Demographic Dividend for Namibia

Oladele O. Arowolo, PhD.

ABSTRACT

This paper is about the Demographic Dividend and the need for Namibia to generate evidence through research for the country to take full advantage of the opportunity. The paper shows how the demographic dividend is delivered through its most important mechanisms; namely, labour supply, savings, and human capital. The focus of the paper is on how the demographic transition process will support the delivery of the Dividend through its effect on the size of the labour force, increase in the labour force participation rates particularly among women, and overall increase in labour productivity. Model calculations show that the relative contribution of children age 0-14 will decline from 0.35 in 2021 to 0.24 in 2061, while the relative contribution of both the working age population (age 15-64) and the elderly (age 65+) will increase over time, but more so for the working age than the elderly. The Spectrum Model has been used to determine the amount of programme efforts that would be required to achieve a desired fertility reduction in Namibia from 2017 to 2063. Estimates show that overall modern contraceptive prevalence rate (CPR) must increase from 55% in 2017 to over 75% by 2062. For the demographic dividend to materialise, there should be in place a conducive policy environment, including among others: access to health and reproductive health services and facilities; promotion of quality education and skills development for the youth; conducive macroeconomic opportunity for national saving and close to full employment of the youth.

Key words: Dividend; Demographic transition; Labour; Youth; Employment; Education; Reproductive; Health; Population; Fertility; Mortality; Life expectancy.

INTRODUCTION

The body of available evidence shows in countries at the beginning of demographic transition[1], where mortality and fertility rates are beginning to fall such as South-Central Asia and much of sub-Saharan Africa, that there is an opportunity for governments to capitalise on the impending demographic transition. This is because the number of working-age adults grows large relative to the dependent population and potentially acts as a major economic spur. However, empirical analyses of relevant data in many countries of the world have revealed that if the appropriate policy environment is not in place, particularly that which provides for education and appropriate skills training for the youth who are the product of pre-transition high fertility, high levels of unemployment and instability might result, and health, education, and social welfare systems might undergo unbearable strain (Bloom, et al., 2002). It is the complex interactions between these demographic and socio-economic variables that have given rise to the notion of 'Demographic Dividend' in the literature.

[1] See for example, Dyson, T and Murphy, M. 1985; C.P. Blacker (1947); Coale and Hoover (1958); Dudley Clark (1996); Un Population Division (2013); UN (1994).

As generally defined, 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 (Ross, 2004). It is widely acknowledged that at an early stage of demographic transition, fertility rates fall, leading to fewer young mouths to feed. But it is also acknowledged in the debate on 'excess population' that for every new mouth to be fed, there are two hands that could be put to work (Ekanem & Arowolo, 1994).

As the argument goes, the demographic dividend most often occurs in countries late in the demographic transition, when birth rates are falling following a prolonged period of mortality decline. It is then assumed that resources shift from dependent children and elders to youth—the age group that comprises the bulk of the productive labor force. While the large number of youth can put pressure on schools, labor markets, and services, it has been noted that the declining dependency ratios of the demographic dividend also allow for increased investment in education and family welfare (Lundberg & Lam, 2007).

The demographic dividend is said to be delivered through several mechanisms; the three most important are labour supply, savings, and human capital (Bloom, yet al., 2002). However, it is one thing to have the dividend, but taking advantage of it is another matter.

The African Union has taken cognizance of the impending Demographic Dividend for Africa and, through the AU Commission, has sensitised Member States about the need to strengthen the available human and institutional capacity to 'harness' the Demographic Dividend. Indeed, African Heads of State and Government devoted the year 2017 to "Harnessing the Demographic Dividend through investments in Youth"[2]. African countries are urged to: "Analyse and understand socioeconomic and political situation through the preparation of national demographic dividend profiles with the objective of facilitating evidence-based development planning processes with regard to the challenges and opportunities to harnessing the demographic dividend in countries in order to define country-specific responses.[3]"

Hence, this paper focuses on analysing Namibia's demographic profile to provide evidence in support of integrated population and development planning for the realisation of the Demographic Dividend.

METHODOLOGY

There are three aspects to the methodology employed in the research for this paper; namely, a) data sources and limitations; b) the analytical framework for data analysis and presentation of results and; c) data consolidation.

[2] The AU assembly decision (Assembly/AU/Dec.591 (XXVI) mandates the Commission in collaboration with UNECA, AfDB, NEPAD and UNFPA to develop a roadmap and expedite the implementation of the Demographic Dividend in Africa. See, AU Commission. 2017. AU Roadmap on Harnessing the Demographic Dividend Through Investments in Youth

[3] AUC, 2017, ibid, para. 36.

a) Data sources and limitations

Regarding data collection, the study relied on secondary sources, including review of official publications by the National Statistical Authority (NSA), the National Planning Commission and other line ministries dealing with education, health, gender and youth development. These sources were supplemented with a review of publications by relevant UN agencies (UN Population Division, UNECA, UNFPA, UNDP, UNICEF, WHO, ILO, World Bank, etc.) as well as databases of the UN accessed via internet. The research found the *Undata* Website[4] particularly useful in obtaining projected population and socio-economic indicators for comparative purposes. The UN population database has updated global and national population data with the 2015 Revision[5].

Given that projections for a far horizon are 'subject to a high degree of uncertainty', the UN has advised that users are invited not to focus only on the outcomes of the 'medium variant'[6]. This research has relied mainly on the medium variant of the projections of the demographic variables in the database. The document analysis also found the UNECA and other official AU sources invaluable especially regarding i) the Africa Agenda 2063 narratives and background official publications of the African Union, ii) NEPAD Office publications; iii) publications of the African Union Commission secretariat, including the 2017 Road Map on Harnessing the Demographic Dividend.

b) Analytical framework

The focus of this paper is to provide Namibia's demographic profile as a basis for i) understanding the implications of the country's population dynamics for the Dividend, ii) appreciating the role of Family Planning in achieving demographic transition which serves as a precursor to the Dividend. This study has utilised the Spectrum Model[7] for the projections of Namibia's population (DemProj) and estimation of the Family Planning component (FamPlan) of the Dividend. Use has also been made of the DemDiv model[8], a two-part model, which combines projected demographic changes and economic changes with equations to estimate employment and investment, along with an estimation of gross domestic product (GDP) and GDP per capita. Given the focus of this paper, attention is given mostly to the demographic aspect of DemDiv.

[4] http://data.un.org/Explorer.aspx?d=PopDiv

[5] United Nations Department of Economic and Social Affairs/Population Division. World Population Prospects: The 2015 Revision. Accessed: *http://esa.un.org/undp/wpp/*

[6] United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision, Highlights and Advance Tables. Working Paper No. ESA/P/WP.228 (see piii).

[7] Avenir Health, Spectrum Manual: Spectrum System of Policy Models; Down loaded at: www.avenirhealth.org/Download/Spectrum/Manuals/LiSTManualEnglish.pdf

[8] Moreland, S., E.L. Madsen, B. Kuang, M. Hamilton, K. Jurczynska and P. Brodish. 2014. Modeling the Demographic Dividend: Technical Guide to the DemDiv Model. Washington, DC: Futures Group, Health Policy Project.

The procedure for population projection in DemProj specifies the population by age and sex for ages 0 to 79 as: Pop(a,s,t) = Pop(a-1,s,t-1) + [migration(a-1,s,t-1) + migration(a-1,s,t)]/2 – deaths(a,s,t-1,t)

The inputs to the demographic projection are:

- Pop5 (a,s): Population by 5 year age groups (a) and sex (s) in the base year
- TFR (t): Total fertility rate by year
- ASFD (a,t): Distribution of fertility by age by year
- SRB (t): Sex ratio at birth by year
- LEB (s,t): Life expectancy at birth with AIDS by sex and year
- Model life table
- Migration (a,s,t): Net in-migrants by age, sex and time

It is assumed that the base population is a mid-year estimate and that the rates (TFR, life expectancy and migration) are calendar year averages (Spectrum Manual, see p.78).

