry of Education (MoE) is directly responsible for formulating policy and guidelines, as well as for the development of textbooks for general education. On the other hand, since its establishment in 2018, the Ministry of Science and Higher Education oversaw higher education and technical vocational education and training (TVET) in the country. However, following the federal government's restructuring in September 2021, higher education is now part of the Ministry of Education while TVET has been placed under the mandate of the Ministry of Labor and Skills.

The new Education roadmap (2018–2030), introduced in 2018 has to replace the education system that was in place for about two decades during the EPRDF, started partial implementation in 2020/21. This roadmap replaces the 4-4-2-2 general education structure in the country with a 6-2-4 education system aiming to improve the education quality at national level. The new roadmap also includes a reform of education expenditure allocation and a restructuring of government expenditure to reallocate spending from tertiary to general education**.** It further aims to increase the supply of pre-primary schooling, focus on targeted spending, and reform the financing of the education sector through increased community financing, by introducing an education tax and user fees for those who can afford them.

Beside, as mentioned by, MoE, 2022/21 abstract report, even though educational coverage in Ethiopia had improved in the recent years, the conflict in the country has made education inaccessible to children in conflict-affected areas. Many school infrastructures have been damaged by the war, particularly in Tigray, Amhara and Afar regions. With increased internal displacement, continuing conflict, and the destruction of school facilities, children's education has been severely affected. The education system was not functional at all in Tigray region in 2020/21, with ***2,221 primary and middle schools (grades 1–8) and 271 secondary schools not in operation***. As a result, 1.3 million students in Tigray who were enrolled in primary, middle and secondary schools in 2019/20 could not return to school in 2020/21. Following the spread of conflict to Amhara and Afar regions after June 2021, ***1,090 schools were fully destroyed, 3,220 schools were partially destroyed, and 1.9 million children were unable to continue their education in these two regions.***

Thus, this spread of internal conflict has one of a challenge to generate a demographic dividend in line of developing skilled human capitals and to generate skilled work force at national and regional level, which further contribute for national economic growth and development. Moreover, it is a risky for non-enrolled females which is a cause for their early marriage which further create increments of fertility rate which negatively affects to harness the demographic dividend at national level and the objective of demographic transition from high fertility rate to low fertility rate at national level.

4.3.1 Access and Enrollment of Primary and Secondary School with Context of Demographic Dividend at National Level

4.3.2 Gross Enrollment Ratio for Primary School (1-8) at National Level

Gross Enrolment Ratio (GER) calculates the total number of children that enrolled in a given grade range irrespective of their age as a percentage of the school age population.

Based on the data collected from MOE abstract report, (2021/22) and as indicated in below figure (4.3) the trend in GER for Primary and Middle level education (Grades 1-8) at national level for the last ten years shows, a straight incremental pattern from 2013/14 G.C. to 2016/17,and then started to declined. However, One Can understand from the result, the gender gap has increased from 5, in 2012/13, to 9.1 in 2020/21 in these ten past consecutive years, though the gap has decreased from year to year.

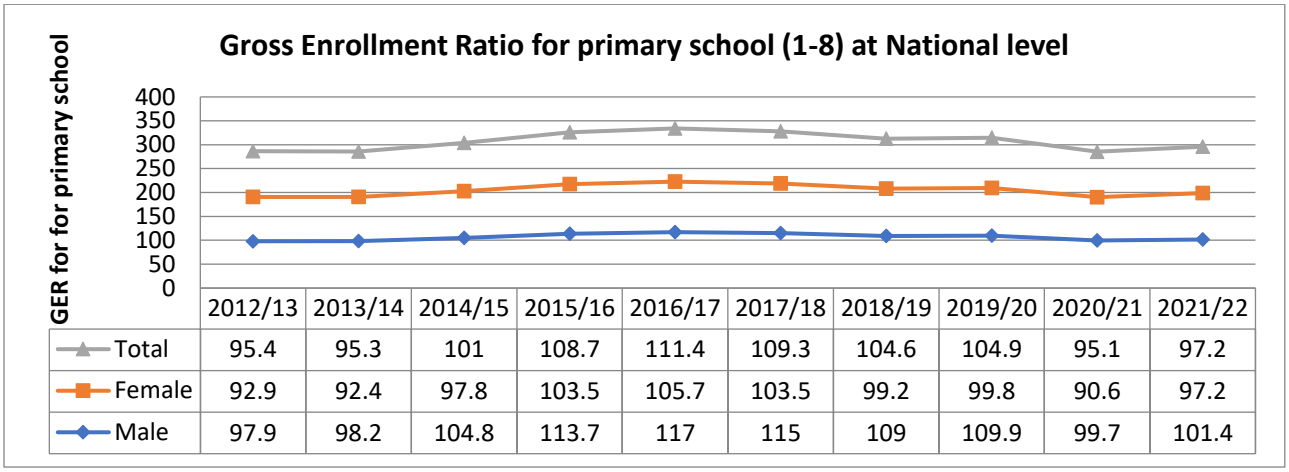
Therefore, as the study result indicates, even though slight improvement of gross enrollment ratio for primary school at national level, there was indications of gender gaps to send female children's to school with compered to male children's. Thus, this has negative implication for female children's future participation in human capital development in both secondary and tertiary schools.

Moreover, the incapability of family to send their female children's to school has spillover effect and creates the opportunity of early marriage for female children's. Therefore, this have negative connotation to harness the demographic dividends generated from the demographic transitions from high fertility rate to low fertility rate.

Thus to come out from this problems creating conducive policy solution like, awareness creation for family in order they send their female children's to school, minimize child labor utilization by family through creating economic opportunity for family, expanding of school feed by government

support, community participation, and searching sponsorship from domestic and external investors for school expansions are some recommended policy come out.

Figure: 4.3: **Gross Enrollment Ratio for primary school (1-8) at National level**

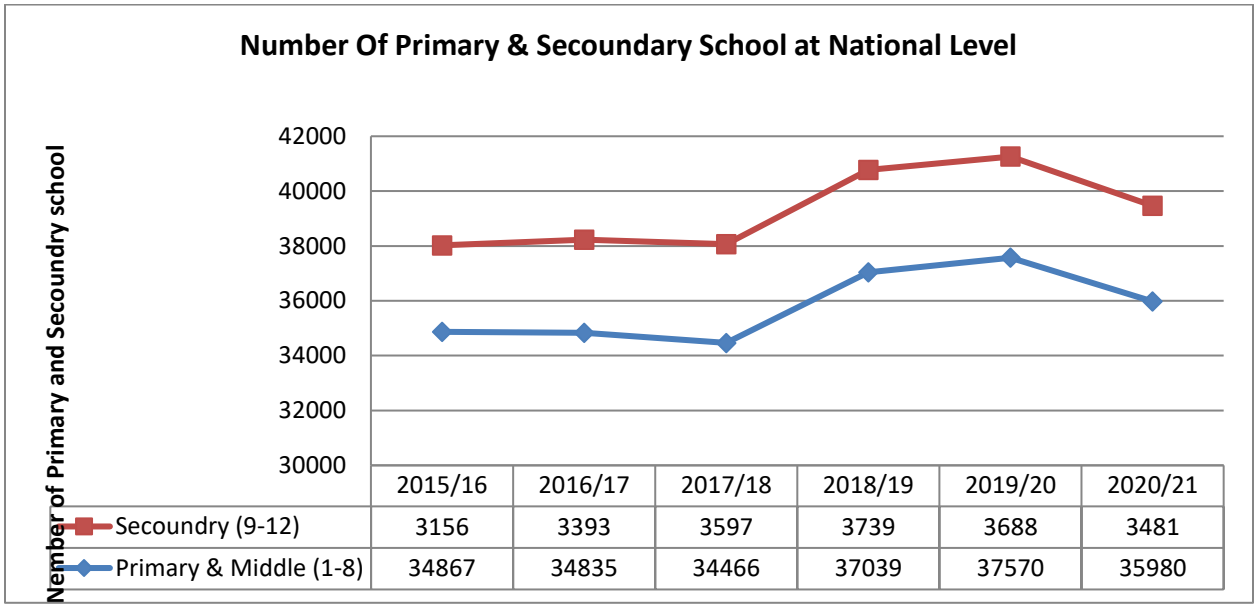


	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Total	95.4	95.3	101	108.7	111.4	109.3	104.6	104.9	95.1	97.2
Female	92.9	92.4	97.8	103.5	105.7	103.5	99.2	99.8	90.6	97.2
Male	97.9	98.2	104.8	113.7	117	115	109	109.9	99.7	101.4

Source: MOE, Abstract report, 2021/22.

On the other hand, as indicated by the data from MoE Abstract report, (2021/22), even if the number of secondary schools has been increasing in recent years, the number is low and challenge to harness demographic dividend through generating human capital at secondary school level. Therefore, the limited access of primary and secondary schools is a serious challenge that country faces in its efforts to improve general education. And this have a direct effect for most children finishing primary school are not able to continue their education, as access to secondary schools is severely constrained, especially in rural areas as indicated in below figure (4.3.1).

Figure 4.3.1: **Number of Primary & Secondary School at National Level**



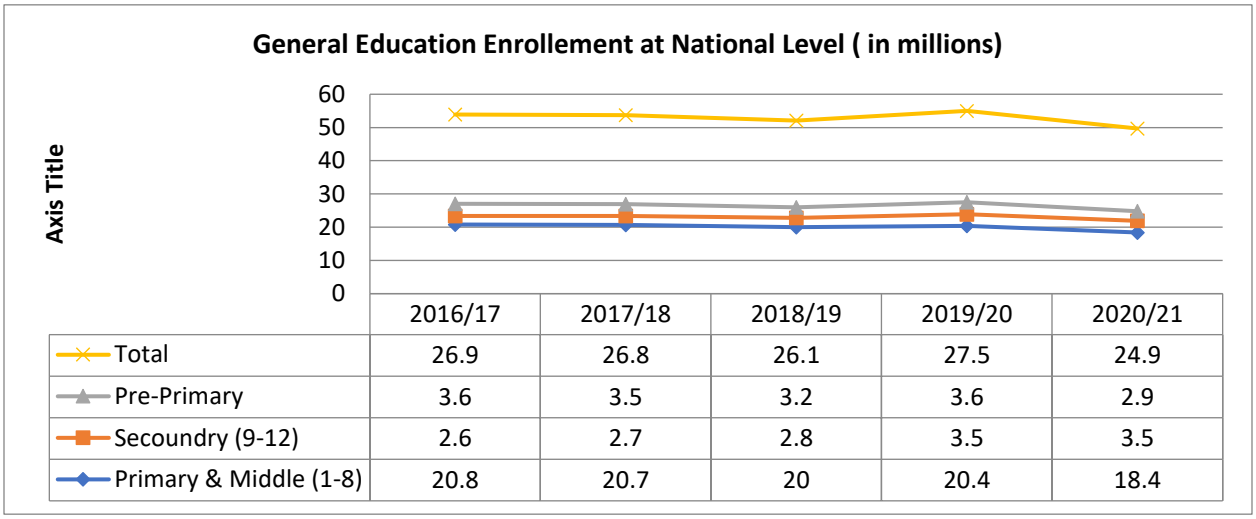
Source: MOE, abstract report, 2021/22

Moreover, shortage of access of secondary school at national level create a problem specially for female children's and one causes for early marriage which further have negative connotation to harness the demographic dividend obtained from demographic transition of high fertility to low fertility. Moreover, it has negative consequences on creating window of opportunity of future share of females in human capital development at national and regional level. Therefore, expansions of the access of high schools at national level both in rural and urban area with compatibility of the growth of children's for official age of high school have vital role and the way come out for the problems.

On the other hand, as mentioned by MoE abstract report (2021/222), prior to 2021/22, the improved access to education sector had brought about an increase in the number of students enrolled in schools, except for the year, 2018/19, where *internal conflicts* had resulted in the displacement of students, leading to lower enrolment as indicated in below figure (4.3.2). Besides, the Enrolment recovered in 2019/20 only to show a significant drop in 2020/21, as the conflict in the Tigray made it impossible for students to attend schools in the academic year. Accordingly, around 1.1 million students and 217,197 students who were enrolled in primary and secondary schools in 2019/20, respectively, ***could not pursue their education in 2020/21***. Therefore, this is a challenge to harness the demographic dividend from developing human capital through

generating skilled man power of young age which have crucial role for national productivity and economic growth. Moreover, this invites the female students for early marriage and negatively affects the demographic transition from high fertility rate to low fertility rate. Another consistent observation throughout the years is the very low number of students enrolled in secondary schools, which is mainly caused by low levels of access to secondary schools and high dropout rates.

Figure 4.3.2: **General Education Enrollment at National Level (in millions)**



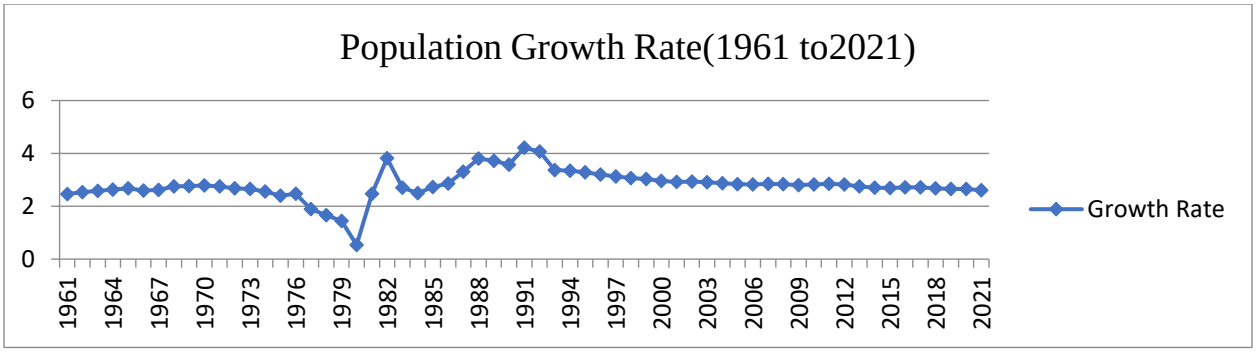
	2016/17	2017/18	2018/19	2019/20	2020/21
Total	26.9	26.8	26.1	27.5	24.9
Pre-Primary	3.6	3.5	3.2	3.6	2.9
Secoundry (9-12)	2.6	2.7	2.8	3.5	3.5
Primary & Middle (1-8)	20.8	20.7	20	20.4	18.4

Source: MOE, abstract report, 2021/22

As indicated in the above diagram there was a slight decline in the total enrollment of General education at National level from 26.9 million to 24.9 million from 2016/17 to 2020/21. On the other hand the pre- primary and primary enrollment at national level has showed a decline from 3.6 million to 2.9 million and from 20.8 million to 18.4 million from the year 2016/17 to 2020/21 of the last five year.

Thus this indicates that, even though slight improvement of general education enrollment for the last five year it is not compatible with context of National population growth rates, hence, the population growth rate has increased with almost minimum variation between 2.6 and 2.7 of annual growth rate from year 2015 to 2021 G.C as mentioned in the below diagram.

Figure 4.3.3: **Population Growth Rate (1961 to2021)**



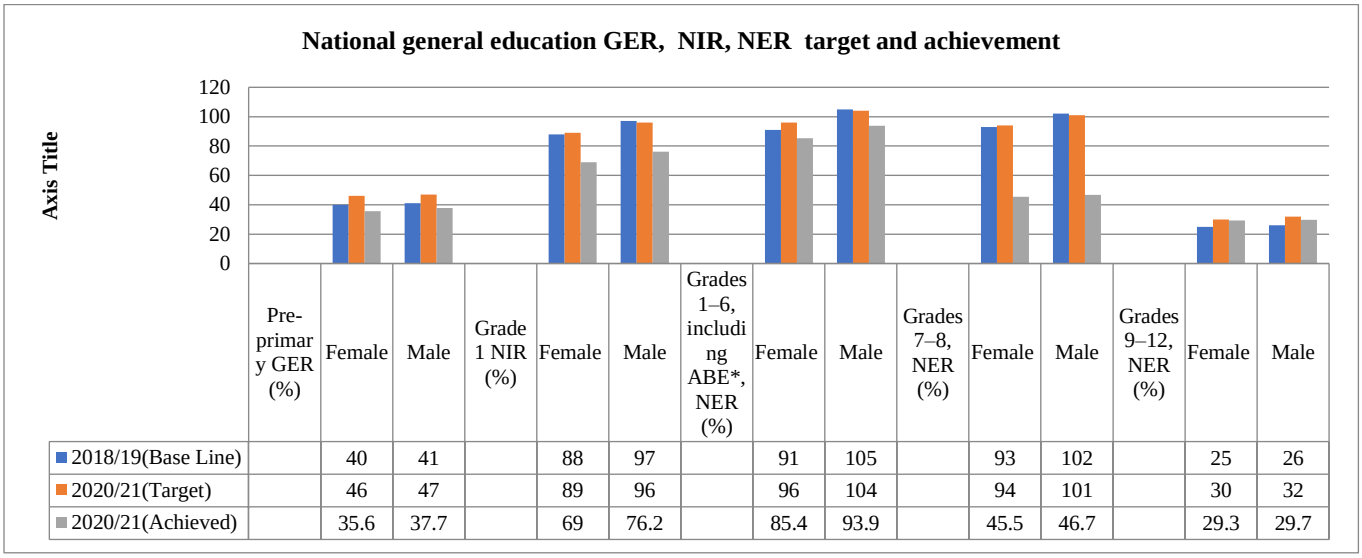
https://data.worldbank.org/indicator/SP.POP.2529.FE.5Y?locations=ET

Therefore, improving access of number of schools for general education at national level and awareness creation for family in order they send children to school, reducing child labor, improving school feed, construction schools near the residential village especially in rural area, and improving of the economy of family and generating the economy which create job opportunity for un employed graduates, developing entrepreneurial skill for graduated unemployed are some of the recommended policy come outs to achieve the demographic dividend derived from human capital development on mentioned official school ages.

4.3.3 National General Education GER, NIR, NER Target and achievement.

A high GER generally indicates a high degree of participation, whether the pupils belong to the official age group or not. A GER value approaching or exceeding 100% indicates that a country is, in principle, able to accommodate all of its school-age population, but it does not indicate the proportion already enrolled. The achievement of a GER of 100% is therefore a necessary but not sufficient condition for enrolling all eligible children in school. When the GER exceeds 90% for a particular level of education, the aggregate number of places for pupils is approaching the number required for universal access of the official age group. However, this is a meaningful interpretation only if one can expect the under-aged and over-aged enrolments to decline in the future to free places for pupils from the expected age group.

Figure 4.3.4: **National general education GER, NIR, NER target and achievement**



	Pre-primary GER (%)	Female	Male	Grade 1 NIR (%)	Female	Male	Grades 1–6, including ABE*, NER (%)	Female	Male	Grades 7–8, NER (%)	Female	Male	Grades 9–12, NER (%)	Female	Male
2018/19(Base Line)		40	41		88	97		91	105		93	102		25	26
2020/21(Target)		46	47		89	96		96	104		94	101		30	32
2020/21(Achieved)		35.6	37.7		69	76.2		85.4	93.9		45.5	46.7		29.3	29.7

Source: MOE, abstract report, 2021/22

Accordingly as, mentioned in figure above, the target gross enrolment ratio (GER) for pre-primary education, and net enrolment ratios (NERs) for primary and secondary education were not met the pre- designed targets.

Therefore, as indicated in the above diagram in all cases the general education GER, NIR, and NER were showed a ***slight decline*** which was below the pre- designed target at national level. However, the trained of national population growth rate has been increasing even though with low speedy at national level. Thus this indicates that, improving the enrollment of general education in all cases has one which demands awareness creation for family to send their children to school and work on reduction of child labor and improving of access of schools in all directions and constructing schools near to the residential area both in rural and urban area is recommendable.