Regarding family planning and fertility the main calculations in FamPlan Model are based on the 'proximate determinants of fertility framework' developed by John Bongaarts (1978; 1983), Bongaarts and Potter (1983), and Stover (1998).

According to the basic formulation of the model, the relationship between the contraceptive prevalence rate and the Total Fertility Rate (TFR) is based on the proximate determinants of fertility (Bongaarts, 1978). In the framework, the factors that determine the observed TFR in any population are the following:

- Proportion of women of reproductive age in union
- Contraception
- Postpartum infecundability
- Induced abortion
- Sterility
- Frequency of intercourse
- Spontaneous abortion
- Total fecundity rate.

The total fecundity rate is the fertility rate that would be achieved in the absence of any fertility-limiting effect of the proportion in union, contraception, induced abortion, or postpartum infecundability. Hence, all the other factors (except frequency of intercourse and spontaneous abortion) act to produce an observed TFR that is lower than the total fecundity rate. Subsequent modifications to the proximate determinants framework allow for specification of the total fertility rate as a function of six factors: proportion in union, contraception, postpartum infecundability, induced abortion, sterility and the total fecundity rate (ibid).

In this multiplicative model, the fertility-inhibiting effect of each of the principal proximate determinants of fertility is measured by an index that can only take values between zero and one.

The central equation of the model is written as:
TFR = Cm x Cc x Ca x Ci x TF, where

TFR = total fertility rate;
Cm = index of marriage [Cm equals one if all women of reproductive age are in marriage or consensual unions and zero in the absence of such unions];
Cc = index of contraception
[Cc equals one in the absence of contraception and zero if all fecund women in marital unions use 100% effective contraception];
Ca = index of induced abortion [Ca equals one in the absence of induced abortion and zero if all pregnancies are aborted];
Ci = index of postpartum infecundability
[Ci = equals one in the absence of lactation and postpartum abstinence and zero if duration of postpartum infecundability is infinite]; and
TF = total fecundity rate [the total fertility rate, in the absence of the fertility inhibiting effect of marriage pattern, contraception, induced abortion, and postpartum infecundability].

For the purpose of this paper, the goal has been specified as expecting the Total Fertility Rate to decline from 3.31 in 2017 to 2.28 in 2063. This approach is used when the objective is to calculate the programme requirements to achieve a given level of fertility, in this case (2.28) by the end of the projection cycle, (in this case 2063).

c) Data consolidation
Based on the projection models adopted (DemProj, FamPlan and DemDiv), the analysis produced a set of population and Family Planning indicators that are useful for, i) presenting Namibia's demographic profile ii) demonstrating with data and by graphic illustrations, the extent of Demographic Dividend that can potentially be realised. The results are summarised in the Appendix Tables 1 and 2, apart from graphic illustrations in the body of this paper.

1. POLICY CONTEXT – AFRICA AGENDA 2063

Against the background of the AU Pan Africanism and successive programming efforts by the New Partnership for Africa's Development (NEPAD) for the continent's development, the representatives of the AfDB, the African Union Commission (AUC), the Economic Commission for Africa, and the NEPAD Secretariat gathered in Tunis on 25-26 June 2013 to discuss the African Union's 'Agenda 2063'[9]. The AU Vision has been to —'*build an*

[9] AfDB: http://www.afdb.org/en/news-and-events/article/the-afdb-and-its-partners-reflect-on-africas-future-development-called-agenda-2063-12074/

integrated, prosperous and peaceful Africa, an Africa driven and managed by its own citizens and representing a dynamic force in the international arena' as their overarching guide for the future of the continent.[10]

Consistent with their view on the Human Rights Based approach to development, the formulation of Agenda 2063 was based on inclusive participation over a reasonable period[11]. Deriving from extensive consultations, the process came up with the following 'common set of aspirations' that served as basis for goal specification and definition of strategies:

1. A Prosperous Africa based on inclusive growth and sustainable development;
2. An Integrated Continent, Politically United, based on the ideals of Pan Africanism;
3. An Africa of Good Governance, Respect for Human Rights, Justice and the Rule of Law;
4. A Peaceful and Secure Africa;
5. An Africa with a strong Cultural Identity, Values and Ethics;
6. An Africa whose development is people-driven, especially relying on the potential offered by its women and youth; and
7. Africa as a Strong, Resilient and Influential Global Player and Partner.

These seven aspirations are not only in alignment with the AU Vision, they are in accord with the Namibia Vision 2030, as well as the following AU and AU supported global frameworks: a) the eight priorities of the OAU/AU 50th Anniversary Solemn Declaration; b) the conclusions and recommendations of the ICPD Beyond 2014; c) the 2030 UN Sustainable Development Goals (2015) and; d) UNFCCC The Paris Agreement (on Climate Change).

The 7 aspirations of Agenda 2063 have 18 goals specified, and each goal is further supported by a number of 'priority areas'; and each priority area is slated for action through a number of strategies. To achieve consistency in planning, the goals have been fashioned after the goals and priority areas contained in post 2015 Africa MDG position and the post 2015 UN High Panel report. Again, the defined strategies in general reflect those contained in the existing tools by member states for AU and related global programme implementation.

A Ten-Year Implementation Plan (2014-2023) was released in September 2015, being the first in a series of five ten-year plans over the fifty-year horizon. It was adopted by the Summit in June 2015 as a basis for the preparation of medium term development plans of member states of the Union, the Regional Economic Communities, and the AU Organs'[12]. Considering the central role of population in development especially the need for African

[10] https://www.google.com.na/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=OAU/AU+50th+Anniversary+Solemn+Declaration

[11] "Agenda 2063 was developed through an extensive consultative process involving various African stakeholders, including the youth, women, Civil Society Organizations, the Diaspora, African Think Tanks and Research Institutions, Government planners, Private Sector, the African media, inter-faith leaders, the Forum for Former African Heads of State and Government, African Islands States and others. In addition, ideas captured from continent wide sector ministerial meetings and meetings with the Regional Economic Communities are included. Outcomes of these consultations form the basis for the Aspirations of the African People, the driver of Agenda 2063". [AUC. 2015. Agenda 2063 Framework Document, see piii.

[12] African Union Commission. 2015. Agenda 2063: First Ten-Year Implementation Plan, 2014-2023, see p12.

nations to take advantage of the Demographic Dividend, AUC has recently published its 'Roadmap' for harnessing the impending Demographic Dividend in African countries, consisting of recommended actions and policy prescriptions (AUC 2017)[13].

One of the recommendations in the AUC Roadmap is for African countries to engage in research such as this for generating evidence for policy decisions about Demographic Dividend. In their words, AUC urged Member States to: "Analyse and understand socioeconomic and political situation through the preparation of national demographic dividend profiles with the objective of facilitating evidence-based development planning processes regarding the challenges and opportunities to harnessing the demographic dividend in countries in order to define country-specific responses" (AUC, ibid p26).

DEMOGRAPHIC PROFILE

The demographic dividend is said to be delivered through several mechanisms; the three most important are: a) labour supply, b) savings, and c) human capital.[14] This paper examines the implications of the dynamics of the population of Namibia for the Demographic Dividend during the 2030 Vision period and with reference to the Africa Agenda 2063.