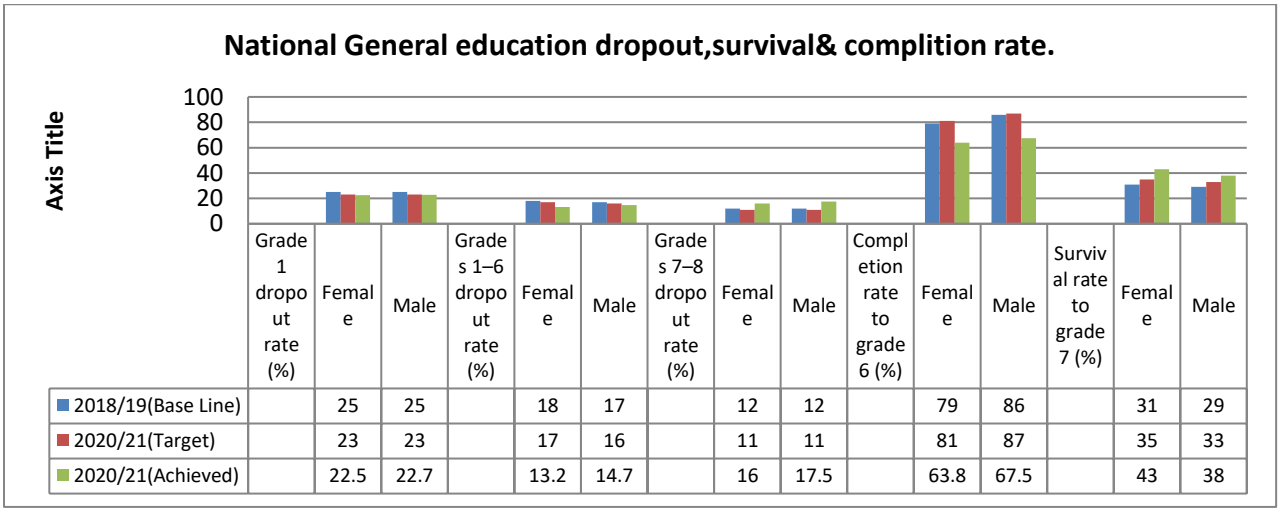
On the other hand, the female participation in all cases are indicates below the pre-designed target, however this have negative connotation to achieve the demographic dividends obtained from the demographic transition from high fertility to low fertility and to increase skilled human capital with compatibility of increase in population at national level.

4.3.4 National Education Efficiency with Context of Harnessing Demographic Dividends

In terms of indicators related to education system efficiency, of the selected efficiency indicators, targets for completion rate to grade 6 and middle school dropout rate have not been met. On the other hand, the dropout rates for grade 1 and primary schools (grades 1–6) have improved from 2018/19 and performed above target as indicated in below figure 4.3.5.

On the other hand, the survival rate to grade 7 is a new indicator in Education Sector Development Program (ESDPVI), replacing survival rate to grade 5 in ESDP V. The survival rate to grade 7 is used to estimate the proportion of children who would complete primary education (grades 1–6). A higher survival rate indicates a higher level of retention and low incidence of dropout. For 2020/21, the survival rate to grade 7 was higher than both the baseline and target. Thus, this indicates improvements from 2018/19 to 2020/21 based on the target set by MoE and further ***positively contributes for harnessing of demographic dividends regarding human capital development as indicated in figure 4.3.5***

Figure 4.3.5: **National general education GER, NIR, NER target and achievement**



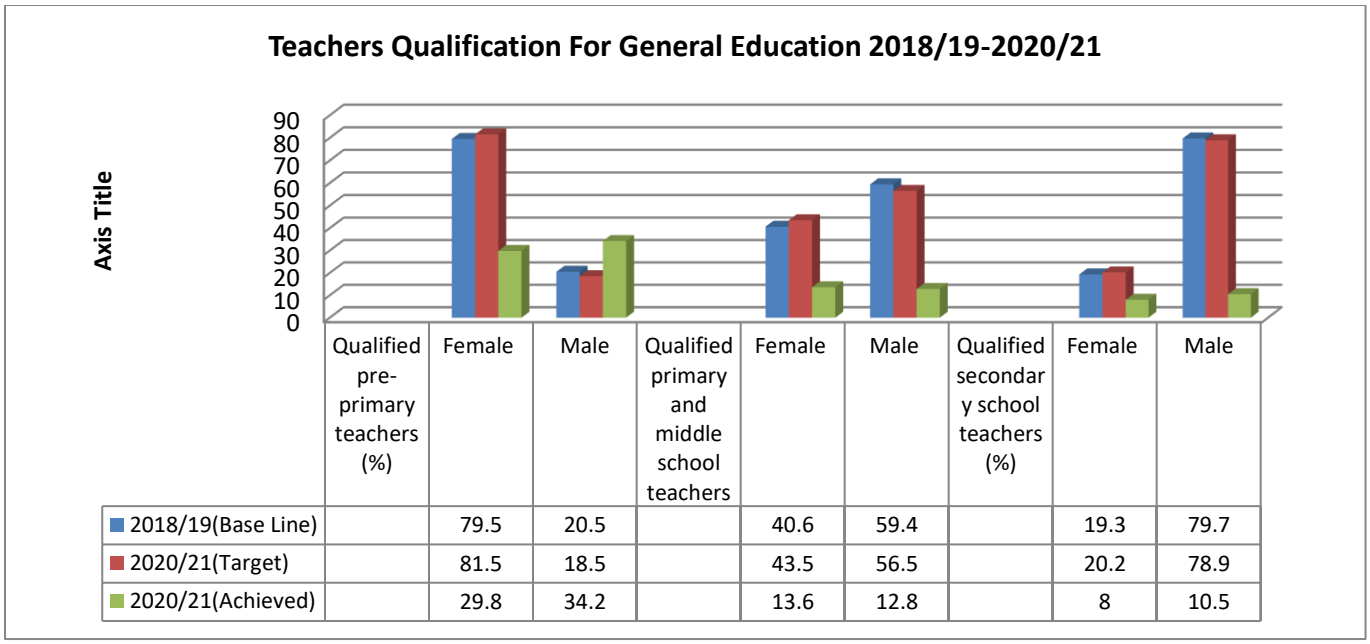
	Grade 1 dropout rate (%)	Female	Male	Grades 1–6 dropout rate (%)	Female	Male	Grades 7–8 dropout rate (%)	Female	Male	Completion rate to grade 6 (%)	Female	Male	Survival rate to grade 7 (%)	Female	Male
2018/19(Base Line)		25	25		18	17		12	12		79	86		31	29
2020/21(Target)		23	23		17	16		11	11		81	87		35	33
2020/21(Achieved)		22.5	22.7		13.2	14.7		16	17.5		63.8	67.5		43	38

Source: MoE, abstract report, 2021/22

On the other hand, among the group of indicators for quality education measurement the percentage of qualified teachers in each level of education are best indicators. Accordingly, the new education roadmap requires diplomas, first degrees, and master's degrees for pre-primary, primary and middle school, and secondary school teachers, respectively. However, as indicated in below figure, the baseline numbers (2018/19) seem higher, as the criteria before the introduction

of the new roadmap was much lower: diplomas for pre-primary and primary school teachers and degrees for secondary school teachers. Thus, according to the new criterion, the proportion of teachers who meet the demanded qualification is very low for all levels of education. Thus this indicates there is a problem of harnessing demographic dividend with regards of producing qualified skilled man power at national level which further affects the economic growth of the nations.

Figure 4.3.6: **National general education GER, NIR, NER target and achievement**



	Qualified pre-primary teachers (%)	Female	Male	Qualified primary and middle school teachers	Female	Male	Qualified secondary school teachers (%)	Female	Male
2018/19(Base Line)		79.5	20.5		40.6	59.4		19.3	79.7
2020/21(Target)		81.5	18.5		43.5	56.5		20.2	78.9
2020/21(Achieved)		29.8	34.2		13.6	12.8		8	10.5

Source: MOE, abstract, 2021/22.

Thus as mentioned in the above diagram the qualified pre-primary teachers has below the target which decline from 81.5% to 29.8% for female and from 18.5% to 34.2% for male qualified teachers which have slight improvement for males. On the other hand, the qualified teachers for secondary schools has decline from the target for female and male which has from 20.2% to 8% and 78.9% to 10.5%.

Thus, one can understand from the result that, supply of qualified teachers in both cases has been slightly decline which further affects to harness the demographic dividends derived from producing qualified skilled human capital at national level and creates the *incompetence* for the primary and secondary schools to join the higher academic education hence student teacher ratio

has increased. Therefore, increasing the qualified trained teachers at national and regional level has a vital role. On the other side improving and re-amending the labor price in the labor market in education sectors in order experienced teachers stay in the school is one police option. Moreover, providing of incentives as per their productivity has a crucial role.

4.3.5 Education and skill development with context of harnessing demographic dividend in Oromia Region.

The economic and social benefits of education investment for developing countries and their people are well-supported by research. For instance, it has been shown that investment in education does not only promote economic growth, but also provides people with the skills, knowledge, and tools to improve the quality of that country's governance, which in itself is a key factor in economic growth (Grant, 2017). Beal (2012) identifies that, compared to investment in other aspects of a country's economy, such as public finances and economic institutions, education is the most important lever in enhancing long-term economic development (Beal, 2012).

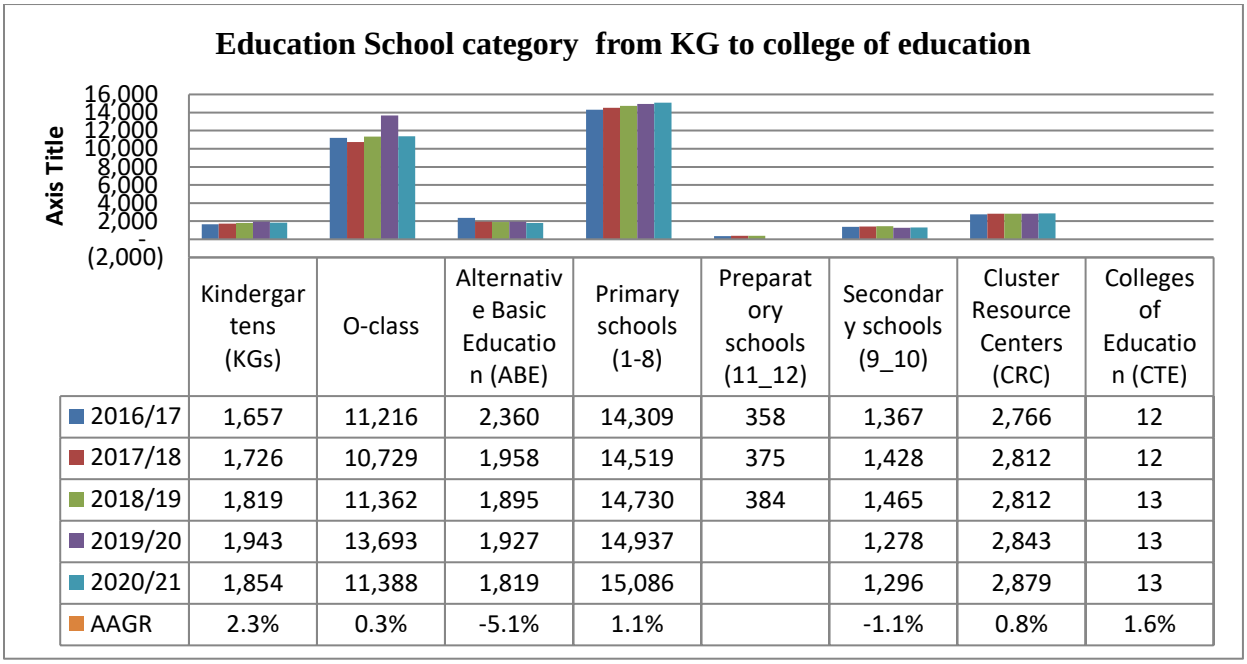
As indicated by, Appiah (2017) there was a positive correlation between educational quality, quantity, enrolment, and economic growth. Beal (2012) shows that, investment in education can amplify growth within a country by encouraging activities like, promote entrepreneurship, and increase specific labor inputs within the market. Investments in education provide substantial benefits in the development and advancement of labor inputs and innovation within a country, which are essential factors in increasing economic growth (Agarwal, 2020).

Many studies indicate the positive relationship between education and economic growth. For instance, Cooray (2009) identifies that enrolment for primary, secondary, and tertiary levels is beneficial and highly significant for economic growth

Thus, beside, of gradually demographic transition like achieving of low fertility rate and death rate improving the supply side of education development like access, efficiency and improving of education quality have a vital role for harnessing demographic dividend through education and skill development. Therefore, the accessibility of education institutions is one of the most criteria for children to get access to education for education and skill development. Thus, to understand weather the ***access*** of education institution harness the demographic dividend at regional level trained of information has collected for five years from (2016/17 to 2020/21) through secondary data from Oromia Education Berue.

Therefore, based on the data obtained from five year trend, the study result revealed that, the access of (KG) school, 0 - Class and Primary schools showed the trained of some improvement from 2016/17 to 2020/21 E.C which constituted ***1657 to 1854, 112l6 to 11388 and 14309 to 15086*** with the annual growth rate of 2.3, 0.3 and 1.1 respectively as indicated in the figure below. But the AAGR of secondary schools was negative which declines from ***1367 to 1296*** from the base year 2016/17 to 2020/21 with the growth rate of (-1.1) which indicates a slight decline.

Figure 4.3.:7 **Education School category from KG to college of education**

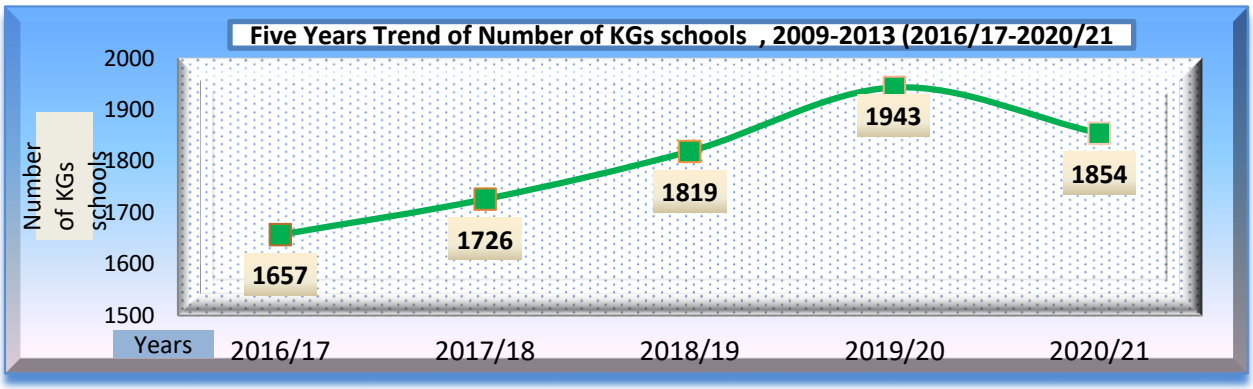


	Kindergartens (KGs)	O-class	Alternative Basic Education (ABE)	Primary schools (1-8)	Preparatory schools (11_12)	Secondary schools (9_10)	Cluster Resource Centers (CRC)	Colleges of Education (CTE)
2016/17	1,657	11,216	2,360	14,309	358	1,367	2,766	12
2017/18	1,726	10,729	1,958	14,519	375	1,428	2,812	12
2018/19	1,819	11,362	1,895	14,730	384	1,465	2,812	13
2019/20	1,943	13,693	1,927	14,937		1,278	2,843	13
2020/21	1,854	11,388	1,819	15,086		1,296	2,879	13
AAGR	2.3%	0.3%	-5.1%	1.1%		-1.1%	0.8%	1.6%

Source: OEB, 2021/22

Moreover, as indicated in the below (figure) even though the trend of KG education sector has been increasing from 1,657 in (2016/17 G.C) to 1,854 in (2020/21 G.C) regarding its distribution, most of KGs are concentrated in urban areas of the region mainly owned by private and non-governmental organizations. Therefore, the regional government should work on balancing its distribution for rural area to address the shortage and to balance the distribution with the compatibility of population growth for KG level education in rural area; hence these age populations (0-6) are high in rural area with related to urban area.

Figure 4.3.8: Five Years Trend of Number of KGs schools, (2016/17-2020/21



Source::OEB, 2021/.22

4.3.6 Early child education at Regional level

As indicated by (Grantham-McGregor et al, 2007) early childhood education between the third and fifth years of life is a critical foundational platform for cognitive and intellectual development, future learning and skills building and for preparing children's for grade one learning of age seven (Grantham-McGregor et al, 2007). Like many countries in sub-Saharan Africa, Ethiopia has investing ***heavily in primary, secondary and college level school education while pre-primary schooling was more of neglected more dominated by private investors***. Moreover, the early childhood education sector for a long time lacked a strong policy framework and there was little investment in the pre-primary school infrastructure and personnel at government level. With the same scenario at Oromia regional level though expansions of investment on education sectors, for the last three decades the expansions of pre-primary schools at regional level has been very low and more dominated by private investors.

Accordingly, to understand weather the pre-primary education levels of the region harness the demographic dividend or not at regional level secondary data was collected on pre-primary school enrollments at regional level. Thus, based on the analysis result the study revealed that, the trend of the enrollments of pre- primary children's at regional level indicates a fluctuation and decline ***from 2016/17 to 2020/21 from 976,606 to 922,984*** with a decline annual growth rate of (-1.1) with mentioned year intervals as indicated in (below tables 3).

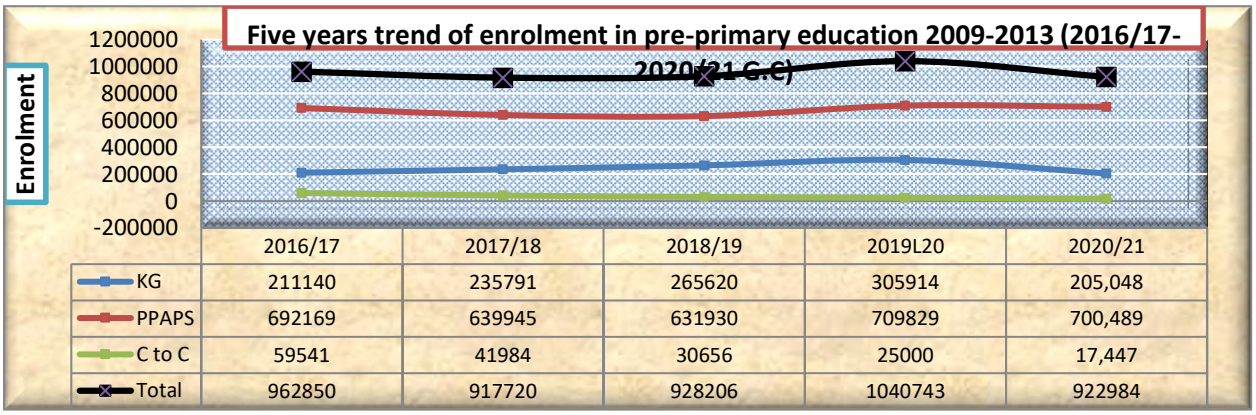
Table 4.1: number of student's enrolled for the last five year (2016/17-2020/21)

Number of students Enrolled in the last five years, 2009-2013 (2016/17-2020/21 G.C.								
Sector	Subsector	Sex	Years					AAGR
			2009	2010	2011	2012	2013	
Pre-primary Education	Kindergarten	M	108753	121199	137646	159270	104,686	-0.8%
		F	102387	114592	127974	146644	100,362	-0.4%
		T	211140	235791	265620	305914	205048	-0.6%
	Child to Child	M	31974	22548	16461	13375	9313	-21.9%
		F	27567	19436	14195	11625	8134	-21.7%
		T	59541	41984	30656	25000	17447	-21.8%
	O-Class	M	374133	338199	335583	377851	374610	0.0%
		F	331792	301746	296347	331978	325,879	-0.4%
		T	705925	639945	631930	709829	700489	-0.2%
	Total Pre-primary	M	514860	481946	489690	550496	488609	-1.0%
		F	461746	435774	438516	490247	434375	-1.2%
		T	976606	917720	928206	1040743	922984	-1.1%

Source; OEB, 2021/22.

As indicated in the above table the trained (from year 2016/17-2020/21) of the percentage of pre-primary enrollment average annual growth rate at regional level was showed negative growth rate which constituted (-1.1%) as indicated in (below figure).thus as one can understand from the result the economic capability of family to send their children's, lack awareness creations for family and distance of schools are expected common problems. ***Therefore, working on awareness creation, school feed, school construction near residents improving family economy is some of policy solutions.***

Figure 4.3.9: Five Years Trend of enrollment in pre- primary education (2016/17-2020/21

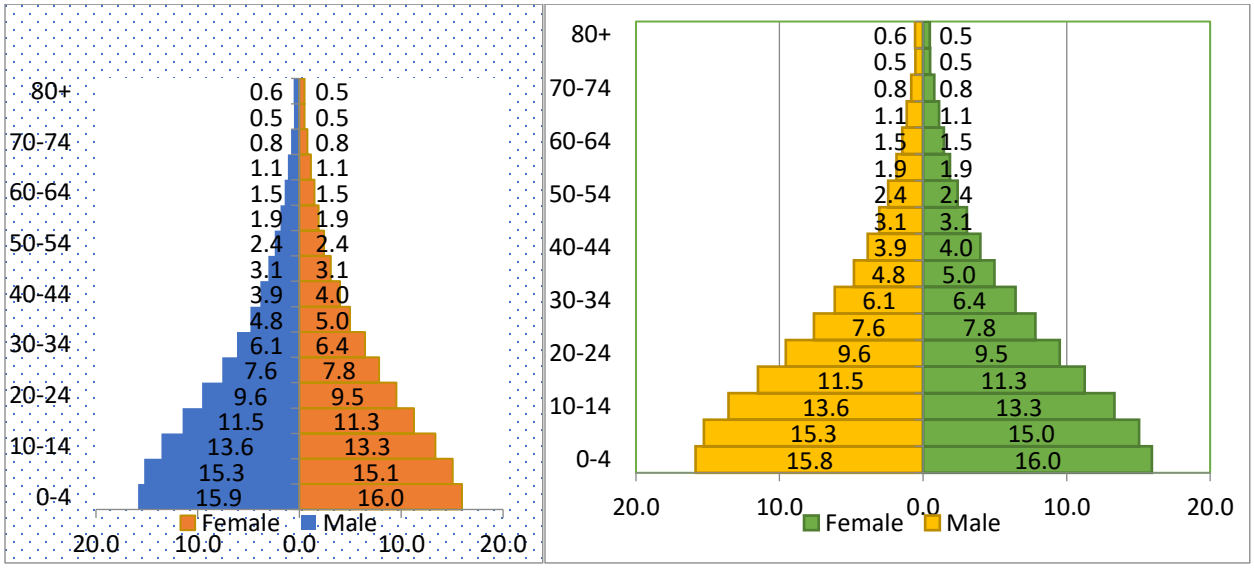


Source: OEB, 2021/22

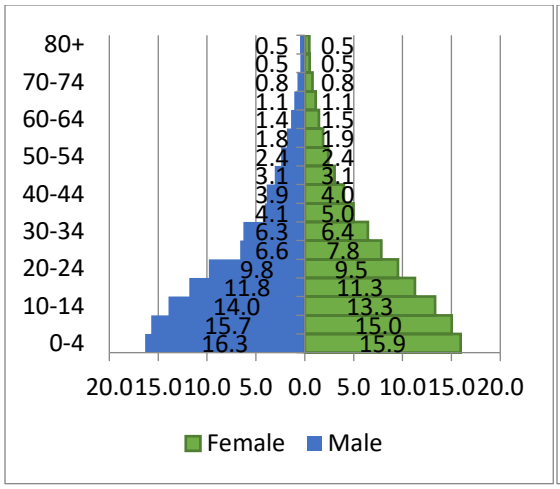
However, as the study result revealed, based on the analysis of growth of population trained for age of pre-primary enrollment which is age of (0-6) from year 2017/18, 2018/19, 2019/20 and 2021/22- indicates high percentage of growth as indicated in (**blow figures**).Thus, this indicates that even though, the Oromia regional state improves its investment on education for the past three decades still it demands further investment on pre- primary education access to make compatible with the population growth of age (0-6).

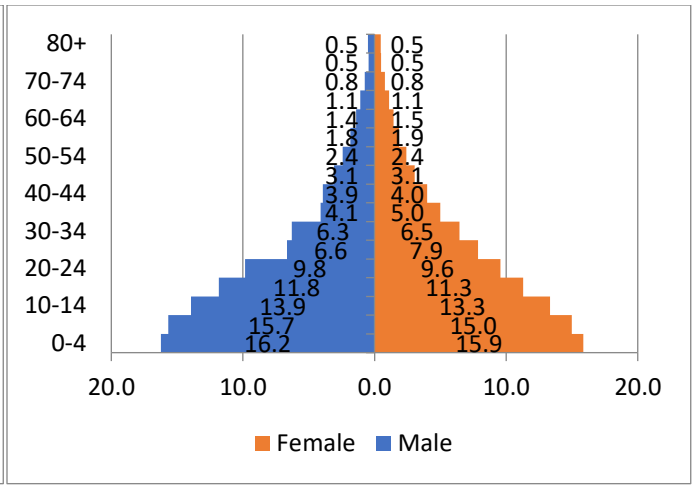
On the other hand, one of the none compatibility of the percentage average annual growth enrollments rate of pre-primary education with the percentage population growth of (age 0-6) has as a result of failures of ***controlling demographic transition from high fertility rate to low fertility*** rate and lack of family planning at regional level as indicated in the below diagram ( )

Figure 4.3.10: male and female population with age category (2017/18-2021/22)



Year, 2017/18 ***year, 2018/19***





Year, 2019/20 ***Year, 2021/22***

Therefore, to stunned this problem, working on awareness creations of family planning both in rural and urban area and investment on education sector to improve its access, work on improvement of family economy and improving the school feed and constructing schools near the residents are some indicators of policy come out to reduce the disequilibrium and have a vital role to harness demographic dividend through improving pre-primary education enrollment at regional level.

4.3.7 Gross Enrollment Ratio for pre-primary Education

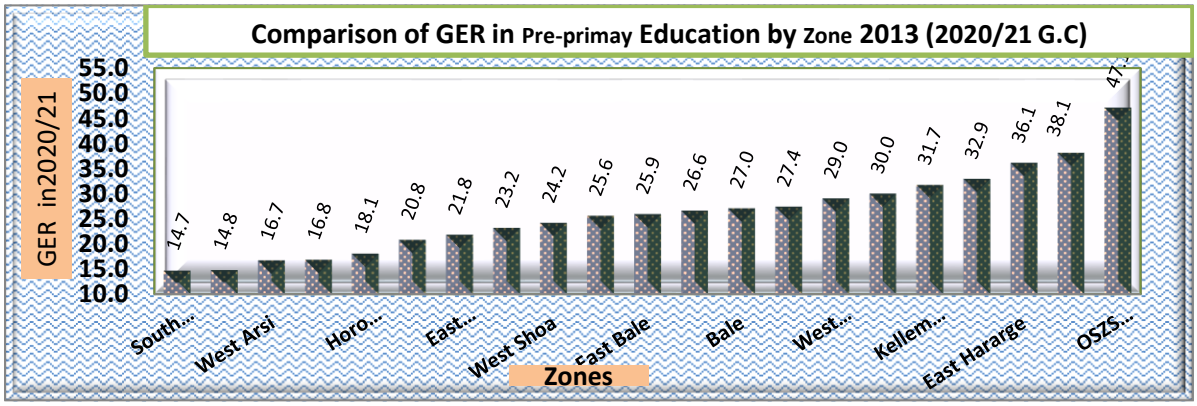
Gross Enrolment Rate (GER) of pre-primary education is defined as the percentage of total number of children in the level irrespective of age out of the total population of 4-6 age children in specified area.

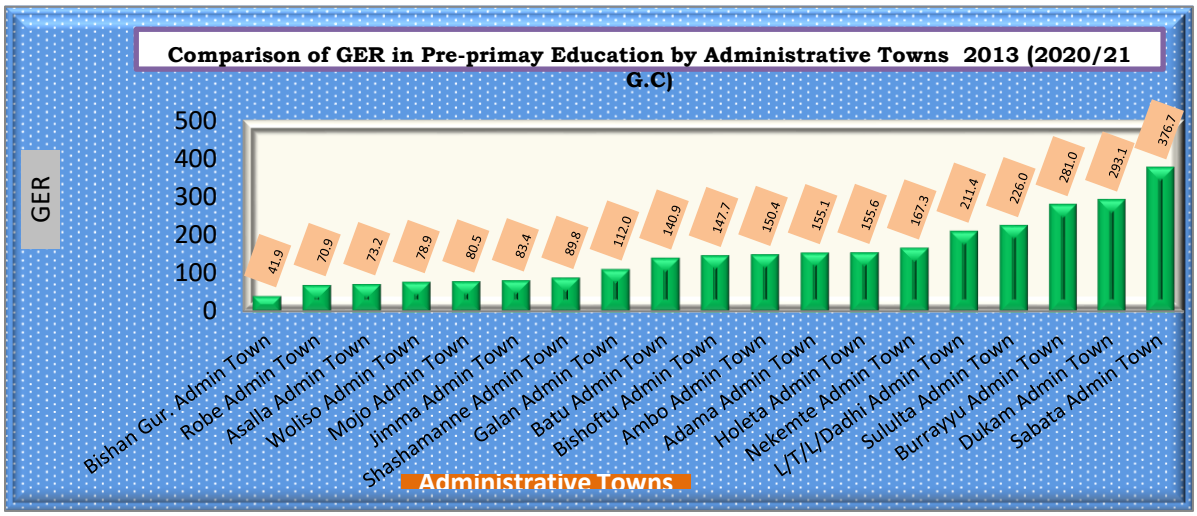
A high GER generally indicates a high degree of participation, whether the pupils belong to the official age group or not. A GER value approaching or exceeding 100% indicates that a country/region is, in principle, able to accommodate all of its school-age population, but it does not indicate the proportion already enrolled. The achievement of a GER of 100% is therefore a necessary but not sufficient condition for enrolling all eligible children in school. When the GER exceeds 90% for a particular level of education, the aggregate number of places for pupils is approaching the number required for universal access of the official age group. However, this is a meaningful interpretation only if one can expect the under-aged and over-aged enrolments to decline in the future to free places for pupils from the expected age group. However, the GER measurement is not free of limitation. Accordingly the main limitation of this

measurement is if GER can exceed 100% this may be due to the inclusion of *over-aged and under-aged pupils/students because of early or late entrants, and grade repetition*.

In this case, a rigorous interpretation of GER needs additional information to assess the extent of repetition, late entrants, and etc. Thus, based on the result of the study the GER for pre-primary education for Oromia Region in year 2013/2020/21 is varies from zone to zone and from town to town as indicated in below figure. Moreover, as the result revealed, the GER for pre-primary education at regional level for the specific year 2013/2020/21 is lower at zonal level with compared to regional Towns as indicated in below figures.

Figure 4.3.12: Comparison of GER in Pre-primary Education by Zone& Town (2020/21 G.C)





Source: OEB,2021/22

As the study result indicates, the GER at zonal level is at low status with compered to Towns which is maximum of 47% and minimum GER of 14.7%. This indicates that, the pre-primary school distribution for regional zonal level is very low and high distributions proportions are dominated by towns with high GER which constituted (376%) as indicated in the above (figure). Thus, this affects negatively to harness the demographic dividend which derived from educating the early age children's at zonal levels.

Therefore, to come out from the above mentioned problems increasing access to education in rural area through regional government support (Oromia Education Berue contribution) and expansion of access by inviting private investors in order they invest on education sectors, awareness creation for family(reducing of child labor), sating way of family income is improved, school feed program, constructing schools near the average resident area are the way of policy come out to harness the demographic dividend, from education development of early age education in rural area.

On the other hand, in all administrative towns the GER was more than 100% in all zones this indicates, there was under age, over aged, and problem of reputation in the same school of official ages enrollments. Therefore, sending children's to school with their official ages and work on reducing of reputation rate is through handling education quality and creating awareness to students in order they stay school have vital role. Moreover, awareness creation for families in order they handle their children's and reduce child labor have vital role.

4.3.7 Primary and Secondary School, Education Participation

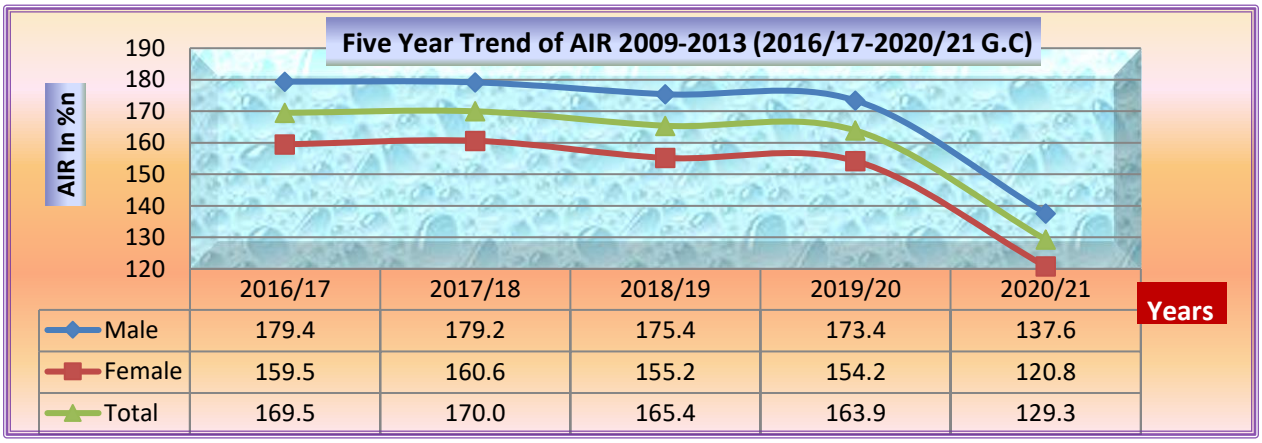
4.3.7.1 Apparent Intake Rate (AIR) for grade (1)

Apparent intake rate (AIR) is defined as the ***percentage of new entrants*** (irrespective of age) in Grade 1, out of the number of children of the official primary admission age 7 in a given year. Sometimes, it is also called the Gross Intake Rate (GIR). Moreover, AIR tends to reflect those students who may have not been enrolled in school at the appropriate age, and often reflects the backlog of students who could not be enrolled before. A high Apparent Intake Rate indicates a high degree of access to the first grade of primary education. The calculation includes all new entrants to the first grade (regardless of age). The Apparent Intake Rate can be more than 100%, due to

over-aged and under-aged children entering primary school for the first time and/or due to inconsistencies in population data. Here is the formula to calculate AIR.

$$AIR = \frac{\text{Number of New Entrants in Grade 1}}{\text{Population at the official school-entrance age}} \times 100$$

Figure 4.3.13: Five Year Trend of AIR 2009-2013 (2016/17-2020/21 G.C



Sorce:OEB, Abstract report, 2021/22

As indicated in the above figure, the total percentages of apparent intake rate (AIR) of grade 1 at regional level from 2016/17 to 2020/21 was increasing from year 2016/17 to 2017/18 and start to decline from 2018/19 to 2020/21. However, throughout the trend of five year it is more than 100%. Thus, this indicates that, there are over-aged and under-aged children entering primary school for the first time and/or due to inconsistencies in population data.

Thus the study result showed that, even though availability of over aged and under aged children's entering to the school with official school age of grade one, there was improvements of apparent intake rate in the official school age, which contributes to harness the demographic dividend of the regions with context of this official school ages of grade one at regional level.

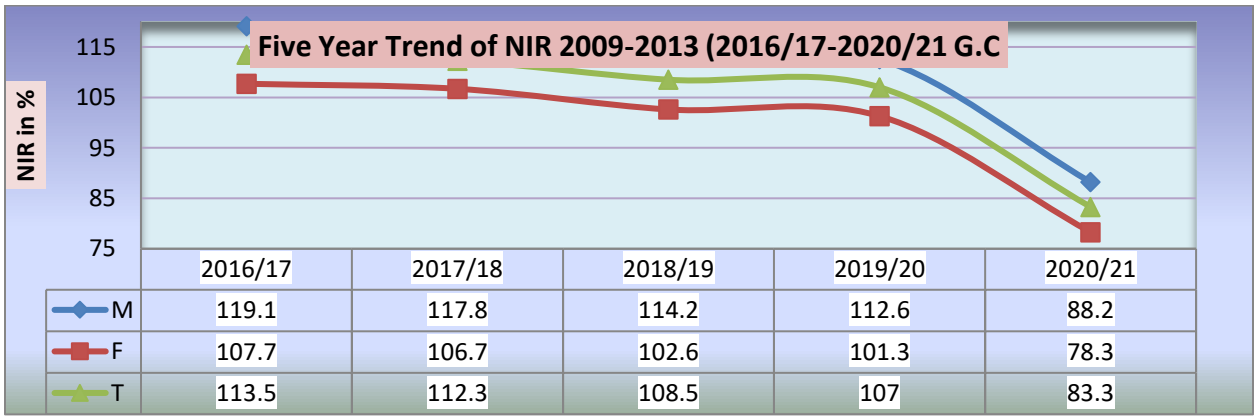
4.3.7.2 Net Intake Rate (NIR)

Net Intake Rate shows new entrants in the first grade of education system who are of the official school-entrance age, expressed as a percentage of the population of the same age. The calculation requires new entrants in the first grade of primary education which are of the official school entrance age (7 years old) and the population at the official school-entrance age. It is calculated as follows:

$$\text{NIR} = \frac{New\ entrant\ in\ 1st\ grade\ of\ primary\ education\ who\ are\ of\ the\ official\ school\ entrance\ age}{Population\ at\ the\ official\ school\ entrace\ age} x\ 100$$

A high Intake Rate for ***primary education*** of official primary school-entrance age children indicates a high degree of access for official school entrance age to the first grade of primary education

Figure 4.3.14: Five Year Trend of NIR (2016/17-2020/21 G.C



	2016/17	2017/18	2018/19	2019/20	2020/21
M	119.1	117.8	114.2	112.6	88.2
F	107.7	106.7	102.6	101.3	78.3
T	113.5	112.3	108.5	107	83.3

Source: OEB,2021/22

As can be seen from graph above, the trend of NIR in the last five years has been decreasing at the regional level. The graph also shows that NIR of Grade 1 by 2016/17 was 113.5% (M=119.1%, F= 107.7%) and by 2020/21 it was 83.3% which indicates a light decline.

4.3.8 Gross Enrolment Rate /GER/ of Primary Education (1-8)

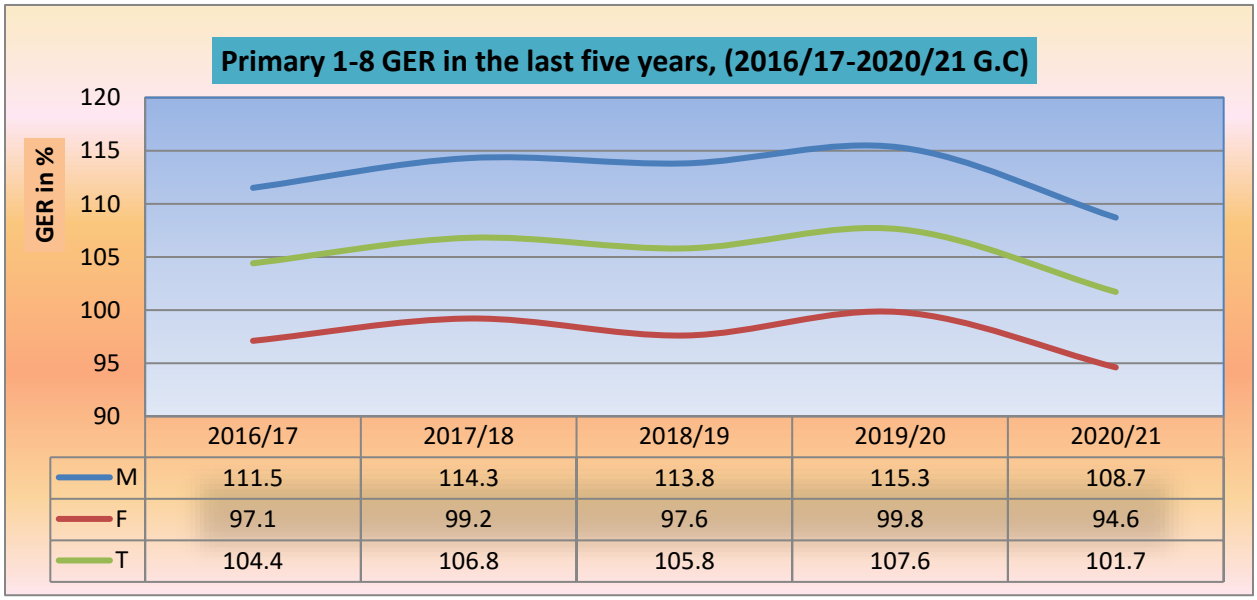
The Gross Enrollment Rate of primary education (Grade 1-8) is a crude measure of primary educational coverage, which indicates the percentage of total enrollment in primary schools

irrespective of age out of the corresponding primary school age (7-14) population. It includes under-aged and over aged pupils. So that GER can be greater than 100%.

$$Primary\ GER = \frac{All\ age\ grade\ (1-8)\ Enrolments}{School\ Age\ population\ of age\ 7-14} x\ 100$$

Accordingly, to understand the percentage GER of primary school education the gross enrollment ratio trained data for five years which is from 2009 to 2013 was used. Therefore, based on the study result the trend of GER for complete primary education in the region has shown slight fluctuating for the last five years. Accordingly, the GER has decreased from 104.4% in 2009 (2016/17 G.C) to 101.3% by 2013 (2020/21 G.C) as indicated i below figure.