4.1 POPULATION AND LABOUR SUPPLY

4.1.1 Population trends

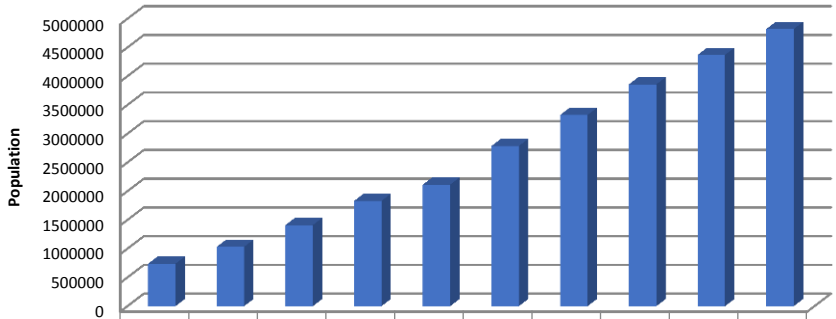
The first post-independence Census of Population and Housing in Namibia was conducted in 1991; thereafter the country has undertaken decennial censuses the latest one being in 2011. The results of the 1991 Census of Population and Housing show that Namibia had a total population of 1,409,920. Available records of the two censuses taken during the colonial period show that in 1970, the population of Namibia was 737,947 which had increased to 1,033,196 by 1981. By 2001, Namibia's population had increased to 1,830,330 and further to 2,113,077 in 2011.

[13] In response to AU Assembly Decision (Assembly/AU/Dec.601 (XXVI) on the 2017 theme of the year

[14] David Bloom, et al., The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change, [Rand, Population Matters, 2002].

Fig. 1: Namibia: Total Population Trend, 1970-2061

Sources: Based on data from: Namibia Statistics Office/National Statistical Agency, 1991, 2001, 2011; UN World Population Prospects, The 2015 Revision, Medium Projections, 2021-2061



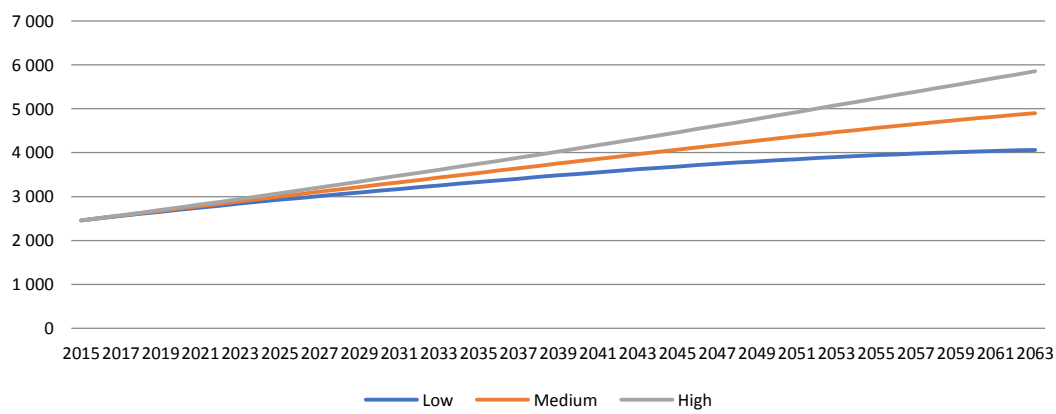
	1970	1981	1991	2001	2011	2021	2031	2041	2051	2061
Population	737947	1033196	1409920	1830330	2113077	2785618	3325821	3857894	4370767	4821897

Population figures for subsequent years from 2021 to 2061 are based on the Medium Variant of the UN population projections as revised in 2015. The projection results, illustrated with Figure 1, show that the population of Namibia will continue to increase throughout the period, from 2.8 million in 2021 to 3.3 million in 2031, 4.8 million in 2061 towards the end of the Agenda for Africa.

By implication, Namibia's population increased at an annual rate of 2.9 per cent from 1970 to 1981, and 3.0 per cent from 1981 to 1991. It is obvious that the growth rate of Namibia's population has been persistently high, and with a tendency to increase over time. Compared with other countries in the Southern Africa region, Namibia has one of the highest population growth rates. However, estimates by the UN show a declining trend in the annual rates of population growth, due mainly to a declining trend in fertility, from 2.3% in 2015, and 1.6% in 2030, 1,4% in 2040, and 1.2% in 2050 to 0.8% in 2063. (UN, Population Division, 2015).

Fig. 2: Namibia: Population (in 1000s) Trend, Low, Medium and High Variants. 2015-2063

Source: Based on data from UN World Population Prospects, The 2015 Revision



To get a broader perspective on the country's population trends within the context of the 2063 Agenda for Africa, the UN population database was explored and data on the projections of the population were taken to plot trends in the country's population based on the three

scenarios: Low, Medium, and High variants. The emerging trends are shown in Figure 2, covering the period from 2015 to 2063. Results of projections based on alternative scenarios are illustrated in Figure 2, implying that the population of Namibia could reach 3.2 million, or 3.3 million or 3.4 million in 2030 based on the 'Low', Medium or 'High' respectively variant of the projection. By 2063, projections of Namibia's population indicate, by 'Variant', a total of 4.1 million (Low), 4.9 million (Medium) or 5.8 million (High). As advised by the Population Division, the Medium Variant is recommended for planning.

These population figures are consistent with the trends in Sub-Saharan Africa, typified by high but declining levels of fertility and mortality since the past three decades or so. For Namibia, the Total Fertility Rate has declined from 5.2 per woman in 1992 to 3.6 in 2013, a trend that is assumed in the UN projections. The same pattern has been exhibited regarding mortality; Infant Mortality Rate in Namibia declined from 48 per 1,000 live births in period 1998-2002 to 39 per 1,000 live births during 2008-2012. (see Tables 1 and 2)

Table 1:

Namibia: Trends in Fertility, 1992 - 2013	
Year	Total Fertility Rate
1992	5.4
2000	4.2
2006--07	3.6
2013	3.6

Source: NDHS 2013, based on Table 5.3.2

Table 2: Namibia: Infant, Child and Under-5 Mortality Rates, 1988-2012

Mortality Rate/ Year	Infant Mortality (1q0)	Child Mortality (4q1)	Under-5 Mortality (5q0)	
1998-2002	48	18	66	
2003-2007	42	23	64	
2008-2012	39	16	54	

Source: NDHS 2013, Based on Table 8.1

As already noted above, the Demographic Dividend is delivered through three major mechanisms; the three most important are: a) labour supply, b) savings, and c) human capital.