Figure 4.3.15: Primary (1-8) GER in the last five years, (2016/17-2020/21 G.C



	2016/17	2017/18	2018/19	2019/20	2020/21
M	111.5	114.3	113.8	115.3	108.7
F	97.1	99.2	97.6	99.8	94.6
T	104.4	106.8	105.8	107.6	101.7

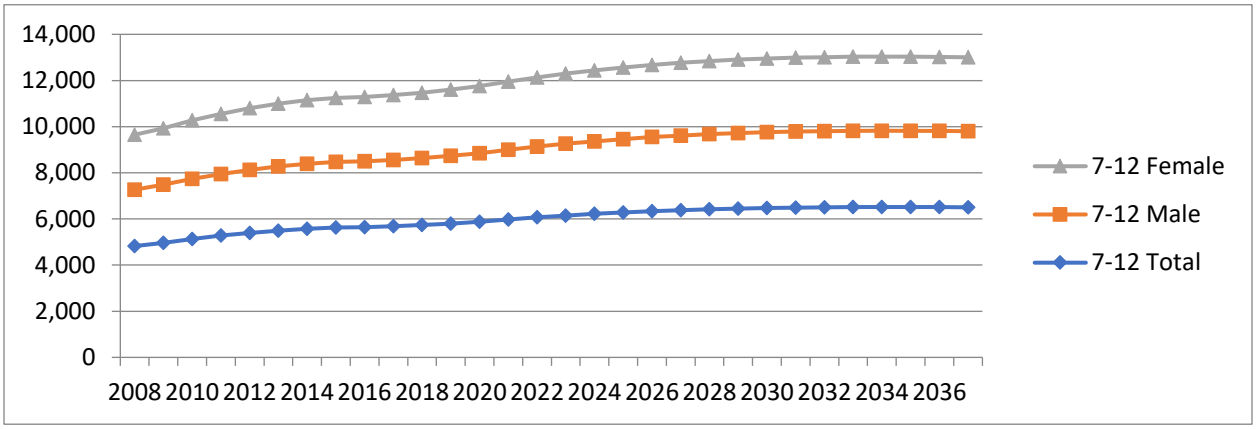
Sources: OEB, 2021/22

Moreover, the data trained result indicates for the past five consecutive years for the percentage GER value was more than 100%. Thus this indicates that, there are **most of the children joined the system at early or late of official schooling age and availability of repetition rate.** Therefore, the regional government should work in order children joins the system with official schooling age should work on reductions of repetitions **with same class** to harness the demographic dividend from generating skilled man power at primary education level.

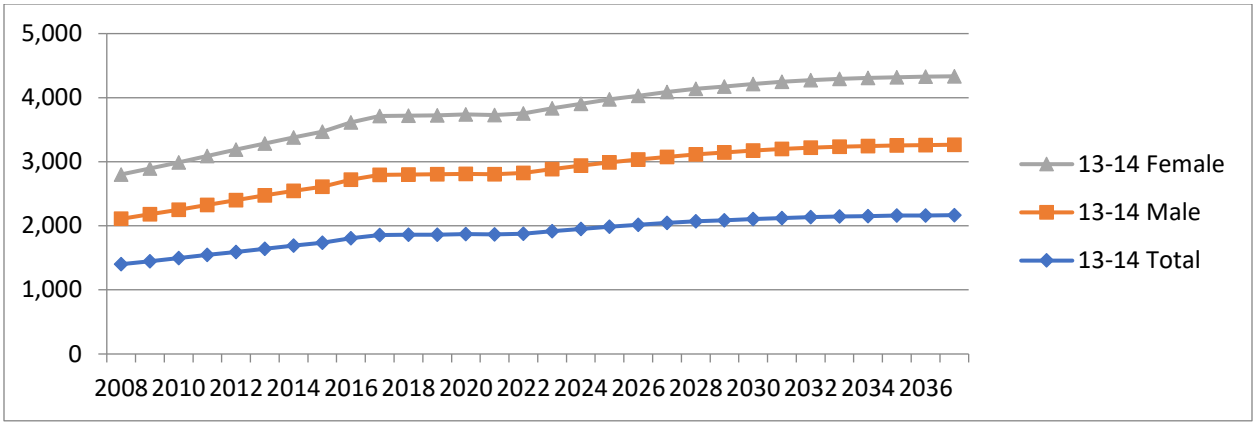
However, as indicated in below diagram the population trained of official age for primary school enrollment aging of (7-14) at regional level shows trained of continuous increment from year (2008-2023) for both male and female. Thus, this indicates that the regional government should work on demographic transition from high fertility rate from low fertility rate through family planning policy, awareness creation on birth control, educating girls to reduce the high fertility rate. Moreover, planning and expansions of access education with context of compatibility of the primary school official age population has one of the other policy come out.

Besides, on the same official school age the population for cast from year (2024-2036) data indicates, continuous slight increasing. Therefore, adjustment through reducing the demographic transitions of high fertility rate to low fertility rate based on the above mentioned policy recommendations have vital role to minimize the disequilibrium between primary school GER and official age population growth from year (7-14) to harness the demographic dividend from educating and improving of GER on this official age schooling.

Figure 4.3.16: Population trained and for cast of official age from (7-12) year 2008-2036



Source: CSA

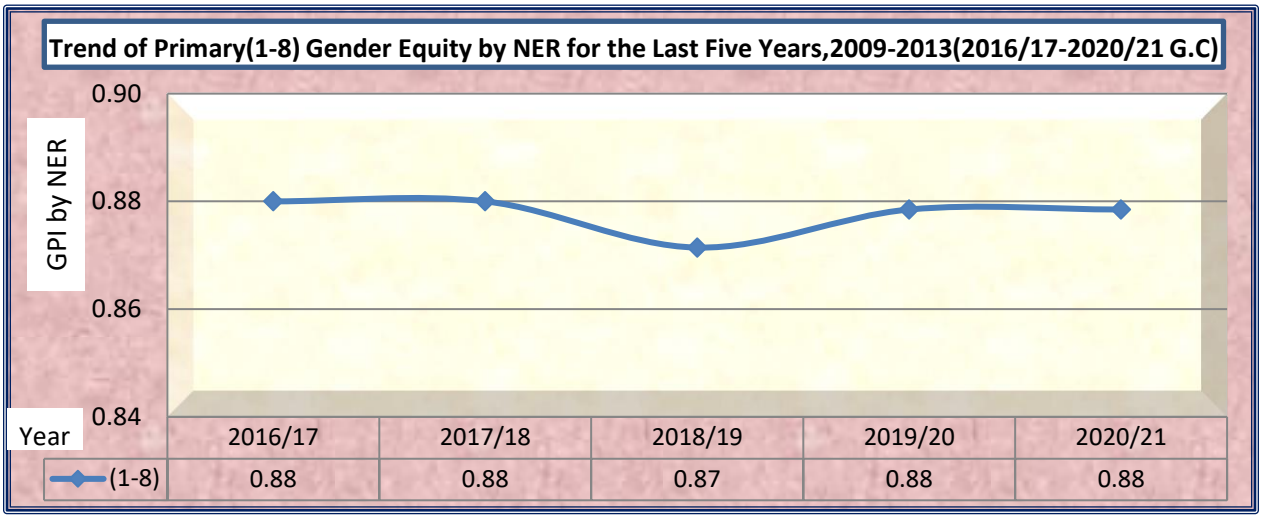


Source: CSA, 2021/22.

4.3.9 Gender Parity Index for primary Education at regional level with context of harnessing demographic dividend.

The parity index compares two groups of ***females and males*** and obtained by dividing the performance indicator of ***females to males***. Accordingly, the Parity between the two groups is achieved when the parity index value is equal to 1. On the other hand, an index value above 1 indicates an advantage for group (numerator); conversely, an index value below 1 indicates a disadvantage for group (numerator). Therefore, the greater the divergence of the index from number one the greater the disparity between the two groups. Accordingly, to understand the gender parity index of primary education at regional level the trained of secondary data was collected from regional education office from 2016/17 to 2021.Accordingly,the study result revealed that, there has been a sustainable decline in gender parity index for the last five years from 2016/17 to 2020/21 as indicated in below graphs.

Figure 4.3.17: **Trained of primary (1-8) Gender Equity by NER years (2016/17-2020/21)**



Source:OEB,2021/22

As the study result revealed and indicated in the above figure, the gender parity index with context of net enrollment ratio at regional level was showed, there was a gender equity gaps for the last five year trained which about 0.8% . This indicates that, there was a variation between male and female children's to access for primary education and the access of male was greater than females.

Therefore, as we understand from the result the low primary education access of female children's compered to male have negatively affects to harness the demographic dividend obtained from achieving of gender parity at primary education level. Moreover, the low participations of female children's in primary education also one of the causes of early marriages which further create the increase in fertility rates at regional level and have spillover effect on the demographic transition from high fertility rate to low fertility rate and to harness demographic dividend.

4.3.10 Education quality with context of harnessing demographic dividends

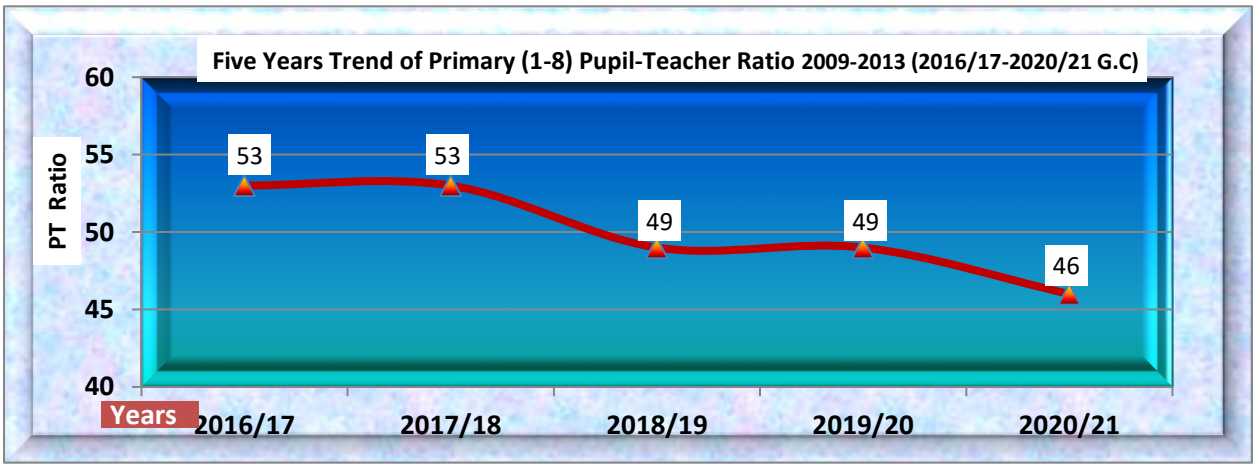
The other way of ***harnessing demographic*** dividend regarding human capital development is producing of competent human power which is competent in the labor market by delivering of standard quality education by improving quality assurance.

As indicated by Goodlad, & Anderson, (1987) education quality measure indicators are categorized in to input; like, *teacher experience, per pupil Expenditure, parent support, teacher pupil ratio and pupil section ratio, process which includes, degree of achievement-oriented policy,*

educational leadership , cooperative planning of teachers, quality of school curricula in terms of content-covered and formal structure orderly atmosphere evaluative potential.

In addition, education process is inclusive of time on task (including homework), structured teaching opportunity to learn high expectations of pupils' progress, degree of evaluation and monitoring of pupils' progress and the output indicators which is student achievement and finally the impact which indicates the competitiveness of the students in the labor market.

Figure 4.3.18: **Five Years Trend of Primary (1-8) Pupil-Teacher Ratio (2016/17-2020/21 G.C)**



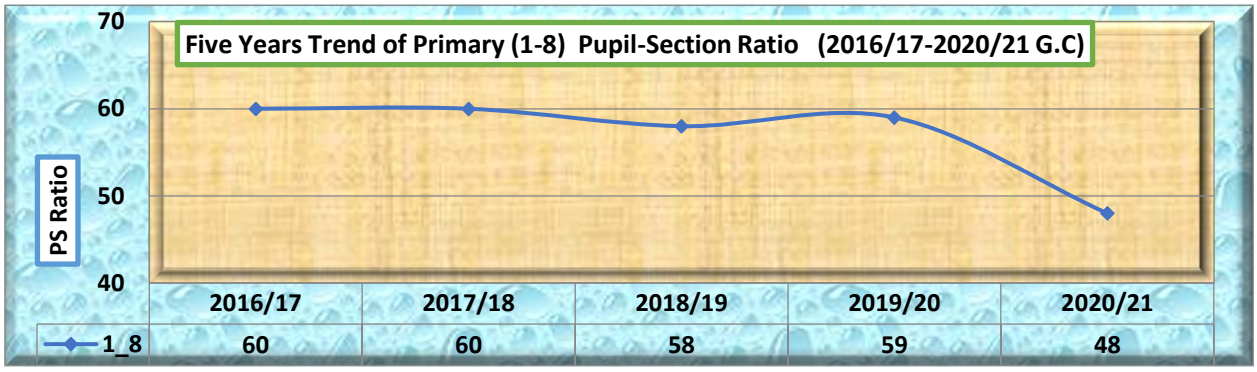
Source; OEB,2014

Accordingly, to understand weather the primary education quality harnesses the demographic dividend or not the five year trained of data on *pupil teacher ratio* and *pupil section ratio* was used as one of quality indicators. Therefore, It is believed that a lower number of pupils per teacher indicate that, pupils might have better chance to contact their teachers within manageable class room and it have vital contribution to generate quality skilled children's. Accordingly, the standard set for pupil teacher ratio for primary education at national level is 50:1. Thus, as the study result revealed, there was an improvement of pupil teacher ratio for the last five year from 2016/17 to 2020/21 from 53% to 46% , which is below the national standard which is 50.1 as indicated in the above figure. Therefore, this implies that, the region has been working in is achieving the standard pupil teacher ratio for the last five years through improving teachers training and capacity building. But when we disintegrate the analysis to subject, zone, administrative town, and schools more

teachers are needed yet at regional level. Thus, this have a vital role to harness the demographic dividend in line of generating skilled man power which competent in the labor market.

The other primary education quality indicator is ***pupil section ration*** which gives a rough estimation of class size, assesses the efficiency of resource utilization and it also used to assess the teaching- learning process and the standard set for pupil section ratio for primary education is 50:1.therefore as the study result indicates, at regional level the trained of pupil section ratio for the past five years (from 2016/17 to 2020/21) declines sustainably from 60 % to 48%. Thus , as the study result indicates a decline in pupil section ration have create conducive environment to easily manage the class room by the teachers and have spillover effect to create qualified children's for the future education promotion and reduce the reputation rates of students at regional level as indicated in below figure 4.3.19.

Figure 4.3.19: **Five Years Trend of Primary (1-8) Pupil-Section Ratio (2016/17-2020/21 G.C**

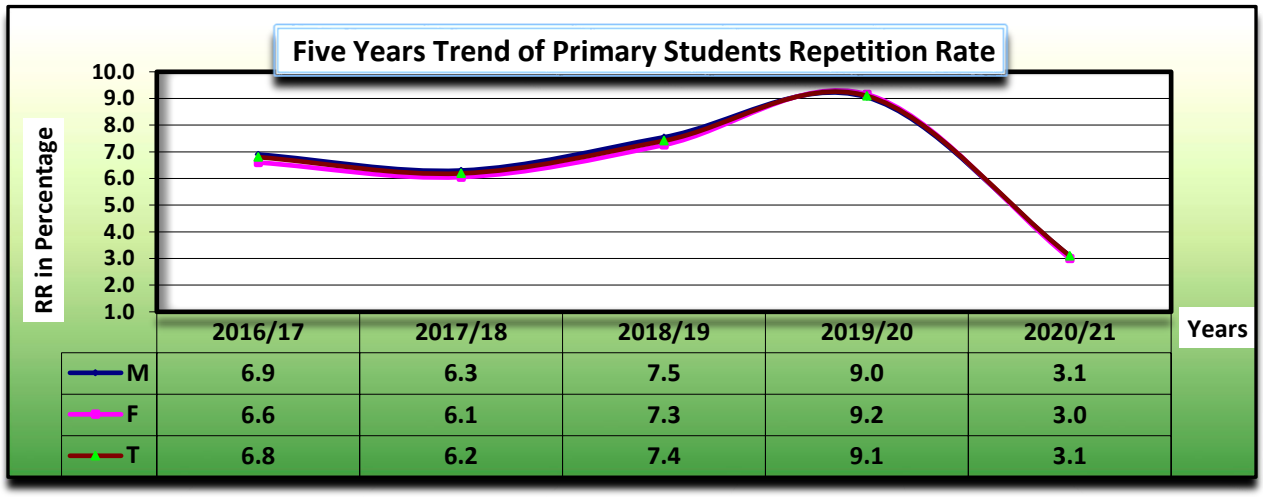


Source; OEB, 2021/22

Moreover, the study result indicates that, there was an improvement in constructions of class rooms for primary school at regional level for the past five years of 2016/17 to 2020/21 G.C

Education Repetition Rate (RR): Repetition Rate is one of the indicators of education efficiency and is the proportion of pupils enrolled in a given grade for a given year who studied in the same grade for the previous year. Accordingly, based on the five years trained of regional primary education reputation rate data, the study result indicates that there was a slight decline in reputation rate for the last five years as indicated in below figure

Figure 4.3.20: Five Years Trend of Primary Students Repetition Rate

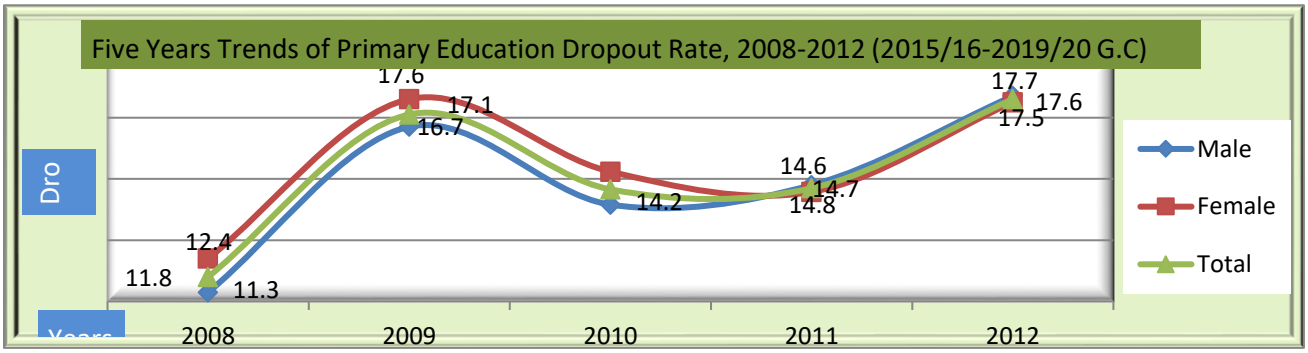


	2016/17	2017/18	2018/19	2019/20	2020/21
M	6.9	6.3	7.5	9.0	3.1
F	6.6	6.1	7.3	9.2	3.0
T	6.8	6.2	7.4	9.1	3.1

Source: OEB, 2014

This indicates that there were ***improvements of awareness creation*** and improvements of family incomes to send their children to school and decline in family interest to use their children for labor supply specifically in rural area. ***On the other hand the other, indicators for education efficiency is school dropout*** which is the proportion of pupils who withdraw from a school in any year and who will not return back to school in the following year. Accordingly, as the study result indicates from the past five year on children's dropout rate in primary school has increased from 11.8% in 2008 to 17.6% in 2012 at regional level as indicated in below figures.