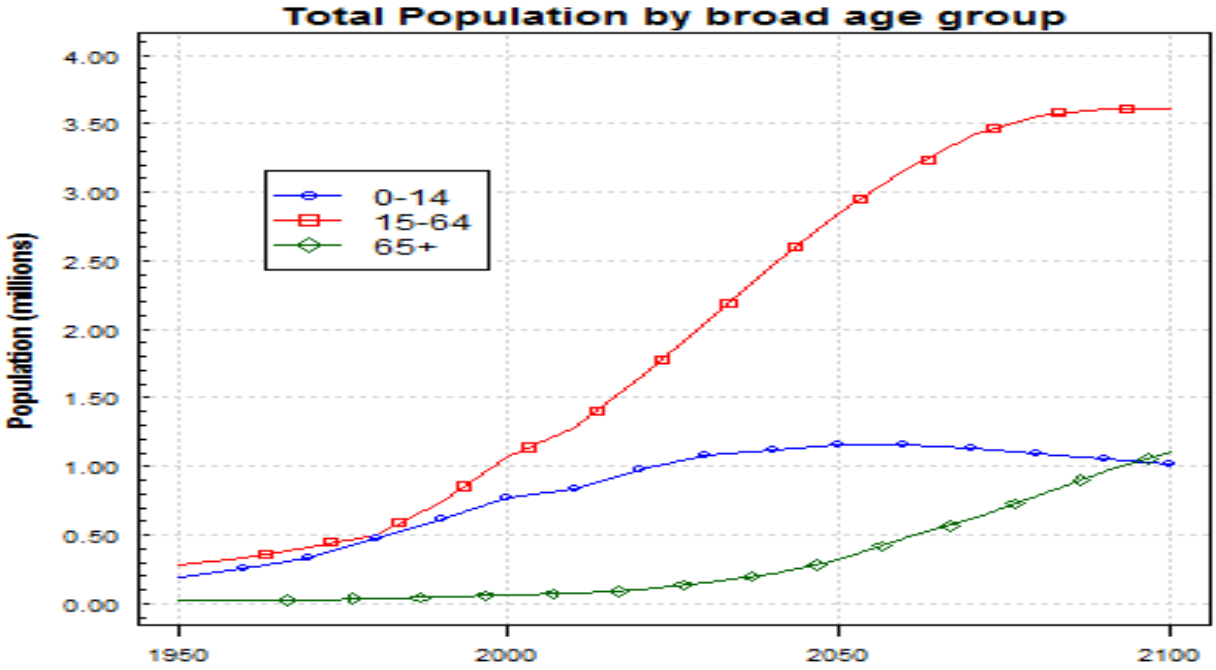
4.1.2 Labour supply

In terms of the vital rates (Fertility and Mortality) described above, Namibia has entered the demographic transition process (SADC, 2013, p33-35). The demographic transition affects labour supply in several ways; namely through its effect on the size of the labour force, increase in the labour force participation rates particularly among women, and overall increase in labour productivity (David E. Bloom, David Canning and Jaypee Sevilla, 2002). This deduction seems to equate potential labour force (those aged 15-64) with the effective labour force (those employable and available for work); but there is a difference between the two labour concepts. Again, much depends on the extent on investments in education and consequent labour force quality, the flexibility of the labour market and its capacity to absorb the growing labour force, and the absence of restrictive policies against female labour force participation.

During the transition phase, the high rate of population growth accelerates the supply of new entrants into the labour market. In relative terms, the labor force temporarily grows more rapidly than the population dependent on it, freeing up resources for investment in economic development and family welfare. The AU Commission defines Demographic Dividend as "the benefit that can arise when a country has a relatively large proportion of working-age population due to declining fertility, and effectively invests in their health, empowerment, education and employment through public action and private sector involvement" (AUC, 2017, p2).

Projections of the labour force for Namibia show a steady increase in the size of the total labour force (Population age 15-64) at much higher levels than the total population itself, and much higher than the rates of growth of the population of children (age 1-14) or the elderly (age 65+). The pattern is shown by the UN projections (2015) illustrated with Figure 3 and further confirmed in Figure 4 based on the Author's own projection (2017).

Fig. 3: Namibia: Population Profile:



Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision. UNdatabase.

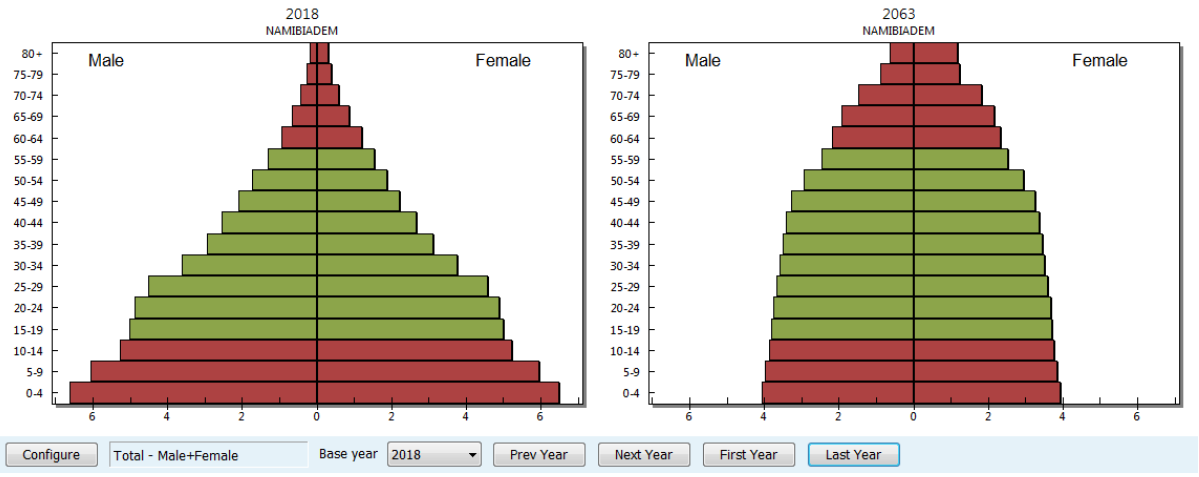
The dividend argument is that, as the work force expands (see Table 3 for Namibia), per capita production increases, provided the labour market can absorb the larger numbers of workers. With improvements in education and reduced fertility, there will be notable increase in the participation of women in the labour force, leading to an overall increase in their productivity in the labor market (Lundberg &Harnessing, 2007; Ross 2004 &Mason, 2006).

Table 3: Namibia: Projected age distribution of the population (%), 2017-2062										
Age/Year	*2017*	*2022*	*2027*	*2032*	*2037*	*2042*	*2047*	*2052*	*2057*	*2062*
0-4	13.31	12.34	11.4	10.59	9.98	9.5	9.03	8.6	8.35	8.13
5--14	22.55	22.58	21.9	20.58	19.32	18.28	17.49	16.82	16.16	15.68
15-24	20.14	18.59	18.23	18.63	18.41	17.57	16.72	16.05	15.57	15.15
15-49	51.93	51.84	52.19	52.93	53.14	52.45	51.59	51.01	50.59	49.84
15-64	60.43	61.02	62.11	63.58	64.75	65.48	65.89	65.98	65.54	65.05
65 & over	3.71	4.06	4.59	5.25	5.95	6.74	7.59	8.6	9.96	11.14

Source: Based on the Author's own calculation with the Spectrum DemProj Model, 2017.

Other things being equal, per capita income grows more rapidly too. That is referred to as the *first* dividend. However, the demographic dividend does not last forever; it is only a limited 'window of opportunity' (Bloom, et al, 2002). This is because, in time, the age distribution of population changes again, as the large adult population moves into the older, less-productive age groups and is followed by the smaller age cohorts born during the period of fertility decline. Now, the old age dependency ratio (ratio of elderly people to adults in the working age), illustrated with Figure 5, rises again, now involving the need to care for the elderly, as opposed to taking care of the young people (ibid).

Fig.4: Namibia: Structural changes in age/sex distribution of the population, 2018-2063
All age groups (Percent)



Source: Based on the Author's projection with the Spectrum DemProj Model

The 'first' dividend period is estimated to be quite long, lasting five decades or more; but eventually lower fertility reduces the growth rate of the labor force, while continuing improvements in old-age mortality speed the growth of the elderly population. Now, other things being equal, per capita income grows more slowly and the first dividend turns negative (Lee & Mason, 2006).

There is also the possibility of a *second dividend*, arising from an increasing number of older work force and extended retirement benefits. A population concentrated at older working ages

and facing an extended period of retirement has a powerful incentive to accumulate assets; whether these additional assets are invested domestically or abroad, national income rises (Boom, et al).

In short, the first dividend yields a transitory bonus, and the second transforms that bonus into greater assets and sustainable development. These outcomes are not automatic but depend on the implementation of effective policies. Thus, the dividend period is a window of opportunity rather than a guarantee of improved standards of living. The dividends are sequential: the first dividend begins first and ends, and the second dividend begins somewhat later and continues indefinitely. Studies have shown that the second dividend has typically been larger than the first, and they certainly overlap. The first and second dividends both had positive effects between 1970 and 2000 (see table 4), except in sub-Saharan Africa. The fact is that demographic pressures are eased whenever fertility falls, but the advantage lies in taking the opportunity.

Table 4: Demographic Dividends: contribution to growth in GDP/N[1]

	First	Second	Total	Actual growth in GDP/N[1]
Industrial economies	0.34	0.69	**1.03**	2.25
East and Southeast Asia	0.59	1.31	**1.90**	4.32
South Asia	0.10	0.69	**0.79**	1.88
Latin America	0.62	1.08	**1.70**	0.94
Sub-Saharan Africa	-0.09	0.17	**0.08**	0.06
Middle East and North Africa	0.51	0.70	**1.21**	1.10
Transition economies[2]	0.24	0.57	**0.81**	0.61
Pacific Islands	0.58	1.15	**1.73**	0.93

[1]Actual growth in GDP per effective consumer (GDP/N), 1970–2000, in percent a year. The effective number of consumers is the number of consumers weighted for age variation in consumption needs.
[2]Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Mongolia, Poland, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
Source: Andrew Mason. 2005. "Demographic Transition and Demographic Dividends in Developed and Developing Countries," United Nations Expert Group Meeting on Social and Economic Implications of Changing Population Age Structures (Mexico City).

What are the policy implications? The generations of children born during periods of high fertility finally leave the dependent years and can become workers. However, if appropriate labour and education policies on education and job creation are not in place and implemented

to take advantage of the "dividends" of changed age distribution, the country may have to struggle with the negative fall-outs of mass unemployment of young people.

Again, women now have fewer children than before the demographic transition; they are therefore released to take jobs outside of the home (provided there are no policies inhibiting female participation in modern industrial enterprises as in some countries). In addition, barring negative social or cultural factors, such women tend to be better educated than their older cohorts and are therefore more productive in the labour force.

4.1.3 Savings

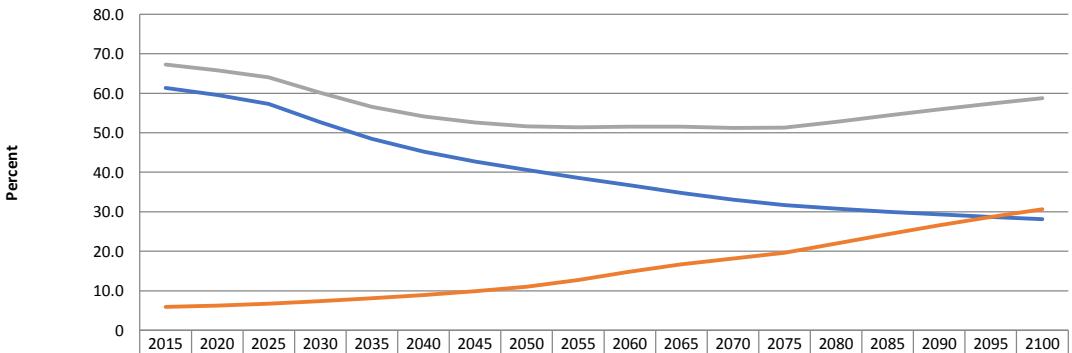
Evidence has shown that the demographic transition could also encourage the growth of savings, thus improving a country's prospects for investment and growth (Bloom et al, 2000; Shiimi & Kadhikwa, 1999, Ogbokor &Samahiya, 2014) etc. Based on the life cycle hypothesis, empirical evidence on the effect of demographic variables on saving seems to suggest the following relationships:

- smaller families with fewer children save more than families with more children;
- the elderly (those age 65+ and or retired) tend to dis-save since they consume from their saving;
- households with more children tend to postpone their retirement until children have completed their schooling and left home;
- falling dependency ratio (both old age and child) affects saving positively (see Figure 5 on the UN projected declining dependency ratios for Namibia, 2015-21000).

When large numbers of baby boomers (those born during the period of high fertility, the pre-transition stage) move into the peak of their working lives (after age 40 years) their propensity to save will tend to increase national savings. As Bloom, et al noted (2000); a healthy population must plan far in advance if it is to maintain its standard of living through decades of retirement.

Fig. 5: Namibia: Child, Old-Age and Total Dependency Ratios, 2015-2100

Source: Based on data from UN Population Division, World Population Prospects, The 2015 Revision, 'Medium Variant'



	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100
Child	61.4	59.5	57.3	52.7	48.5	45.2	42.7	40.6	38.6	36.7	34.8	33.0	31.7	30.8	30.0	29.3	28.7	28.1
Old Age	5.9	6.2	6.8	7.4	8.1	8.9	9.9	11.1	12.8	14.9	16.7	18.2	19.6	22.0	24.4	26.6	28.7	30.6
Total	67.3	65.8	64.0	60.1	56.6	54.1	52.6	51.6	51.4	51.6	51.5	51.2	51.3	52.7	54.4	55.9	57.4	58.8

The dividend argument is that working-age adults tend to earn more and can save more money than the very young, the shift away from a very young age distribution favours greater personal and national savings. In addition, the ability to save money is even greater when individuals born during periods of high fertility move into their 40s, when their own children are mainly on their own and require less support. Finally, personal savings grow and serve as a partial resource for industrial and commercial investments that fuel economic growth (Ross, 2004).

The first dividend phase is marked by the interval during which the support ratio is rising. In the case of China, between 1972 and 2014, the rise of the support ratio pushed per capita income and consumption higher by 42 per cent; and the annual addition to economic growth during this period was 0.7 percent. (UN, 2013:10).

4.1.4 Human Capital

Research works have demonstrated that the demographic transition has significant effects on investments in human capital - health, education, information - effects which are the least tangible, but may be the most significant and far-reaching (Mason, 2005); (Lee & Mason, 2006) and (Ross, 2004). Typically, the demographic transition begins with reductions in mortality rates, resulting a healthier population and consequent increased longevity. Table 6 shows trend in the country's Life

Expectancy at birth for males and females from 1991 to 2011. It is evident that Namibia has had a fluctuating pattern since 1991; this is comparable to the general trend in Southern Africa (see Tables [7(a) and 7(b)] resulting from the devastation caused by AIDS[15] during the period 1998 to 2008.

Both HIV/AIDS and TB contributed significantly to a decrease of 3.6 years of life expectancy for both sexes combined in Namibia from 1990 to 2013 (IHME 2013).

Table 6: Namibia: Life Expectancy at Birth (Years)

Both Sexes, 1991-2011

Year/Sex	*Male*	*Female*
1991	59.1	62.8
2001	47.6	50.2
2011	53.3	60.5

Source: Namibia Statistics Agency. 2014. Namibia 2011 Census, Mortality Report, Based on Table 4.1

[15] UNICEF. 2005. Focus on Namibia's Health – Children's Health Threatened, Windhoek, Namibia.

Table 7(a): Namibia: Life Expectancy at Birth Both Sexes [LE),

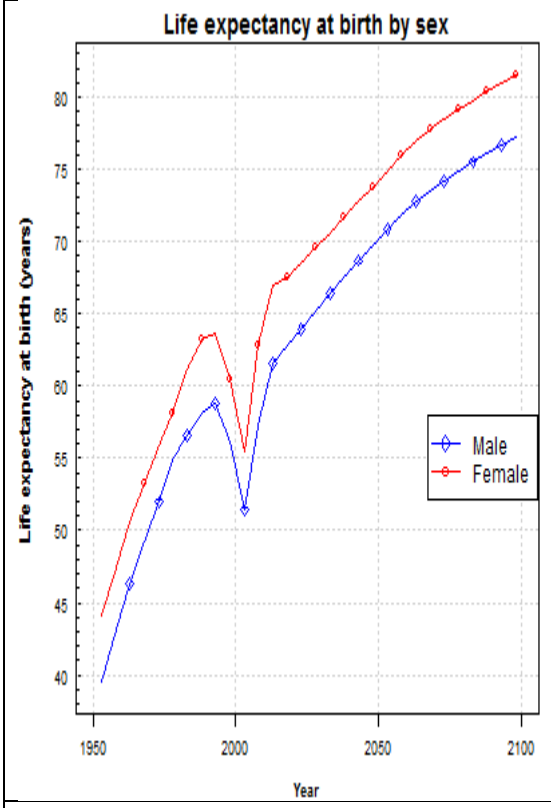
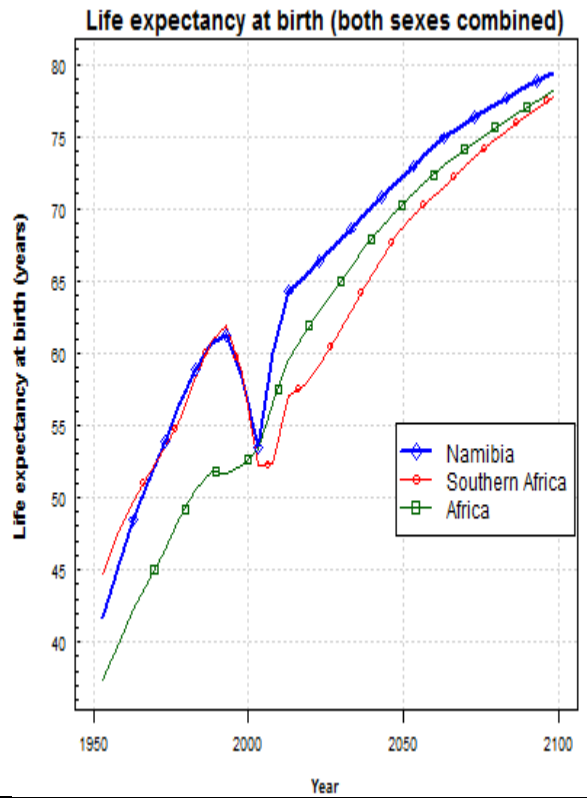