Figure 4.3.21: Five Years Trends of Primary Education Dropout Rate,(2015/16-2019/20)



Source: OEB, 2020/21

Therefore as indicated in the above figure the dropout rate for male and female children's in primary education was increasing from year 2011 to 2012 EC. Thus, this may directly affect in one

side the income of family which invested on children and have a cause for female children's for early marriage which further negatively affect the demographic transition from high fertility to low fertility rate to obtain demographic dividends at regional level. On the other side the economic incapability of families to send their children to school is the other causes for the increase in drop out of children's from school.

On the other hand, the problem of poor family income and demanding for child labor are the other causes for the dropout. Therefore, to improve the problem of drop out at regional level, the regional government have to plan to expand the school feed program in both rural and urban area, awareness creation for family in order they reduce using of child labor and send their student to school and crating possibility and the way family income are improved.

4.4. Economic growth with context of harnessing demographic Dividend

As indicated by Ethiopia ten year home grown development plan, (2020/21) the implementation of the two Growth and Transformation Plans (GTP I and II), of Ethiopia has registered rapid and high economic growth. Accordingly, as the report indicates based on constant basic prices (2015/2016 base year), Gross Domestic Product (GDP) grown on average by 9.2% per year and the volume of real GDP rose from Birr 828 billion in the 2009/10 fiscal year to Birr 1.99 trillion in the 2019/20 fiscal year. Compared to an average of 11% annual growth target during the period, the actual growth performance fell 1.8 percentage points short of the target.

Moreover, as the report indicates, when the economic growth performance is disaggregated into major economic sectors, agriculture, industry and services sectors have been respectively registered an average annual growth rate of 5.3%, 17.2% an 9.7%. However, as the home grown ten year plan indicates, there were a short fall of different economic variables to achieve healthy economic growth in the past Growth and Transformation Plans (GTP I and II). Accordingly, some of the failures and challenges identified during the ten years home grown plan pre- assessment plan were;-

Failure to ensure quality economic growth: Although high economic growth has been registered over the past ten years, there were gaps in terms of creating adequate job opportunities, ensuring equitable distributions, ensuring structural transformations, and creating sectorial linkages and synergies. Thus, this challenge was the main causes for the past ten year to create job opportunity at national level and it has spillover effects on national political instability and in harnessing

demographic dividends regarding creating jobs for skilled and unskilled human capitals at national and regional level.

The other challenge was ***External debt distress***: Besides the lack of or limited competitiveness in international markets, our domestic products were not also able to compete with imported commodities. The bulk of Ethiopia's export commodities come from limited number of agricultural products without significant value additions. Moreover, domestic productions could not be able to fulfill the demand for input for domestic economic activities and industrialization. In addition the problems of like ***inflation, poor sectorial transformation, imbalance between saving and investment, rise in unemployment, poor domestic financial access, and its focus on liquidity supply for government own enterprise and failures of co-ordination, and finally the government co-ordination failures were the past ten year challenges***. Thus the above mentioned challenges are directly and indirectly affect the nation to harness demographic dividends at national level with context economic growth and developments.

Moreover, as the report gap analysis indicates, the unhealthy of the economic growth in the past GTP (I) and GTP (II) failed to create sufficient jobs for the active labor force population and to utilize the window of opportunity/demographic dividend from active labor force.

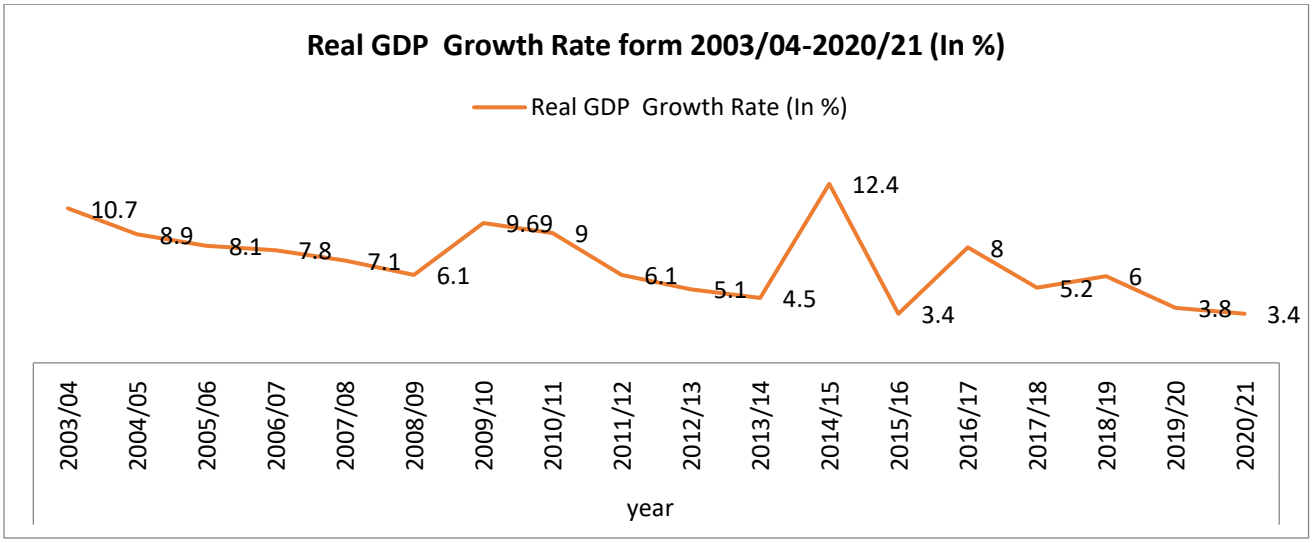
Thus, based on the above past ten year challenges, the ten year plan was put as a priority to resolve the above mentioned challenges through setting of different strategies and different macro-economic policies and to harnessing demographic dividends at national and regional level under the ten year home grown economy plan hence harnessing demographic dividends was one of the pillar areas. .

Accordingly, to examine whether the economic growth is harness demographic dividend or not through creating sufficient jobs for the active labor forces Data was collected from different literature review and world bank, National bank and other sources to review some of the economic growth indicators of macro-economic variables like, Great Domestic Product, Inflation and Unemployment, investment and population growth. Beside the study utilize ***ARDL*** model to check the short run and long run relationship between economic growth and population growth, weather population growth contributes to economic growth or not in both scenario of short run and long run.

4.4.1 Trend of GDP and population with context of harnessing demographic dividends

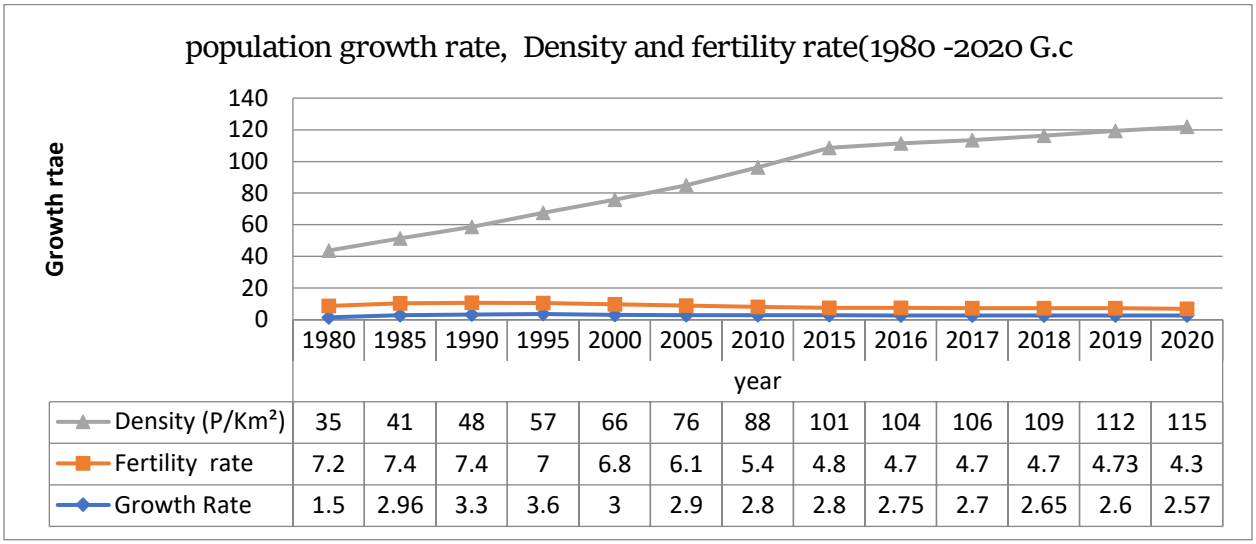
To examine the trend of a given national economic growth, weather it is healthy economic growth or not; GDP is a measurement tool for any given nation. Moreover, healthy economic growths have a vital role in creating sufficient job opportunity to absorb the active labor force and to create window of opportunity from demographic dividend. Accordingly to examine whether the economic growth harness demographic dividend or not through creating sufficient job opportunity trained of Data was collected from National Bank of Ethiopia from the year 2003/04 to 2020/21 for eighteen years on GDP growth rate and population growth rate for 40 years as indicated in the below figure 4.4

Figure 4.4: Real GDP Growth Rate form 2003/04-2020/21 (In %)



Source: NB, Report, 2021/22

Figure 4.4.1: population growth rate, Density and fertility rate (1980 -2020 G.c



	1980	1985	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Density (P/Km²)	35	41	48	57	66	76	88	101	104	106	109	112	115
Fertility rate	7.2	7.4	7.4	7	6.8	6.1	5.4	4.8	4.7	4.7	4.7	4.73	4.3
Growth Rate	1.5	2.96	3.3	3.6	3	2.9	2.8	2.8	2.75	2.7	2.65	2.6	2.57

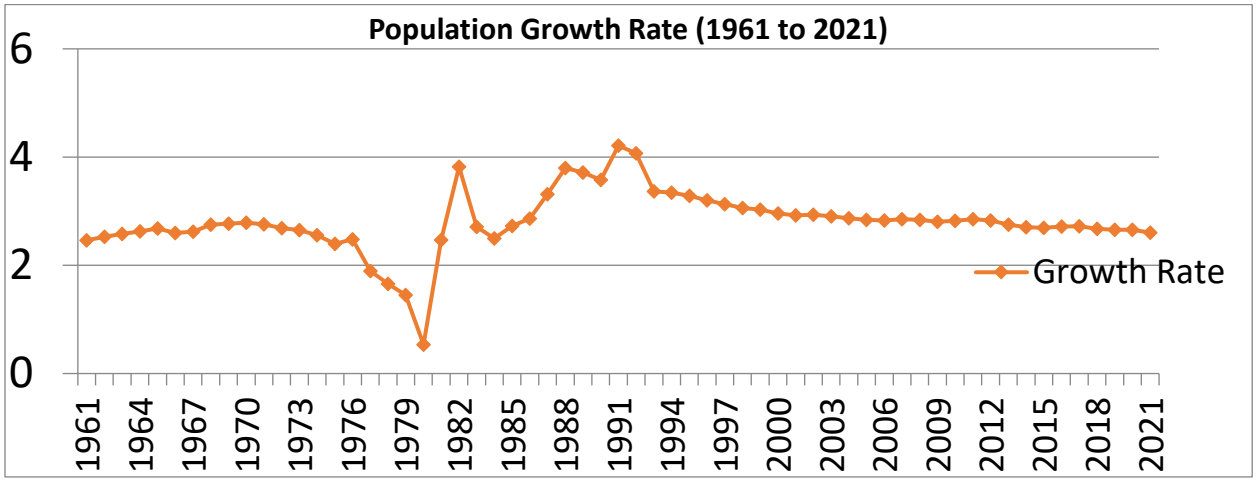
Source, NBE, 2021/22

As indicated in the above diagram the trained of growth rate of GDP with constant market price were declines persistently from 2003/04 – 2009/10 from 10.7 to 6.1 and starts to increase in 2010/11 and 20111/12 to 9.6% and 9%. However, it insistently starts to decline from year 2016/17 to 2020/21 from 8% to 3.4% at national level. This may results from the global prospective, like; the epidemic of ***Covid -19 and the Russia- Ukraine war*** which affect the global economy through cutting of goods and service supply chain and directly affecting the global international trade and other global economic linkage.

On the other hand, domestically Ethiopia has been with in internal conflict for the last three years, like the war in the northern Ethiopia. Thus, the internal conflicts for the past three years have spillover effect on improving economic growth as a results of like; low domestic and foreign investments expansion, hence internal political instability have negative connotation on internal and external investment expansion. Therefore these slight declines in economic growth have negative implication for the economy to create sufficient job opportunity for active labor force and to harness demographic dividend at National and Regional level.

However, as the study result shows the population growth rate at national level was increasing sustainably from year 2016/17 to 2020/21 as indicated in diagram below.

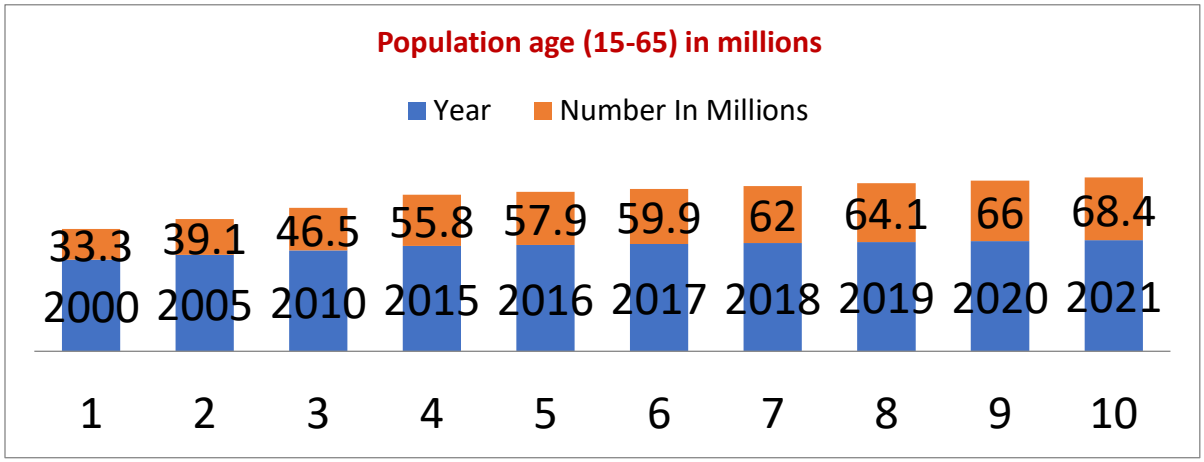
Figure 4.4.2 : Population Growth Rate (1961 to 2021)



Source: WB, 2021/22

Beside as the study result indicates, even though the economic growth declining for the last consecutive years from 2016/17 to 2020/21 the productive age population growth rate was increasing persistently for the last twenty years from 2000 to 2020/21 as in indicated in below diagram.

Figure 4.4.3: Population age (15-65) in millions



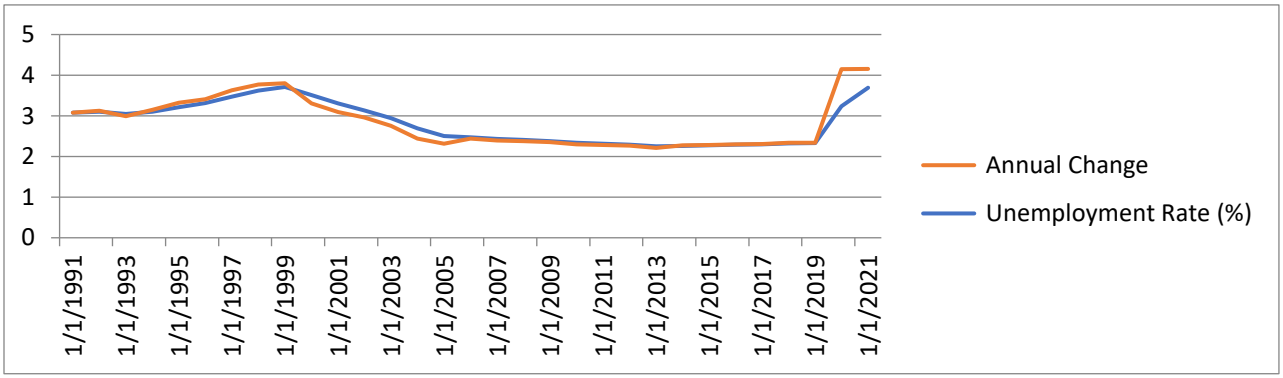
Source: Source: WB, 2021/22

Thus, as the study result indicates even though the active age population is increasing sustainably it is not contributes to the GDP growth at national level which have spill- over effect on regional economic growth. Moreover, this indicates that, the active age population cannot contribute to economic growth rather than waiting for the economy which create job opportunity. Beside the

result indicates, even though, access of education at national level it cannot contribute to the active age population to create their own jobs. Therefore, to come out from this problem, providing of short term training, for both active age population and leaders on mind set, entrepreneurial skill, project management, and leader ship have some of the policy come out and work on reduction of fertility rate both at regional and national level have vital role..

Moreover, the slight failures of the economic growth from 2016/17 to 2020/21 have also a Cause for inability of the economy to expand productive investments on development projects with full potential and to create job opportunity for active labor force and further it creates the problem of unemployment at national and regional level. Furthermore, the increase in unemployment make incapable the active labor force to spend on consumption expenditure which further reduce the growth of Domestic product which is given as ***(GDP = C+I+G+X-M)*** hence, consumption expenditure© is one components of National economic growth. Thus, this auxiliary leads to a vicious circles for persistent decline in economic growth and is challenge's to harness demographic dividend through creating job opportunity for active labor force from economic growth.

Figure 4.4.4: Trained Of Unemployment Rate from (1991-2021)



Source; WB, 2021

In other side increase in unemployment directly affects the active labor force productivity and their consumption expenditure which directly reduce economic growth.

4.4.2 Inflation with context of harnessing demographic dividend

Inflation is an increase in the overall level of prices in the economy. Another popular saying explains inflation as ‘‘too much money chasing too few goods’’. There are two causes of inflation namely the demand pull inflation caused by excessive demand over supply and cost push inflation caused by the rise in cost of production. When this increase in price is too sharp it is called Hyperinflation usually caused by an excessive growth of money supply (Mankiw, 2001).

Before, 1970s, there were continued debates over the relationship between economic growth and inflation however, most recently it was an accepted common opinion among researchers and macro-economic policy makers that, there is no positive correlation between the economic growth and the inflation rate. This widely acknowledged mostly with context of economic development in Latin American countries during those periods (Behera, 2014). The study by Fischer (1993) used inter-sectorial and panel data for developed and emerging economies to examine the relationship between inflation and economic growth. His study revealed out the negative relationship between economic growth and inflation. Ghosh and Phillips (1998) claim that there is no doubt that high inflation is detrimental to economic growth, while this inflicting effect is less pronounced when it comes to moderate inflation rate. They have used a regression panel data and have found a significant opposite relationship between inflation and economic growth.

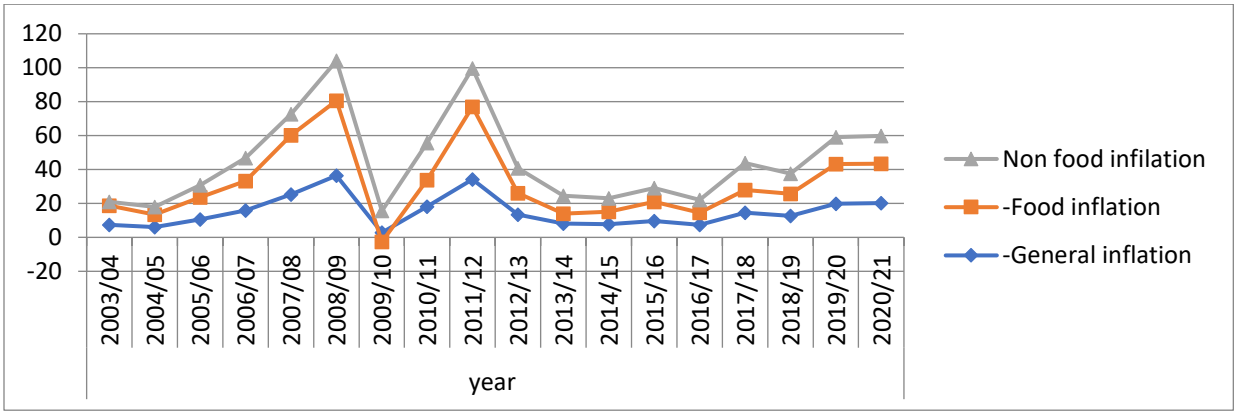
Barro (1995) assessed the effects of inflation on economic growth using data from 100 different countries covering the period 1960-1990 using regression model and he concluded that; an increase in average inflation of 10 per cent per year reduces the real GDP growth rate from (0.2 to 0.3%). On the other hand, Andres and Hernando (1997) found a significant negative relationship between inflation and economic growth during long periods. Inflation reduces the level of investment and has a negative temporary impact on long term growth rates, which in turn generates permanent fall in per capita income.