Table 7(b): LE Namibia, Southern Africa, Africa



Source: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision. UNdatabase

Compared to other countries in southern sub-Saharan Africa (Lesotho, Swaziland, Zimbabwe, South Africa, and Botswana) in 2013, only Botswana had higher life expectancy (66 years) for both sexes combined (ibid, p13). The HIV epidemic had a significant impact on health in Namibia between 1990 and 1998; however, from 1998 to 2013, rates of new cases of HIV declined almost as dramatically as they had increased, from and the downward trend has continued since then[16].

It is known that a longer life expectancy causes fundamental changes in the way that people live, particularly regarding decisions on education, family, retirement, the role of women, and work all tend to shift. If people are regarded as an asset, then society tends to invest in social services, particularly on education, health, and housing. Such investments naturally affect health outcomes, with the result that people live healthier and longer lives.

Regarding education, it has been reported that of the three MDG 2 targets that Namibia has set for herself to achieve by the year 2015, the net enrolment in primary education target has been achieved, standing at 99.6% by 2012. Even for adult literacy the rate it reached 94% in 2011 (GRN 2013).

[16] IHME report shows that from 1998 to 2013, rates of new cases of HIV for males declined from over 1,000 per 100,000 to 290 per 100,000 in 2013; and for females incidence rate declined from about 1,000 per 100,000 to 320 per 100,000 in 2013. (ibid, p14)

The argument is that as life expectancy increases, parents are likely to choose to educate their children to more advanced levels. Healthier children, in turn, tend to experience greater cognitive development per year of schooling than their less healthy counterparts. The result of this educational investment is that the labor force as a whole becomes more productive, promoting higher wages and a better standard of living. Women and men therefore tend to enter the workforce later, partly because they are being educated for longer, but they are likely to be more productive once they start working (Bloom, 2002).

Regarding human capital formation, Ross (2004) has also argued that having fewer children (the fertility transition experience) enhances the health of women. Their participation in the labor force, in turn, enhances their social status and personal independence. They tend to have more energy to contribute both to their families and to the society.

In this regard, it is worthy of note that Namibia has made remarkable strides in addressing gender issues in development: gender parity targets have been reached for secondary education; the ratio of girls to 100 boys for secondary education was 112.3 in the year 2012, 101 for literacy in 2011 and 101.2 for pre-primary education in 2012. Regarding political representation in the country, however, only 25% of the number of seats in parliament was held by women in 2013 (GRN 2013).

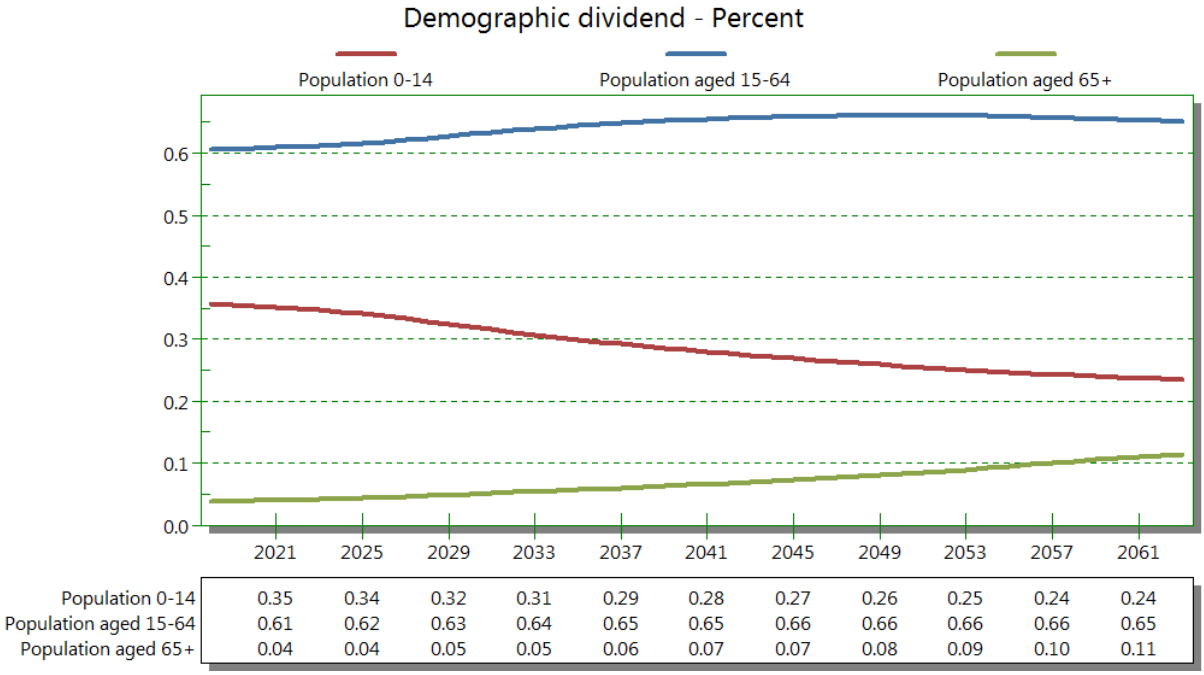
Parents are under less strain to provide for many children. In surveys both men and women often cite economic pressures as their reason for using contraception. Family income can be focused more upon better food for infants, including girls, who are often given less to eat. Incomes can go toward prolonged education for girls, and for teenagers of both sexes to improve their life prospects. While the large number of youth can put pressure on schools, labor markets, and services, it has been noted that the declining dependency ratios of the demographic dividend also allow for increased investment in education and family welfare (Lundberg & D Lam, 2007).

POPULATION PROFILE AND THE DEMOGRAPHIC DIVIDEND

Figure 8 illustrates the DemProj results of the projections of Namibia's population and the computed Demographic Dividend, representing relative contribution to the GDP by the age groups in the population in relation to the number of effective consumers[17].

[17] The effective number of consumers is the number of consumers weighted for age variation in consumption needs.

Fig. 8: Namibia: Potential contributions to the Demographic Dividend by specified Age Groups



	2021	2025	2029	2033	2037	2041	2045	2049	2053	2057	2061
Population 0-14	0.35	0.34	0.32	0.31	0.29	0.28	0.27	0.26	0.25	0.24	0.24
Population aged 15-64	0.61	0.62	0.63	0.64	0.65	0.65	0.66	0.66	0.66	0.66	0.65
Population aged 65+	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.11

Source: Based on the Author's computation with the Spectrum DemProj Model, 2017

It is clear from this Figure that the relative contribution of children age 0-14 declines over time from 0.35 in 2021 to 0.24 in 2061 as school enrolment increases and more children are withdrawn from the labour force. Conversely, the relative contribution of both the working age population (age 15-64) and the elderly (age 65+) increases over time, more so for the working age than the elderly obviously because of the rapid growth of the labour force.

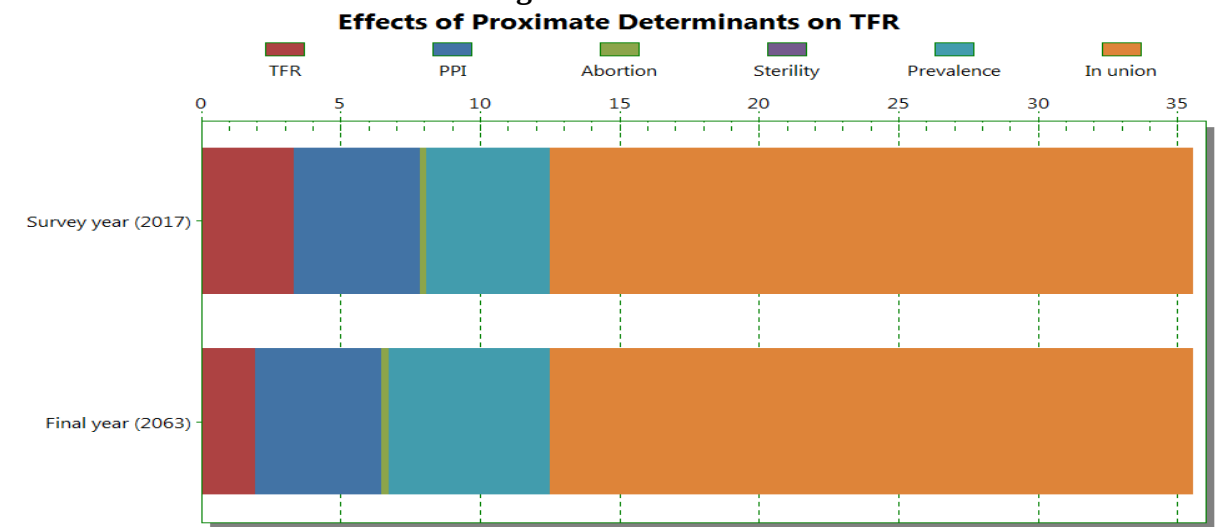
One major factor in the growth of the labour force is fertility transition to which reference has already been made. The Bongaarts' model has been used to estimate the amount of programme efforts that would be required to achieve a fertility reduction in Namibia from a TFR of 3.31 in 2017 to 2.31 in 2062.

Recalling, the central equation of the model is written as:
TFR = Cm x Cc x Ca x Ci x TF.
In this multiplicative model, the fertility-inhibiting effect of each of the principal proximate determinants of fertility is measured by an index that can only take values between zero and one. The argument is that the level of fertility [total fecundity] in a population is almost completely determined by the four 'proximate determinants.' The most important variables in terms of influencing resulting fertility were found to be: the proportion of women in sexual union, the duration of the period of inability to conceive following a birth, and the level and quality of contraceptive practice and to a lesser degree, the underlying capability to conceive, the level of induced abortion, and the prevalence of pathological sterility (Bongaarts, 1982).

Empirical tests of the model have led to the conclusion that contraceptive prevalence is by far the major determinant of fertility decline (ibid). The FamPlan Target-Setting Model used for this study was developed by The Population Council and The Futures Group (Bongaarts and Stover, 1986). This model can be used to estimate the family planning requirements to meet specific fertility goals; these include the number of family planning users, new acceptors, and commodities required by method and source to achieve a total fertility rate (TFR) goal (Avenir Health[18]). However, when it comes to tempo, studies have shown that the pace of fertility decline is related to the level of socioeconomic development of a country and the amount of effort put into the family planning program (Bongaarts, Mauldin & Phillips, 1990).

The results of this study calculations of the effects of Proximate Determinants of Fertility, based on the Fam Plan Model using data on Namibia, are summed up in the Appendix Table 2 and

Fig. 9: Namibia:



Source: Author's calculations based on the FamPlan Model (Spectrum)

illustrated by Figure 9. Calculated figures indicate that to achieve a reduction in the level of fertility (TFR) in Namibia from 3.3 in 2017 to 2.3 in 2062, the country's national Family Planning programme efforts must be considerably strengthened.

Estimates show that overall contraceptive prevalence rate (CPR) must increase from 55% in 2017 to over 75% by 2062. The focus of the FP programme will have to be on the use of modern methods of contraception, including condoms, IUDs, Pills and injectables. The magnitude of supply of the contraceptive methods are estimated in this study (see Appendix Table 2) for programme guidance. Of course, FP programme efforts will be operating within the context of the programme of social and economic development being pursued since the implementation of Vision 2030 started.

[18] https://www.healthpolicyproject.com/index.cfm?id=software&get=Spectrum

Among others, AUC (2017) in its 'Roadmap' has recommended that African nations should "Prioritize national investments to ensure universal access to family planning services, including expanding the use of modern contraceptives.

When the DemDiv Model is broadened to include the economic aspects of the Demographic Dividend, additional policies will be required to accelerate economic growth through increased labour participation and close to full employment especially among the new entrants into the labour force – the youth.

CONCLUSION

The foregoing analysis of Namibia's demographic characteristics has shown that the potential is there for the country to 'harness' the Demographic Dividend. The country has already entered the process of demographic transition with accompanying rapid growth of the labour force and declining total dependency ratio.

These demographic changes in the population are conducive to the realisation of the Demographic Dividend in the country, provided the trend in fertility transition is adequately supported by a comprehensive national sexual and reproductive health programme with a strong family planning component.

Additionally, while the transition in fertility provides the opportunity to capitalise on the growing labour force, the Government must seize the opportunity by implementing its education and skills development policy for the youth, as well and the macroeconomic policy employment.

In essence, for the demographic dividend to materialise, there should be in place a conducive policy environment, including: access to reproductive health and reproductive health services and facilities; promotion of quality education and skills development for the youth; sufficient flexibility in the labor market to allow its expansion in the different sectors relative to the supply of labour; macroeconomic policies that permit and encourage investment; access to adequate saving mechanisms plus confidence in domestic financial markets.