The study by Xiaojing (2008) examined the trade-off between inflation and economic growth in ***China*** using annual time series data from 1978 – 2007. The finding of his study reveals that, growth can be affected differently at different steady state level. He found that, at the socially accepted steady state of inflation, there was positive relationship between inflation and GDP. However a rising inflation ***above its steady state will have a negative effect*** on growth and tight monetary and fiscal policies are recommended in to resolve.

The study by Hodge (2005) checked the findings of the numerous empirical findings that inflation has negative long-run impact on the economic growth in South Africa. As he indicates, the OLS regression results have shown the existence of a strong and statistically significant negative long-run relationship between inflation and economic growth in South Africa. As indicated by Getchew, (1996), the short run determinant of inflation in Ethiopia is money stock and the long run is supply factors. His paper recommends that, in the short run inflation is controlled by controlling money supply while in the long run he advice that removing the bottlenecks of the supply side of the economy. On the other hand the study by Rao and Yesigat, (2015) states, the negative relationship between inflation and economic growth in Ethiopia ***both in the long run and short run***

Based on the above analytical review, to examine the relationship between inflation and economic growth at national level, secondary data was collected from national banks from year 2004- 2021. Accordingly, the trained of general inflation at national level for the last eighteen years indicates a slight fluctuation. For example it persistently increase from 2004 to 2008/09 and decline in year 2009/10 and starts to increase from year2010 to2012. Finally the ***general inflation, none food and food inflation were*** persistently increase from 2016/17 to 20221 as indicated in below diagram. As the study result revealed above the persistent increase in inflation for has as a result of external factors global problems of Covid-19 and Russia Ukraine war which directly and indirectly affects the global economy including Ethiopia through diplomatic relation and trade with the rest of the world. On the other hand domestically Ethiopia has been with in internal conflict for the last three years which further affects the supply and demand side of the economy which has spillover effect for ***general inflation, none food and food inflation at national level.***

Figure 4.4.5: Trained Of inflation Rate from (2003/04-2020/2021)



NBE, 2021/22

Thus, as a different review above indicates in both developing and developed countries inflation have more of a negative connotation on economic growth both in the short run and long run cases. Moreover, inflation has a negative connotation through increasing cost of living and by reducing the purchasing power which further reduce the consumption expenditure of households which reduces the national GDP which is given as *(GDP = C+I+G+X-M)* assuming the economy is open economy.

Beside, Inflation affects the economic growth through increasing the cost of factors of production which directly affects investment on expenditure which have directly spillover effect on economic growth. Therefore, even though the normal steady state inflation has positively contributes to the economic growth, if it is beyond the steady state, it directly affects the economic growth through increasing the purchasing power parity which reduces capital accumulation. Thus, the slight increase in general, none food and food inflation at national level have negative effect on economic growth and make incapable the economy ***to create sufficient job opportunity*** which absorbs the active labor force. Therefore, the declines in economic growth have a negative connotation to harness demographic dividends at national and regional level. Thus, policy injection through controlling money supply in the short run and resolving problem of supply shock in the long run is vital to establish health economic growth and to harness demographic dividend at national and regional level.

4.4.3 Population dynamics and Economic growth

As mentioned by Dullah et al., (2011), Population growth of a country increase whenever the total birth rate of the country exceeds the total death rate of the nation or, when the total emigration of the country is higher than the total immigration. On the other hand, as the study by, Adediran, (2012) point out, there is a multi-directional relationship between population and economic growth.

However, it has been accepted that, economic growth is mainly affected by the population since more human activities drive the economy that, in- turn, accelerates economic growth. Moreover, Population dynamics and its effects on economic growth have been an age-long debate (Dauda & Aziakpono, 2015) and it has been a subject of major debates in the economic and social science literature. In general, there are three strands about the consequence of population growth on the overall economic development of a nation. Some scholars argue that, rapid population growth (high fertility and emigration rate) hinders economic development leading to lower economic growth and poverty (**Gorge** et al., 2016). Robert Malthus (1798), in his theory of population, contended that population growth inescapably led to poverty fundamentally, for it would always surpass food supplies (Dennis & Robert, 2008).

The Other researchers (they are also known as the Revisionist) have argued that, rapid population growth promotes economic growth by increasing the stock of human capital, and even by prompting technological and institutional changes (Admassie et al., 2015). On the other hand, according to (Furuoka, 2010), in most developing countries, the demographic dynamics found to be encouraging for economic growth and development and rises living standards of the society. This is because in developing countries, population growth enlarges market size and increases competition in marketing activities. Even some other researches have established that population growth has an indefinite effect on economic growth (Bloom et al., 2003; Admassie et al., 2015).

However, there is no over-all agreement among researchers about the proper role of the population in the economic growth path (Furuoka, 2016). But there is no controversy that, Population expansion affects many phenomena, such as; the age structure of a country's population, migration, economic inequality, and the amount of labor force; these factors, in turn, affect the overall economic growth of a given nation (Wesley, 2017).

In developing countries, however, it has been accepted that, rapid population growth and high fertility rate could have negative consequences in economic and social development (Dennis & Robert, 2008). On the other hand, as the study result by Assefa, (1994) indicates, Population growth, is not the fundamental cause of low levels of living, and serves to worsen the problems of underdevelopment and makes development possibilities unattainable in developing countries

In general, the population dynamics have a significant impact on any country's economic growth and performance depending on ***the economic position of a given countries***. On the one hand, the declining birth rate in the developed countries leads to shortages of labor supply and put pressure on their pension systems. On the other hand, increasing fertility in developing nations has been viewed as a potential obstacle to their economic and social development (Furuoka, 2010).

However, there is an on-going debate concerning the population and growth nexus (Furuoka, 2016). The argument started when Malthus (1798) published his book entitled "An Essay on the Principle of Population." According to Malthus, the causation between population increase and economic growth is bi-directional. Higher economic growth increased the population by exciting early marriage and higher fertility rates, and by improves health standard reducing mortality, while a rapid population growth depressed economic growth through diminishing returns (Dullah, 2011). For about two centuries, since the formation of the Malthus theory of population, researchers have been debating about the role of population growth in the path of economic development.

Accordingly, the arguments, in general, can be classified into two schools of thought pessimistic and optimistic views (Furuoka, 2016). The first view, popularly referred to as population ***pessimism***, follows the line of Malthusian and neo-Malthusian arguments of adverse influence of population variables on economic prosperity (Dauda & Aziakpono, 2015). Malthus supposed that population to grow geometrically, while food production to grow arithmetically, and this population economic growth interaction is the main crux of the Malthusian model (Temitope et al., 2013).

Others such as (Linden, 2017) argued that, higher population growth has been and will continue to be challenging for economic growth. Since more and more people use more of the limited scare resources, it will ultimately reduce the long-term potentials of growth. The second view ***optimistic view***, justifies that population growth leads to economic growth. A large population increases

market size and competition; it also increases the labor supply and the aggregate demands of a given nation.

In other literature, there appears to be some consensus that population and economic growth are inter-dependent. However, their nature of the interaction between seems to depend on the particular circumstances such as on the population age structure in the different countries and regions of the world (Wesley, 2017).

When Malthus (1798) discussed the theory of population, he assumed that population growth increases at a geometric rate and food production (the level of subsistence) at an arithmetic rate. He presupposed that population growth has a depressing effect on per capita output growth; this is because ***production growth cannot keep up at the same pace as population growth***. The main factor for this contention is that land (hence agriculture) exhibits diminishing returns to scale as more and more inputs employed. Thus, Malthus asserted that if "preventive check" (such as late marriage, never marry, education) failed to curb fertility, what he termed "Positive checks" (Famine, war, plague, starvation) will work then.

A neoclassical growth model such as ***Solow (1956),*** considers the population as exogenous (independent on economic dynamics) following arithmetic pattern expansion. Solow (1956) assumes a constant population growth and shows how economic growth is affected by population growth. Population growth, he thought, increases labor force supply and thus increases output per-worker growth rate in one hand, population growth reduces physical capital per worker; that eventually reduces productivity and output per-worker growth. In this case, changes in population growth rates affect the economic growth of the country, and it would be detrimental for economic development.

In recent years, different economists and researchers are involved by the population growth nexus of developing countries. However, empirical studies have found a mixture of negative and positive effects as well as of no effects evidence. Jorge et al. (2016) analyzed the dynamic interaction between population growth and economic growth in Mexico. By using a structural break co-integration and time series data for the period 1960-2014, their study revealed the presence of a long-run relationship between population and economic growth in Mexico. Moreover, their study confirmed that, there is bi-directional causality between population and economic growth in Mexico.

Temitope et al. (2013) examined the effect of population dynamics such as mortality and fertility, on the economic growth of 35 sub- Saharan African countries. Using the five-year average data from 1970 to 2005, pooled OLS and the dynamic panel data analysis, their study results showed that, total fertility rate and life expectancy at birth had a negative and a positive influence on economic growth, respectively.

Dauda and Aziakpono (2015), examined the effect of population dynamics on the economic growth of West African countries over the period 1970 to 2011. By using fixed effects and random effects estimation methods, their findings revealed that, increase in Population, labor force, and fertility improved economic growth. In contrast increase in infant mortality lowered the level of growth in the West African countries.

Akinbode et al. (2017), using yearly data obtained from 1970 to 2014, co-integration and causality test, examined the dynamic relationship between population and economic growth in the Nigerian economy. Accordingly, the study revealed that, both variables had a long-run relationship; moreover, uni-directional causality between population and economic growth running from former to the later was found. Ademola (2019) investigated the nexus between demographic dividend and economic growth in the Nigerian economy. By using time series data spanning from the year 1970 to 2017, and multivariate VAR model, their study showed that, the innovation in gross enrolment contributed to economic growth relative to innovation in economic support ratio.

On the other hand, by using historical data over the past 200 years, Wesley (2017) studied the links between population growth, per capita output growth, and overall economic growth of the world. His result revealed that, low population growth in rich countries is likely to create social and economic problems whereas; high population growth in developing countries may slow their economic development. He also proposes that international migration could be used to adjust such imbalances for advanced countries.

In addition, other study has conducted using time-series data spanning from 1980 to 2010 and descriptive statistics as well as regression analysis, by Eli and Amade (2015) on the impact of population growth on the economic growth of the ***Nigerian economy***. The study showed the existence of a positive relationship between economic growth and export growth, population, and fertility, while negative links were found between economic growth and, life expectancy and crude death rate.

Emmanuel (2015), empirically examined the relationship between population growth and economic growth in Ghana. by using time series data spanning from the period 1980-2013, Bounds test approach co-integration and Granger - causality test, the study reveals a negative relationship between population and economic growth in the short-run and, unidirectional causality in the long-run between them. Besides, it revealed that, population density and labor force impact positively, whereas the unemployment rate negatively impacts economic growth in the long run.

Beside, by using the Vector Auto-regression Estimation technique for an annual time series data ranging from the period 1963 to 2009 Thuku et al., (2013) investigated the relationship between population growth and economic growth in Kenya. Accordingly, their study revealed that, the population growth has a positive influence on economic growth, and subsequently promotes the development of the country. In addition Dao (2012), by using Least Square Estimation on linearly multivariate regression and using data on 43 countries, analyzed the nexus between population and economic growth in developing countries. The result revealed that, GDP per-capita, linearly, and negatively depends on population growth.

However, there a scanty empirical study conducted on a similar issue for the case of Ethiopia. Terefe (2018) investigated the relationships between economic growth and population indicators in Ethiopia. By using time- series techniques and descriptive analysis, the study showed that the growth of GDP negatively interacts with population growth, total fertility rate, child mortality rate, infant mortality rate and unemployment.

Besides, economic growth positively interacts with primary and secondary school enrolments, technical and vocational education and training, undergraduate studies, and health. Nonetheless, his analysis lacks econometric models making inference between population and development impossible. Generally, from the above studies, it is concluded that population-growth nexus lead to a mixed result base on the economic context and population of a given nation. Moreover, the empirical review above mentioned that, the relationship between economic growth and population are contextual based on given nations economic and other development policy context. For example, as indicated in most literatures the decline in population growth negatively affects the economic growth in advanced countries and negatively affects the poor and emerging countries. And as a result most advanced countries are demanding for migrations from the rest of the world.

However, in poor and developing countries, hence, the economy is not capable to absorb in terms of sufficient job creation and in generating sufficient food supply there was a negative relationship between population growth and economic growth. Therefore, to cop up with this problems poor and developing countries have to develop conducive policy which support economic growth and reduction of fertility rate at national and regional level.

4.4.4 Population Dynamics Nexus Economic Growth with Context of Harnessing Demographic Dividend (ARDL) Model application.

This study uses a time series secondary obtained from the World Bank (WB) to check the short run and long run relationship between economic growth and population. The annual time series data used in this study are; gross domestic product (GDP) as a proxy of economic growth, and population growth of Ethiopia. The data used in the study range from the period 1990 to 2020; the sample used is relatively small. The econometric analysis of the data was executed in three-stage procedures: (1) Stationary/unit root tests, (2) Bounds test for co-integration and estimation of the long-run and Short-run coefficient from the ARDL method, and (3) the Toda–Yamamoto (TY) causality test.

4.4.5 Autoregressive Distributed Lag (ARDL) Model approach to Co-integration

Co-integration can be defined as the existence of long-term and equilibrium relationships between different series (Matchaya, et al., 2013). This makes the co-integration method an ideal technique to determine whether the long-term relationships between variables exist or not. However, before proceeding to the co-integration testing, the levels of integration of variables need to be tested by using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test. Both Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) unit root tests are used mainly in the literature (Umit and Alkan, 2016).

Accordingly, this study relied on using the ARDL model; hence, Autoregressive Distributed Lag models are suitable for small sample sizes, unlike other VAR methods like the Johansen co-integration technique, which in the same situation are vulnerable for substantial loss of degrees of freedom (Emmanuel, 2015).

The implication on behalf of using Autoregressive Distributed Lag models is that, it generate consistent estimates of long-run coefficients that are asymptotically normal, whenever the variables are fully integrated of order zero, I(0), purely integrated of order one I(1) or a mixture of

I(0) and I(1) (Pesaran et al.,2001). It also ***provides unbiased and efficient estimates of the long-run model and valid t-statistics even if the variables under consideration are endogenous***. This is possible because it avoids the problems of serial correlation and endogineity (Afzal et al., 2010). Consider the following equations for which the ARDL model constructed when economic growth is the dependent variable and population, unemployment, inflation and investments are independent variable, the ARDL model equation is given as below;-

$Y = \alpha + \beta 1\ POPN + \beta 2\ INVT - \beta 3\ UNEPT - \beta 4 INFN + €$

***Where*:-**

Y is Growth Domestic Product (GDP)

α is constant or intercept and equals to Y if the value of explanatory variables included in the **model are zero.**

β1, β2, β3 and β4 are Coefficients of the explanatory variable included in the model

€ is the error term which indicates the explanatory variables which affect the dependent variable which is GDP in this case**.**

4.4.6 Conducted Unit Root Test and Its Results.

To analyze the relationship between the variables, in this case which is the short run and long run relationship between economic growth and population, the most important steps for applying an ARDL model was to perform ***stationarity*** test. The main purpose of stationery test in time serious data analysis is helps to avoid the crashing of ARDL model application as a result of the non-stationary of the data and to avoid the biased estimates of coefficients from the Autoregressive Model (ARDL) Model. In addition, the stationery test enables to identify the order of integrated level of the variables, so that there will be no spurious regression result (like high R-squared values even if the data is uncorrelated and problem biased coefficient).

The null hypothesis is that there is a unit root in our observed time series against the alternative hypothesis that the process is stationary. Accordingly, the results from *Augmented Dickey-Fuller* (ADF) test for unit root test can be discussed below.

Table 4.4.1: *Augmented Dickey-Fuller* **(ADF) test Result**

Variables	At Level		At first difference		Order of integration
	Intercept	Intercept and trend	Intercept	Intercept and trend	
GDP	-3.92445** [0.0126]	-4.907475 [0.0097]	-7.137715 [0.0001]	-7.03538 [0.0007]	I(0)
UNEMPT	1.403721 [0.9974]	1.784709 [0.9999]	-1.822398 [0.3532]	-2.781691** [0.0213]	I(1)
INVT	-1.480589 [0.5111]	-0.072668 [0.9858]	-2.423568 [0.1559]	-5.611606*** [0.0055]	I(1)
INFN	-3.160483 [0.0467]**	-3.089875 [0.1487]	-6.294307 [0.0005]	-5.936548 [0.0037]	I(0)
POPN	-0.838295 [0.7735]	-2.837871 [0.2137]	-2.811646 [0.088]	-2.872281*** [0.0081]	I(1)

Source: Author's Calculations. Brackets show Mackinnon (1996) one-sided P-values.

Note: The rejection of the null hypothesis is based on MacKinnon (1996) critical values. The Akaike Information Criterion (AIC) is used which an estimator of prediction error and thereby relative quality of statistical models for a given set of data and is used to determine the lag length while testing the stationarity of all variables and the star Sign (***, **, and *) denote significance at $p<0.01$, $p<0.05$, and $p< 0.1$ levels, respectively. Accordingly, as it was shown above table the economic variables like Unemployment, investment and Population are non-stationary at level and become stationary ***after taking first difference***. This implies that these three series are integrated of order one, i.e. I (1), while GDP and Inflation is stationary at level, i.e. I (0). In general as it was shown in the table, since the order of integration of all the variables is not same, the mixed results obtained from the unit root test justify using an auto Regressive Distributed lag (ARDL) model technique to estimate the long-run and short-run relationship among the above mentioned dependent and independent variables under investigation.

Table 4.4.2: Bound Test of Co-integration (Test for long run relationship) result

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K

F-statistic	4.361225	4

Critical Value Bounds

Significance	I(0) Bound	I (1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: *Computed by the author using Eview 16*

As it is depicted in table above, the calculated ***Pesaran et al. (2001)*** **F- calculated values of 4.361225** is greater than the Pesarian upper bound critical values at (5%) level of significance with (95%) level of confidence intervals. Thus, the null hypothesis of no co-integration has been rejected. Thus, this indicates that, the existences of the long run relationship between the variables have been assured. Therefore, there is co- integration relationship among the variables in long run. Thus, the long run positive relationship between economic growth and population growth indicates that, in the long run population growth is contributed to economic growth of Ethiopia hence; in the long run there is a gradual demographic transition from dependent age to active labor forces. Thus, this active labor forces are contributes for the increase of productivity which further contributes to economic growth through improving their income and consumption expenditures of active labor forces. However, with the growth of population in the long run, setting of conducive economic growth policy is mandatory in order the economy absorbs the active labor force through creating sufficient job opportunity. Thus, this creates the window of opportunity to harness the demographic dividends.

4.4.7 Results of the Long run ARDL model

After confirming the existence of long-run co-integration relationship among the variables, the next step is running the appropriate ARDL model to find out the long run coefficients, which is reported in table below.

ARDL (1, 0, 0, 0, 0) selected based on AIC (28) observations used for estimation from 1990 to 2020 and dependent variable is GDP.

Table 4.4.2: ARDL model result

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEMPT	-0.0425963	1.205430	-0.353370	0.7342
INVT	0.063021	0.093003	0.677624	0.5198
INFN	-0.047429	0.047724	-0.993820	0.3534
POPN	0.04372702	7.806281	2.404820	0.0471**
C	-45.203567	25.174793	-1.795588	0.1156

Source: *Computed by the* ***author*** *using Eviews 16*

Note: as indicated in the above table, the ** sign indicates, the significance of the coefficients at 5% significant level. Accordingly, based on the ARDL model result the empirical results of the long run model coefficients are presented in above table. The results suggest that, factors which include unemployment, investment rate and inflation rate found to be not determinants of GDP of Ethiopia in this long run period of time series and statistically insignificant.