APPENDIX

Appendix Table 1: Namibia: Summary Demographic Indicators (2017 - 2062)										
Indicator/Year	*2017*	*2022*	*2027*	*2032*	*2037*	*2042*	*2047*	*2052*	*2057*	*2062*
Fertility										
Input TFR	3.31	3.07	2.88	2.72	2.58	2.46	2.35	2.31	2.31	2.31
GRR	1.63	1.51	1.42	1.34	1.27	1.21	1.16	1.14	1.14	1.14
NRR	1.56	1.46	1.37	1.3	1.23	1.18	1.13	1.11	1.11	1.11
Mean age of childbearing	28.4	28.2	28.2	28.1	28.1	28.1	28.1	28.1	28.1	28.1
Child woman ratio	0.5	0.47	0.43	0.4	0.37	0.36	0.35	0.34	0.33	0.33
Mortality										
Male LE	67.7	68.8	69.8	70.6	71.5	72	72.8	73.1	73.1	73.1
Female LE	73	74	74.9	75.6	76.3	77	77.7	78	78	78
Total LE	70.4	71.5	72.4	73.1	73.9	74.6	75.3	75.5	75.5	75.5
IMR	0	0	0	0	0	0	0	0	0	0
U5MR	34.9	30.5	26.7	24.7	22.2	21	19.1	18.5	18.5	18.5
Vital Rates										
CBR per 1000	27.8	25.6	23.5	21.8	20.6	19.5	18.4	17.7	17.1	16.7
CDR per 1000	5.1	4.9	4.8	5	5.2	5.5	5.8	6.3	7	7.7
RNI percent	2.28	2.08	1.86	1.69	1.54	1.41	1.27	1.14	1.02	0.9
GR percent	2.26	2.06	1.86	1.69	1.54	1.41	1.27	1.14	1.02	0.9
Doubling Time	31.1	34	37.5	41.5	45.3	49.7	55.1	61.3	68.6	77.5
Annual births & deaths (Thousands)										
Births	70.85	72.72	73.5	74.58	76.22	77.82	78.54	79.92	81.73	83.33
Deaths	12.92	13.85	15.15	16.96	19.12	21.77	24.6	28.46	33.26	38.35
Population (Millions)										
Total	2.55	2.84	3.13	3.42	3.71	3.99	4.26	4.52	4.77	5
Male	1.25	1.39	1.54	1.68	1.83	1.97	2.1	2.24	2.36	2.47
Female	1.3	1.45	1.59	1.74	1.88	2.02	2.16	2.29	2.41	2.53
Percent population by Age Groups										
0-4	13.31	12.34	11.4	10.59	9.98	9.5	9.03	8.6	8.35	8.13
5--14	22.55	22.58	21.9	20.58	19.32	18.28	17.49	16.82	16.16	15.68
15-24	20.14	18.59	18.23	18.63	18.41	17.57	16.72	16.05	15.57	15.15
15-49	51.93	51.84	52.19	52.93	53.14	52.45	51.59	51.01	50.59	49.84
15-64	60.43	61.02	62.11	63.58	64.75	65.48	65.89	65.98	65.54	65.05
65 & over	3.71	4.06	4.59	5.25	5.95	6.74	7.59	8.6	9.96	11.14
Females 15-49	51.71	51.56	51.83	52.43	52.52	51.76	50.84	50.2	49.73	48.93
Sex ratio	95.95	96.32	96.65	96.96	97.23	97.43	97.56	97.65	97.68	97.68
Dependency ratio	0.65	0.64	0.61	0.57	0.54	0.53	0.52	0.52	0.53	0.54
Mean Age	22	23	24	25	26	28	29	30	32	33

Source: Author's calculations, based on Spectrum Model DemProj.

Year /	**Appendix Table 2: Namibia - Summary of FamPlan Model Calculations, 2017-2062**									
Indicator	*2017*	*2022*	*2027*	*2032*	*2037*	*2042*	*2047*	*2052*	*2057*	*2062*
Average effectiveness	0.73	0.74	0.76	0.78	0.8	0.81	0.83	0.85	0.86	0.88
Contraceptive prevalence	55.02	63.97	68.78	71.56	73.65	74.83	75.47	75.06	74.2	73.32
Total Fertility Rate	3.31	3.07	2.87	2.7	2.56	2.43	2.32	2.28	2.28	2.28
Women of reproductive Age	671 809	745 103	824 735	910 006	988 055	1 047 178	1 097 601	1 149 537	1 201 957	1 240 670
Married women Reproductive Age	233 261	266 953	299 123	330 109	359 915	384 876	409 025	433 844	457 594	474 396
Users	128 340	170 759	205 722	236 227	265 089	287 994	308 696	15 237	17 707	20 136
Acceptors	1 975	3 184	3 988	5 197	6 458	7 528	8 658	9 599	10 996	11 856
CYP	76 854	108 007	133 865	162 858	192 455	218 991	246 293	270 339	296 189	314 611
Male condom	2 524 807	3 403 226	4 262 624	5 149 873	6 053 096	6 777 957	7 481 396	8 195 520	8 877 723	9 426 162
3 month (Depo Provera)	124 729	165 988	201 294	233 921	266 294	298 567	331 474	358 646	378 988	394 122
Jadelle (5 Year)	153	265	383	517	680	856	1 040	1 185	1 318	1 455
Standard Daily regimen (Pill)	125 629	189 213	258 948	333 395	417 428	504 558	594 929	679 304	762 644	840 016
Copper-T 380- A IUD (10 Year)	539	1 014	1 477	2 079	2 793	3 434	4 056	4 663	5 457	6 111

REFERENCES

African Union. (2013). *Mission and values of the African Union Commission*. Retrieved from http://www.peaceau.org/uploads/au-act-en.pdf

African Union. Governance of integration in Africa: Challenges and way Forward. Retrieved from http://au.int/en/sites/default/files/Issue%20paper%20on%20Governance%20of%20Integration%20%20en.pdf

African Union Commission. (2017). *AU Roadmap on Harnessing the Demographic Dividend through Investments in the Youth* (Assembly/AU/Dec.601 (XXVI) on the 2017 theme of the year]

African Union. (2001). *The New Partnership for African Development* (NEPAD), October 2001.

African Union. (2013). *Decisions, Declarations and Resolution; Decision on the African Common Position on the Post-2015 Development Agenda* (Doc. Assembly/AU/10(XXI).

African Union. (2013). *Declaration of the African Union Commission Consultative Conference of Women Stakeholders on Pan Africanism*, (Renaissance and Agenda 2063) Final draft Version 1.0

AU/NEPAD Secretariat. (2005). *NEPA Progress Report*. (Prepared for the 4th Meeting of the African Partnership Forum in Abuja, Nigeria, 9-10 April 2005). African Union Commission. (2009). Strategic Plan 2009-2012.

Arowolo, O. (2014). *Towards AU Agenda 2063*. (Paper presented at the African Unity for Renaissance Conference, Pretoria, South Africa, May 2014) .see: PPP at http://www.hsrc.ac.za/uploads/pageContent/4470/AU%20Agenda%202063.pdf

Baffour, A. (2013). NEPAD: 10 Years And Counting. *New African* 18 September 2013.

Avenir Health. *Spectrum manual: Spectrum system of policy models*. (An analytical tool developed to support policy decisions concerning public health and accompanying research) Retrieved from https://www.healthpolicyproject.com/index.cfm?id=software&get=Spectrum

Blacker, C. (1947). Stages of population growth. *The Eugenics Review, 39(3),* 88-101.

Bongaarts, J. (1978). A framework for analyzing the proximate determinants of fertility. *Population and Development Review 4(1):* 105–132.

Bongaarts J. (1982). The fertility-inhibiting effects of the intermediate fertility variables. *Studies in Family Planning 13(6/7):*179-189.

Bongaarts J. & Potter R.G. (1983). *Fertility, biology and behaviour: An analysis of the proximate determinants*. New York,NY: Academic Press.

Bongaarts, J. and Stover, J. (1986). *The population council target-setting model: A user's manual* . New York, NY: The Population Council.

Bongaarts, J.W., Mauldin, W.P. & Phillips J.F. (1990). The demographic impact of family planning programs. *Studies in Family Planning 21 (6):* 299-310.

Coale, A. & Hoover, E. (1958). *Population growth and economic development: A case study of India's prospects.* Princeton, Princeton University Press.

Dyson, T. & Murphy, M. (1985). The onset of fertility transition. *Population and Development Review, 11(3)*.

Bloom, D.E., Canning, D. & Sevilla, J. (2002). *The demographic dividend: A new perspective on the economic consequences of population change*, Rand, Population Matters.

Bloom, D.E., Canning, D. & Sevilla, J .(2005). Global demographic change: Dimensions and economic significance; Harvard Initiative for Global Health, Working Paper No. 1; downloaded at: http://www.globalhealth.harvard.edu/WorkingPapers.aspx

Department of Foreign Affairs, Republic of South Africa.(2002). Transition from the OAU to the African Union.

Ronal Lee and Andrew Mason. (2006). What is demographic dividend?, Finance and Development, Vol. 43, No.2, IMF, September 2006.

Development Bank of South Africa. (2000). Provincial Population Projections, 1996-2021 – Low HIV/AIDS Impact, Development Paper 143, August 2000.

Ekanem, Ita and Arowolo, Oladele O. (1994). *Population and development planning: The integrated approach*. Lagos: Third Press Publishers.