Even if the long run relationship between GDP and unemployment is statistically insignificant, the result of coefficient is with negative sign. This indicates the negative relationship between unemployment and GDP and the result is consistent with Okun's Law which explains that there is an inverse relationship between GDP growth rate and unemployment and (It predicts that a 1% increase in unemployment will usually be associated with a 2% drop in gross domestic product (GDP). But according to this time series data output the effect of unemployment on GDP is insignificant

Thus, this indicates that, even though there was the negative relationship between economic growth and unemployment its effect is not significant in the long run. Thus, this indicates that there was a room to set the conducive policy for readjusting the economy and reducing of unemployment

through creating healthy economic growth which create sufficient job opportunity and to harness the demographic dividend from creating of sufficient job for the active labor force.

Therefore, the government should work on expansion of productive investments (manufacturing industry) through facilitating both domestic and FDI by maintaining National and regional peace and security through resolutions of internal conflict from multiple direction. Moreover, the government has to work on developing the entrepreneurial skills development of youths in order they create their own jobs both at urban and rural area mainly focusing on the abundant resources available in both rural and urban area and establishing a market linkage and supply chain for their final product. Thus, this further creates window of opportunity to harness the demographic dividend hence, the economy creates sufficient jobs for the active labor forces.

On the other hand with the same scenario as the ARDL model result indicates, inflation is negatively related with the economic growth but it is not significant in the long run. Thus this empirical result indicates that, the problem of inflation is caused from two main causes which are the increase in money supply in the short run and the supply shock in the long run.

Therefore, there is a room for the government to maintain the problem of inflation by narrowing the gap between economic growth and inflation through increasing productivity in the long run which maintain the problem of supply shock. Moreover, there is opportunity to balance the problem of increase in price by seting both conducive monitory policy like selling of financial security, increase in reserve requirement and the fiscal policy tools like balancing the government expenditure and private expenditure and increasing productivity domestically which is one of the pillar home grown economic policy to maintain the market instability. In addition, giving focus on import substitutes production of consumption goods, specially, by using domestically abundant resources or factors of production to expand production and productivity.

The other is the relationship between economic growth and investment. As the ARDL model result indicates there was a long run positive correlation between investment and economic growth. As the economic theory indicates GDP of a given nation is the component of household consumption expenditure, government expenditure, investment expenditure and net export of a given nation which is given as (GDP = C+G+I+X-M). Therefore, from the equation one can understands that there is positive relationship between GDP and investment expenditure. Thus , improving of both domestic and FDI through creating conducive environment like; attractive investment law at

national and regional levels have a vital role for economic growth and to minimize supply shortage, to generate foreign currency through producing export base production, in creating jobs for both skilled and un skilled labor, in maintaining market price and for technology transferring.

However, the ARDL model result indicates that, even though long run positive relationship between economic growth and investment it is insignificant. Thus, this indicates that, there was a slight decline in the investment trained for the last thirteen years. Therefore, it demands to create conducive environment for both domestic and FDI, like; conducive investment law, assuring peace and security, opening the window for higher, medium and lower investments in terms of their income/capital potential rather focusing on high potential investors, provide more chance for those investors engaged on productive investment rather than service sectors, encouraging domestic investors based on their capital potentials like investment on small and medium micro enterprise both in rural and urban area.

However, as indicated from the ARDL model result, holding other economic variables constant growth rate of population found to be statistically significant in determining GDP in the long run. Thus as it depicted from the model result, holding other variable constant a one percent increase in population growth rate improve the growth rate of GDP by 4.3%. Thus, this the long run positive relationship between population growth and economic growth indicates that, in the long run there is a trend of demographic transition from dependent age to active age which creates window of opportunity to harness demographic dividend from active labor force.

Moreover in the long run the active age labors force are supplying their labor efficiently and effectively which further increase their income, consumption and saving which further have positive connotation on investment expansion and economic growth. Moreover, increase in employment increases production and productivity which further contributed to economic growth. Therefore, in the long run to harness from demographic dividend, sustainably at national and regional level, designing of conducive development economic policy based on national abundant resource context have vital role.

Thus, this further generates healthy economic growth which creates sufficient job opportunity. Moreover, work on capacity building through entrepreneurial skill development both in rural and urban area is the other policy option to increase the employment opportunity and to reduce the

problem of unemployment at national and regional level and to utilize window of opportunity from demographic transition.

4.4.8 Estimation Results of the Short Run and Error Correction Model

Once the long run model and its coefficients are determined, the next step is determination of Short run dynamics. In the short run analysis the error correction term, indicates the speed of adjustment to restore equilibrium in the dynamic model. It is a one lagged period residual obtained from the estimated dynamic long run model. In addition, the error correction model is to indicate the speed of adjustment from the short-run equilibrium to the long-run equilibrium state and it indicates, the greater the co-efficient of the parameter, the higher the speed of adjustment of the model from the short-run to the long-run equilibrium.

On the other hand, the coefficient of the error correction term indicates ***how quickly variables converge to equilibrium***. Moreover, it should have a negative sign and statistically significant at a standard significant level (i.e. p-value should be less than 0.05).

Table 4.4.2: short term Co- integration Result

ARDL Co-integrating And Short Run Form
Dependent Variable: GDP
Selected Model: ARDL(1, 0, 0, 0, 0)
Date: 04/4/23 Time: 08:33
Sample: 1990 - 2020

Included observations: 28

Short term Co- integrating result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNEMPT)	-0.694763	1.965596	-0.353462	0.7341
D(INVT)	0.102790	0.156988	0.654762	0.5335
D(INFN)	-0.077358	0.073198	-1.056830	0.3257
D(POPN)	0.6.619029	13.947035	2.195379	0.0642*
CointEq(-1)	-0.2131040	0.301701	-5.406154	0.0010****

Co-inteq = GDP = (-0.4260*UNEMPT + 0.0630*INVT -0.0474*INFN + 18.7727*POPN - 45.2036)

Source : *Computed by the **author** using Eviews 16*

As indicated in the above table, the result coefficient for the explanatory variables included in the model; population growth, investment, inflation and unemployment are similar to long-run economic growth and population growth rate for the serious of last thirteen years. Therefore, to adjust the dis-equilibrium between population growth rate and GDP I demands conducive policy adjustment, like reduction of fertility rate through family planning, awareness creation on culture and religious, educating female children, reduction of gender gaps. Beside to improve the GDP growth the policy measure which are, improving supply side of the economy, improving peace and security to expand domestic and FDI, improving export base production are some of the policy measure to improve the growth of GDP.

4.4.9 Pair wise granger causality test

A pair wise granger Causality test is a test which enables us to identify the direction of the causality from where the lagged values of one variable in the past or present causes the future and; where the present and the future value responds to the cause in the past.

Table 4.4.3: Pair wise Granger Causality Test Result.

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMPT does not Granger Cause GDP	28	1.12619	0.3767
GDP does not Granger Cause UNEMPT		0.47274	0.6418
INVT does not Granger Cause GDP	28	1.21945	0.3513
GDP does not Granger Cause INVT		0.27973	0.7641
INFN does not Granger Cause GDP	28	0.32418	0.7334
GDP does not Granger Cause INFN		0.35670	0.7120
POPN does not Granger Cause GDP	28	0.47305	0.041**
GDP does not Granger Cause POPN		0.51478	0.031**
INVT does not Granger Cause UNEMPT	28	0.34435	0.047**
UNEMPT does not Granger Cause INVT		6.93985	0.0218**
INFN does not Granger Cause UNEMPT	28	0.09493	0.9106
UNEMPT does not Granger Cause INFN		1.68971	0.2519
POPN does not Granger Cause UNEMPT	28	0.69608	0.021**
UNEMPT does not Granger Cause POPN		6.26225	0.06276
INFN does not Granger Cause INVT	28	4.18880	0.0636
INVT does not Granger Cause INFN		2.05169	0.1990
POPN does not Granger Cause INVT	28	0.30194	0.7485

INVT does not Granger Cause POPN		1.69818	0.2505
POPN does not Granger Cause INFN	28	3.22554	0.02**
INFN does not Granger Cause POPN		6.99170	0.214

*Source: Computed by the **author** using Eview 16*

The results causality of INFN and UNEMPT are insignificant to the unemployment rate in Ethiopia in the long-run. Based on Philips Curve, there is no effect on unemployment in the long run as it assumes natural unemployment (frictional and structural unemployment) rate in long term. On the other hand We can definitely conclude that there exists a uni-directional causality running from investment to unemployment, which indicates that, creating conducive environment for both domestic and FDI improves the production and productivity and it increases the employment opportunity which maintain the problems of unemployment's.

The other granger causality test result indicates the, bidirectional relationship between population growth and GDP, which means economic growth causes population growth and the vice versa. Thus this indicates that, increase in population have an opportunity to generate the active labor force in the long run as a result of gradual demographic transition which further creates opportunity for market expansion and labor supply which improve consumption expenditure and have positive contribution from economic growth. On the other hand there is situation if income improvement there may be increases the fertility rate hence the family can easily afford their livelihoods. Therefore setting policy which controls the fertility rate have vital role.

The other granger causality test is the test between population growth and unemployment. The test result indicates the unidirectional relationship which population growth causes unemployment. As Malthus indicates unless the food supply and the economy are not grown with the proportions of population growth it leads to problem of poverty and starvation. Therefore one can easily understand that, if there is no health economic growth with proportion of population growth there is problem of unemployment which further affects the economic growth again.

4.4.10 Model Diagnostic Tests

Diagnostic check is undertaken in order to determine consistency of the estimated long run model which essential to know the standard property of the model. Hence, in this study we carried a number of model stability and diagnostic checking, which includes Serial correlation test (Brush & God fray LM test), Functional form (Ramsey's RESET) test, Normality (Jarque-Bera test) and Heteroscedasticity test. Such tests are recommended by Pesaran *et al.* (2001). In order to reject or

accept the null hypothesis, we can decide by looking the p-values associated with the test statistics. That is the null hypothesis is rejected when the p-value are smaller than the standard significance level (I.e. 5%).

Table 4.4.4: Model Diagnostic Tests result

Test type	Statistics	Value	Probability	Remarks
Serial correlation	F-stat	3.493475	0.1743	No serial correlation
Functional form	F-stat	0.677206	0.442	No misspecification
Normality	Jarque-Bera	4.88286	0.087	Normally distributed residuals
heteroscedasticity	F-stat	0.720144	0.629	No heteroscedasticity

Source: Computed by the author using Eview 16

Note: The test for serial correlation is the LM test for autocorrelation, the test for functional form is Ramsey's RESET test, the test for normality is based on a test of skewness and kurtosis of residuals, the test for Heteroscedasticity is based on the regression of squared residuals on squared fitted values.

The above table indicates that the long run ARDL model estimated in this study passes all the diagnostic tests. This is because the p-value associated with the F version of the statistic was unable to reject the null hypothesis specified for each tests, implies that model is indicating well feted the data.

4.5 Governance in Demographic Transition

This section of the study includes primary data gathered through surveys from six offices (city and zonal administrations, justice, civil service, trade and cooperation, and revenue offices) located in sample zones and city administrations (Jimma zone and Jimma city administration, East Shoa zone and Bishoftu and Adama city administration, West Arsi Zone and City Administration, Arsi Zone and Administration, West Hararghe zone and Chiro City Administration, and Oromia Sp Furthermore, rather than depending on the pillars of good governance, the study emphasized governance effectiveness, regulatory quality, rule of law, corruption control, and political stability as governance proxies.

A government can help boost human development since it is socially responsible for meeting its people's needs and fostering a democratic atmosphere (Emara & Chiu, 2016). The ability to reap the demographic dividend depends on various conditions, including effective governance. Governance quality impacts the development of human well-being (Kurzman et al., 2002; Przeworski et al., 2000) and economic growth (Gerring et al., 2012). Poor governance (Chauvet & Collier, 2004; Emara & Chiu, 2016) and corruption (Gründler & Potrafke, 2019; Tsanana et al., 2016) may lead to less economic progress, according to some empirical findings.

Based on this respondent’s response concerning governance effectiveness, it shows that there is an absence of accessible and uninterrupted telecommunications for the growth of the business and electricity for the growth of the business, efficient and cost-effective transportation for the growth of the business, quality bureaucracy and institutional effectiveness, widespread excessive bureaucracy and red tape, quality compromised civil service delivery, a lack of independent civil service from political intervention, and an absence of credible government and civil service for policy formulation and implementation. These are the usual challenges the region is facing in its attempt to foster development goals.

Regulatory quality reflects perceptions of the government's capacity to establish and enforce solid rules and regulations that allow and support private sector development. They offer an enabling environment for the government to capitalize on opportunities and accelerate the demographic shift. Because the government establishes effective and credible coordination mechanisms, promotes consistency across main policy objectives, clarifies responsibility for ensuring regulatory quality, and ensures the capacity to respond to a changing, fast-paced environment, ensure that

proper institutional structures and resources are in place, as well as processes to efficiently manage regulatory resources and discharge enforcement tasks. Strengthen quality regulation by fully staffing regulatory units, holding regular training sessions, and making efficient use of consultation, including stakeholder advisory groups.

Respondent's response dictum that there are problematic labor and tax regulations for business growth, the presence of unfair competitive practices in trade, auction, job opportunities, and related activities, ineffective price controls, market inspection, and inflationary measures, discriminatory tariffs for water, electricity, telecommunications, and other services, excessive trade licensing, patent rights, and trademarks, and discriminatory tax systems Citizens and the state does not respect institutions that control economic and social relations, and policies and laws are limited to promoting private sector development.

In terms of the rule of law, respondents were unconcerned about the trend of increasing crime prevalence while expressing their intention to suggest the absence of a fair and honest court system, enforceable and swift court rulings, immediate judicial processes, and a lack of trust in rules and laws.

Aside from this, the survey attempted to identify the prevalence of control of corruption in the region; accordingly, respondents responded that there are irregular and additional payments by firms and individuals to get things done, additional payments in connection with taxes, customs, and the judiciary, the prevalence of corruption is affecting businesses in the region, corruption in public institutions is prevalent, particularly services related to the media, education system, and legal system, corruption in public institutions is prevalent, and corruption in public institutions is prevalent. Corruption may generate instability not just because of its bad economic implications but also because it reduces people's ability to fully participate in social, economic, and political life under corrupt systems. During demographic changes, pressures on the labor market and the environment are already considerable, and corruption may increase the effects of instability.

Political stability is the final variable or indication of governance used in this study. Respondents represented political antagonism among major powers, unfavorable influences of regional (inter-regional) political forces, and political risk: Wealth distribution, population, fractionalization of the political spectrum and the power of these factions, fractionalization by language, ethnic, and/or religious groups and the power of these factions, restrictive (coercive) measures required to retain

power, organization, and strength of forces for a radical government, and societal conflict involving demonstrations, strikes, and street violence are all examples of social conditions.

Studies suggest youth bulges appear to raise the probability of conflict in a variety of ways (Goldstone 2002). The fact that numerous Middle Eastern countries have huge youth bulges, with over 30% of their working-age populations in the youth age group, appears to be a powerful explanatory factor for the region's recent revolutions. The discovery of important variables that mediate the stability consequences of demographic changes is critical given the world's current and future demographic issues.

In addition, the prevalence of corruption diverts public funding to areas where bribes are easier to collect, such as capital-intensive infrastructure projects, rather than investing in employment-intensive sectors such as health care and education (Mauro 1995; Gupta, Davoodi, and Tiongson 2001). People's talents in corrupt cultures are focused on rent-seeking rather than long-term benefits (Mo 2001). Corruption harms the poor by decreasing access to social services. In contrast, it might be claimed that it favors well-connected members of society, who are more likely to be in the upper-income bracket (Gupta, Davoodi, and Alonso-Terme 2002). Finally, corruption can either incite individuals to participate in public demonstrations or generate instability at the hands of corrupt regime officials (Treisman 2000). Another study (Mo, 2001) investigates the transmission routes of corruption on economic growth and ties it to political stability. Many results point to a relationship between corruption and political instability. Corruption has an impact on several metrics that can either alleviate or exacerbate the pressures on a large young cohort in a political stability situation. Corruption not only has direct economic repercussions on development and investment, but it also influences individual political behavior.

However, there is a scarcity of literature quantifying the contribution of specific programs to the total dividend. Only a few studies that quantify the effect of age structure changes on economic growth examine policies that resulted in age structure change. Even fewer studies attempt to quantify the impact of policy interventions that were either consciously or unintentionally implemented to capitalize on age structure change and hence maximize potential economic gains, such as expanding access to schooling. This issue warrants more investigation as policymakers continue to seek evidence-based suggestions for policy changes to implement as their countries approach and move through the demographic window of opportunity.

Scholars have investigated distinct aspects of how government matters. Goncalves (2013) examines unique governance processes and human development components. Gerring et al. (2011) analyze the various socioeconomic and political mechanisms via which democratic government influences economic growth. As Oster (2009) points out, access of citizens to governance mechanisms is inextricably tied to development performance. Similarly, Kumar (2013) observes that discriminatory governance processes might contribute to low development. Blaydes and Kayser (2011) investigate the connections between democratic governance, distribution, and living conditions. Some scholars, on the other hand, argue that governance and democracy have no direct impact on economic growth, but have an indirect impact through increased human capital, higher degrees of economic freedom, and lower inflation rates (Doucouliagos & Ulubaşolu, 2008). Several factors for institutional measures, such as World Governance indices, Democratization, and Transparency International's Corruption Perception Index, have been employed as proxies for successful governance in empirical investigations.

For instance, despite Latin America's own fertility reduction, the economic miracles that the age structure shift contributed to in East Asia were not duplicated. Latin America's yearly per capita GDP growth rate was one-eighth that of East Asia between 1975 and 1995. When compared to the East Asian Tiger economies, regional governments' policy priorities directly hampered the opportunity to capitalize on age structure change. Trade barriers, corruption, and unstable banking systems that disincentives savings have prevented some Latin American countries from realizing the demographic dividend (Bloom, Canning, and Sevilla, 2003). As countries progress through the demographic transition and begin to reap the economic benefits of lower fertility, policy interventions that optimize the magnitude and increase the duration of the dividend are crucial.

To conclude, promoting peaceful and inclusive communities for long-term development, guaranteeing equal access to justice, and establishing effective, responsible, and inclusive institutions at all levels (SDG 16) all contribute to achieving the demographic dividend. A key component in this regard is achieving more equality in the participation of men and women in leadership, decision-making, and governance. This necessitates policies that encourage organizations to develop gender-inclusive programs and plans aimed at expanding women's participation in management, influential, and decision-making roles across society.

Good governance is seen as a cross-cutting concern in demographic dividend study. This means that every sector critical for a demographic dividend—health, education, economic reforms, and job creation—has a governance component, as the government must ensure that resources allocated for public service delivery are put to effective use, accountability mechanisms for public funds are robust, and corrupt officials impeding progress are dealt with swiftly. As a result, the regional government must sustain good governance in addition to making initial investments in family planning to support the fertility drop and a demographic transition.

Chapter Five
5. Major Findings and Recommendation

5.1 Major findings

Population Structure and Health

- It is obvious that an undistorted understanding of the status and trends of demographic transition will help scholars and policy researchers better understand the state of the labor market and will serve as a foundation for policy decisions. Effective policy, planning, and decision-making in education, social development, labor, and health depend heavily on the figures provided by the census and other data management. However, there is no officially published systematic data and up-to-date information on the status of demographic change and population dynamics.
- Mortality, fertility, and migration are the drivers of change in a population's size, structure, and distribution. The annual population increase is due to fertility rates exceeding mortality rates.
- It is due to the interactive effects of fertility and mortality, the proportions of the total population in these age groups [young dependents (0-14), productive age (15-65), and old dependents (>65)] may transition from a higher (lower) share to a lower (higher) or declining (increasing) share over time.
- The young dependency is substantial in number, on average younger age dependency was about 85 boys or girls depending on every 100 working men and women. However, the old age dependency ratio in every 100 working men and women is less than 6 (six). In alignment with this, the dependency ratio is higher in rural areas (80 percent) and in comparison, in urban areas of the region (45 percent).
- If fertility decline continues in urban and rural areas, the proportion of children under 15 will decline to 34.3% in urban areas and 40.4% in rural areas by 2037. Again, the proportion of children under 15 years is declining, while those of working age (15-59) are increasing in both urban and rural areas, the decline is faster in urban areas.
- The working-age population increased from 52.8% in 2007 to 54.7% in 2017 and is expected to increase to 61.8% in 2037 in urban areas and from 51.5% in 2007 to 55.1% in 2037 in rural areas.

- The demographic window of opportunity opens when the proportion of those in the working age group starts to exceed the proportion of the dependents, namely the children, the youth, and the elderly. It is not the age structure alone that substantially correlates with demographic transition and creates the window of opportunity for the demographic dividend however, rather the extent of the economically active age group engaged in productive economic activities, quality of education, and skill possession.
- In the region proportion of dependent age group, typically the young dependent age group (0-14) are higher and ceteris Paribas in the future. Nonetheless, the proportion of the economically active age group (15 to 65 years average) in urban areas is higher as compared to rural areas. This implies rural-to-urban migration of the working age group which will negatively affect the agriculture sector to hire educated and interactive to agricultural technologies.
- There was a continuous increase in the median age starting in 2005 which was 16.7 until 2020 the median age was 19.5. This will continue for the next three decades until 2050 and the median age will be 27.3. And the majority of them will be at school despite the growth.
- Despite some claims to the contrary, evidence suggests that family planning programs can significantly reduce fertility, but only if they are well designed and implemented in the cultural and social context. Currently, there are 45 percent unmet needs for contraceptives in the region and the prevalence of contraceptives will grow to 65 percent in 2040 with 35 percent unmet needs.
- There is a shortage of health workers and a lack of competent personnel; the health worker density (doctors, nurses, and midwives) ratio to the population is four times less than the WHO standard for developing countries to achieve a minimum level of key health interventions. There is also a significant difference in service coverage between urban and rural areas.
- Even though the childbearing age in the region is more than 30 years on average there is an alarmingly high rate of girls/women dropping out of school after marriage, as well as a high prevalence of underage marriage.
- In most cases, mortality and fertility have ended up adjusting to each other efficiently to maintain reasonable rates of population expansion. It is difficult to conceive of the demographic shift, especially in its initial stages, without some form of change in mortality

- Women are more affected by HIV infection prevalence than men and also most affected are the adult or economically active age group (15 plus) which endangers demographic transition in the country and regional government as well. Women are more infected but less treated for HIV.
- Economically active and engaged in productive economic activities are less susceptible to HIV infection than adults less involved in economic activities. Thus, employment opportunities among the adult population not only fillip economic growth but also vulnerability to HIV infection also will decline.
- Women and men at considerable risk of HIV infection would prefer to accelerate childbearing to satisfy their fertility objectives, it increases the risk of household dissolution and migration, and the risk of household breakup.

Education and Economy

Based on the main objectives, the study put the following measure findings;

- Based on the main objectives, the study showed that, there is a slight decline in the number of schools and pre-primary education enrollment for the last five years from 20216/17 to 2020/21 at regional level.
- The study result revealed that, there is also none compatibility of access to number of pre-primary schools and the population growth rate with the same official age of pre – primary schools at regional level.
- The study result indicates that, the pre-primary General Enrollment ratio (GER0 at regional Zonal and town level is not proportionally distributed, where the higher proportion was in regional town level.
- The GER for Primary education for the last five year showed a slight decline and with value of 100% and above which indicates, there was children's enrollment below and above official age of schooling at regional level both in rural and urban area.
- As the study result revealed out, there was the dis equilibrium between the primary education GER and the increments of population growth rate with the same official primary education ages (from 7-14 years).

- On the other hand, as the study result showed there was the gender parity gap between male and female at regional level for primary education, where the male enrollment at primary schools was greater than females' children.
- As the study result indicted, one of the quality education indicators pupil section ratio and pupil teacher ratio has slightly declining from year 2016/17 to 2020/21, which have a crucial role in generating quality education on the stated education level.
- On the other scenario, the school drops out for the last five years for primary education has increasing from year 2018/19 to 2020/21 which is challenge to harness demographic dividend from human capital developments.
- Based on the finding of the study there was short term and long term relationship between economic growth and population dynamics at national level which have spillover effect on regional level economic growth and population dynamics.
- Based on the ARDL model result the study showed that, the short term relationship between economic growth and population dynamics indicted the disequilibrium and it demands conducive policy adjustment in speedy.
- As the study result mentioned, there was the non-compatibility between population growth and the growth rate of national GDP for the last thirteen years which demands policy adjustment to control the population growth and sating conducive economic growth policy at national level.
- On the other side as the study result showed, there was a sustainable increase in general inflation and unemployment at national level for the last ten years which have spillover effect at regional level and challenge to harness the demographic dividend at regional levels

5.2 Policy recommendation

- Outside of healthcare facilities and schools, the most effective means of reaching youth with services include street-level outreach that distributes condoms and over-the-counter access to contraception, including emergency contraception also known as the morning-after pill.
- Time and cost savings for patients in remote areas to access health facilities often constitute a major obstacle to seeking care. Therefore, schools and health centers in the region should use school clubs and community outreach programs in reaching youth, girls, and women.

- In the region, integration of family planning and HIV AIDS with other health services may be beneficial. Because it is not uncommon for a patient to be obliged to allow one full day of travel to access a health structure.
- In the region, beyond being youth-friendly and physically accessible, reproductive health services should be financially accessible. The cost of reproductive health services can be a barrier that prevents adolescents and youth from accessing the care they need.
- Improvements in girls' access to education, female labor force participation, and women's political participation promote an enabling environment for a demographic dividend. The key to all of the above is the health and safety of girls and women. This could be realized through investing in the capable and becoming a model for others.
- In the region, education sectors should emphasize empowering girls with skills and knowledge to improve health and human capital outcomes through delayed marriage, reduced risk for sexual violence, and increased educational attainment. Because fertility relies on not only access to contraceptives but the desire to plan.
- Many demographers believe that if these women were given access to family planning services, many, if not most, would use contraception and their fertility rate would decrease. It seems critical here that for a family planning program to be effective, it must be adequately designed and administered, which means it must effectively consider the specific situation in which it will be used. Family planning services are well integrated with community health services, and this integration appears to have a key to success (i.e., provision of family planning services with other health services especially in rural areas of the region).
- Health posts, centers, and hospitals in the region should implement reproductive health services in a way that is appropriate to local norms and circumstances, because family planning programs can reduce fertility rates, in part through lowering desired fertility.
- In the region, reproductive health services should engage Abba Gadas, Hadha Siinqees, and religious clerks typically in rural areas where people are more obedient to religious and traditional practices.
- In the region, continuing education for health workers should be provided typically health workers working in rural areas because it is essential to build and strengthen health workers' capacities for an effective health system to provide quality care.

- In the region, digital media in disseminating Family Planning and HIV AIDs information among young women and their networks should be provided through social media apart from conventional media.

Human capital development has a vital role for economic growth and development for a given nation. Moreover, producing skilled and quality man power generates competent labor force in the labor market and further it increases the labor productivity.

Accordingly, based on the above main finding the study put the following policy come out and recommendation to harness the demographic dividend at regional level sustainably from continuous demographic transitions with the prospects of human capital development, population dynamics and economic growth.

- The Oromia National education bureau have to expand the number of schools with compatibility of the pre-primary and primary official age population growth to minimize the dis equilibrium.
- The regional government and the regional education office have to plan and work for equilibrium distributions of pre- primary schools both for urban and rural area
- The regional government and the regional education office have to plan and work to expand the public pre-primary schools in rural area and urban area in order families send their children to school without economic problems
- The regional government should plan and work in developing community schools both in rural and urban area with free education fee or with minimum education fee which is compatible with the economic capability of the society
- The regional government should minimize the private pre-primary and primary school expansion or have to set the policy of education fee at regional level for private schools.
- The Regional education bureau have to Work on awareness creation in order the rural area family have send their children to school and reduce child labor.
- Expansions of school feed both in rural and urban area by creating multilateral and bilateral collaboration with different private institutions and rural and urban community also to support the expenditure for school feed by the regional government
- Setting policy and rule of law for domestic and private investments in order they expand and construct schools in the area they invest hence, they utilize local resources.

- The national and the Oromia regional government should set conducive Macao economic policy which facilitate the economic growth and in reductions of problems of unemployment and inflation
- Developing entrepreneurial skills for graduate youths and other productive age population which reduce problem of unemployment and contribute to economic growth.
- Work on mind set of youths in order they utilize local resource and create their own jobs rather than they are waiting for the job created by the economy
- Expansions of the supply sides of the economy to reduce the problems of inflation and to reduce problems of unemployment's, developing good governance which support the young generation to create job opportunity in local area using local resources.
- Focus on manufacturing industry rather than service industry to create the job opportunity to improve the supply side of the economy.

Appendixes

Dependent Variable: GDP
Method: ARDL
Date: 04/14/23 Time: 08:29
Sample (adjusted): 2009 2021
Included observations: 13 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): UNEMPT INVT INFN POPN
Fixed regressors: C
Number of models evalulated: 16
Selected Model: ARDL(1, 0, 0, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	-0.631040	0.301701	-2.091610	0.0748
UNEMPT	-0.694763	1.965596	-0.353462	0.7341
INVT	0.102790	0.156988	0.654762	0.5335
INFN	-0.077358	0.073198	-1.056830	0.3257
POPN	30.61903	13.94703	2.195379	0.0642
C	-73.72883	43.85485	-1.681201	0.1366

R-squared	0.631584	Mean dependent var	6.353846
Adjusted R-squared	0.368430	S.D. dependent var	2.698338
S.E. of regression	2.144406	Akaike info criterion	4.667640
Sum squared resid	32.18935	Schwarz criterion	4.928386
Log likelihood	-24.33966	Hannan-Quinn criter.	4.614045
F-statistic	2.400053	Durbin-Watson stat	2.547224
Prob(F-statistic)	0.142390		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Cointegrating And Long Run Form
Dependent Variable: GDP
Selected Model: ARDL(1, 0, 0, 0, 0)
Date: 04/14/23 Time: 08:33
Sample: 2008 2021
Included observations: 13

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNEMPT)	-0.694763	1.965596	-0.353462	0.7341
D(INVT)	0.102790	0.156988	0.654762	0.5335
D(INFN)	-0.077358	0.073198	-1.056830	0.3257
D(POPN)	30.619029	13.947035	2.195379	0.0642
CointEq(-1)	-1.631040	0.301701	-5.406154	0.0010

Cointeq = GDP - (-0.4260*UNEMPT + 0.0630*INVT -0.0474*INFN + 18.7727*POPN -45.2036)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEMPT	-0.425963	1.205430	-0.353370	0.7342
INVT	0.063021	0.093003	0.677624	0.5198
INFN	-0.047429	0.047724	-0.993820	0.3534

POPN	18.772702	7.806281	2.404820	0.0471
C	-45.203567	25.174793	-1.795588	0.1156

ARDL Bounds Test
Date: 04/14/23 Time: 08:36
Sample: 2009 2021
Included observations: 13
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	4.361225	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Test Equation:
Dependent Variable: D(GDP)
Method: Least Squares
Date: 04/14/23 Time: 08:36
Sample: 2009 2021
Included observations: 13

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.918705	Prob. F(2,5)	0.4573
Obs*R-squared	3.493475	Prob. Chi-Square(2)	0.1743

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 04/14/23 Time: 08:37
Sample: 2009 2021
Included observations: 13
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	0.087660	0.689378	0.127158	0.9038
UNEMPT	-0.143123	2.002282	-0.071480	0.9458
INVT	0.016912	0.196969	0.085859	0.9349
INFN	-0.015106	0.085553	-0.176570	0.8668
POPN	3.078334	18.76182	0.164074	0.8761
C	-9.004765	56.46387	-0.159478	0.8795
RESID(-1)	-0.546333	0.676045	-0.808131	0.4557
RESID(-2)	-0.408762	0.641751	-0.636948	0.5522

R-squared	0.268729	Mean dependent var	-1.20E-14
Adjusted R-squared	-0.755051	S.D. dependent var	1.637817

S.E. of regression	2.169753	Akaike info criterion	4.662362
Sum squared resid	23.53914	Schwarz criterion	5.010023
Log likelihood	-22.30535	Hannan-Quinn criter.	4.590902
F-statistic	0.262487	Durbin-Watson stat	2.111451
Prob(F-statistic)	0.945003		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.720144	Prob. F(5,7)	0.6290
Obs*R-squared	4.415676	Prob. Chi-Square(5)	0.4912
Scaled explained SS	2.706582	Prob. Chi-Square(5)	0.7451

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/14/23 Time: 08:38
Sample: 2009 2021
Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-30.61356	115.3070	-0.265496	0.7983
GDP(-1)	-0.991887	0.793258	-1.250397	0.2513
UNEMPT	-1.664302	5.168118	-0.322032	0.7568
INVT	0.399163	0.412767	0.967042	0.3657
INFN	-0.046740	0.192459	-0.242859	0.8151
POPN	11.18743	36.67077	0.305078	0.7692

R-squared	0.539667	Mean dependent var	2.476104
Adjusted R-squared	-0.131999	S.D. dependent var	5.299345
S.E. of regression	5.638261	Akaike info criterion	6.601066
Sum squared resid	222.5299	Schwarz criterion	6.861812
Log likelihood	-36.90693	Hannan-Quinn criter.	6.547471
F-statistic	0.720144	Durbin-Watson stat	1.502760
Prob(F-statistic)	0.628982		

Variance Inflation Factors
Date: 04/14/23 Time: 08:39
Sample: 2008 2021
Included observations: 13

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
GDP(-1)	0.091023	12.88702	1.546933
UNEMPT	3.863569	69.30578	2.020300
INVT	0.024645	87.46801	1.856147
INFN	0.005358	5.191008	1.420729
POPN	194.5198	4103.610	2.863445
C	1923.248	5437.064	NA

Ramsey RESET Test
Equation: UNTITLED
Specification: GDP GDP(-1) UNEMPT INVT INFN POPN C
Omitted Variables: Squares of fitted values

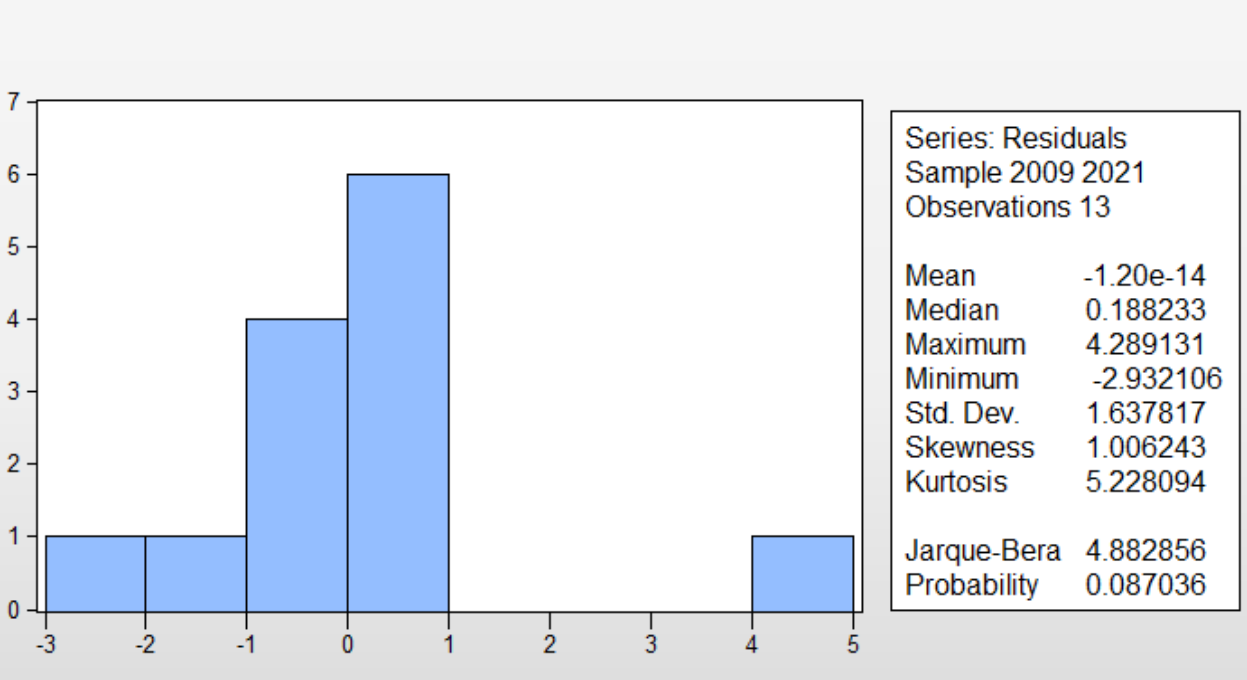
	Value	df	Probability
t-statistic	0.822926	6	0.4420
F-statistic	0.677206	(1, 6)	0.4420

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	3.264664	1	3.264664
Restricted SSR	32.18935	7	4.598479
Unrestricted SSR	28.92469	6	4.820781

Model Selection Criteria Table
Dependent Variable: GDP
Date: 04/14/23 Time: 08:43
Sample: 2008 2021
Included observations: 13

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
16	-24.339662	4.667640	4.928386	4.614045	0.368430	ARDL(1, 0, 0, 0, 0)
8	-23.787637	4.736560	5.040763	4.674032	0.323161	ARDL(1, 1, 0, 0, 0)
14	-24.279833	4.812282	5.116486	4.749755	0.269919	ARDL(1, 0, 0, 1, 0)
15	-24.325344	4.819284	5.123487	4.756756	0.264789	ARDL(1, 0, 0, 0, 1)
12	-24.339506	4.821463	5.125666	4.758935	0.263186	ARDL(1, 0, 1, 0, 0)
13	-23.659727	4.870727	5.218388	4.799267	0.203620	ARDL(1, 0, 0, 1, 1)
4	-23.736127	4.882481	5.230142	4.811021	0.194205	ARDL(1, 1, 1, 0, 0)
6	-23.761195	4.886338	5.233999	4.814878	0.191091	ARDL(1, 1, 0, 1, 0)
7	-23.784041	4.889853	5.237514	4.818393	0.188243	ARDL(1, 1, 0, 0, 1)
10	-24.275697	4.965492	5.313153	4.894032	0.124460	ARDL(1, 0, 1, 1, 0)
11	-24.324905	4.973062	5.320723	4.901602	0.117807	ARDL(1, 0, 1, 0, 1)
5	-23.634777	5.020735	5.411854	4.940342	0.008339	ARDL(1, 1, 0, 1, 1)
9	-23.649870	5.023057	5.414176	4.942664	0.006034	ARDL(1, 0, 1, 1, 1)
2	-23.724370	5.034518	5.425637	4.954126	-0.005424	ARDL(1, 1, 1, 1, 0)
3	-23.735999	5.036308	5.427426	4.955915	-0.007224	ARDL(1, 1, 1, 0, 1)
1	-23.611329	5.170974	5.605550	5.081649	-0.317453	ARDL(1, 1, 1, 1, 1)



Pairwise Granger Causality Tests
Date: 04/14/23 Time: 08:57
Sample: 2008 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMPT does not Granger Cause GDP	12	1.12619	0.3767
GDP does not Granger Cause UNEMPT		0.47274	0.6418
INVT does not Granger Cause GDP	12	1.21945	0.3513
GDP does not Granger Cause INVT		0.27973	0.7641
INFN does not Granger Cause GDP	12	0.32418	0.7334
GDP does not Granger Cause INFN		0.35670	0.7120
POPN does not Granger Cause GDP	12	0.47305	0.6417
GDP does not Granger Cause POPN		0.51478	0.6186
INVT does not Granger Cause UNEMPT	12	0.34435	0.7200
UNEMPT does not Granger Cause INVT		6.93985	0.0218
INFN does not Granger Cause UNEMPT	12	0.09493	0.9106
UNEMPT does not Granger Cause INFN		1.68971	0.2519
POPN does not Granger Cause UNEMPT	12	0.69608	0.5300
UNEMPT does not Granger Cause POPN		6.26225	0.0276
INFN does not Granger Cause INVT	12	4.18880	0.0636
INVT does not Granger Cause INFN		2.05169	0.1990
POPN does not Granger Cause INVT	12	0.30194	0.7485
INVT does not Granger Cause POPN		1.69818	0.2505
POPN does not Granger Cause INFN	12	3.22554	0.1017
INFN does not Granger Cause POPN		6.99170	0.0214

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