



Egypt's Demographic Opportunity

**Preliminary Assessment
based on 2017 Census**

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Introduction

The returns of the 2017 population, housing and establishment census indicated that the Egyptian population amounted to 94.8 million, compared to about 72.6 million in 2006. The estimated annual growth rate for the inter-censal period reached 2.56% which is above the estimated annual growth rate of 2.04% during the period 1996-2006. The data also showed no significant differences in the population distribution by urban/rural areas¹ or by gender.

The demographic opportunity occurs as a result of the continuous substantial decline in fertility levels leading to changes in the age structure where a noticeable decline in the share of young people (0-14 years of age) within the total population would take place, leading to significant savings in resource allocations that can be used to enhance the skills and capacity of the relatively increasing number of people in the working age group (15-64 years). Such a situation would increase overall productivity and Gross Domestic Product (GDP) per capita leading to better welfare for the overall population. These investments in human capital are a necessary pre-condition to benefit from the demographic opportunity and maximize the chances of a demographic dividend. It should also be supported by relevant public policies to enhance investments in various sectors and improve the business climate in order to be able to create new productive work opportunities for the expanding economically active group.

These changes in the age structure are the result of a long term decline in the levels of both fertility and mortality leading to changes in the age dependency levels and indicating whether the country/governorates are approaching the opportunity for a demographic dividend. Some studies indicated that a relatively low dependency ratio of less than or equal 66% provide such locations with such opportunities.

The 2017 census provides important information about the age structure and its changes during the intercensal period 2006-2017, especially with the noticeable increase in fertility levels during these years. Such a trend goes against the well-known established pathways for harnessing the demographic dividend and reduces women's opportunity to participate in the labor force. It also lowers the country's ability to achieve any savings that can enhance the level of human capital investment in the areas of empowerment, health, education and employment, especially for young people.

Accordingly, the main objective of this paper is to benefit from the newly emerged data from the 2017 census to examine the age structure and assess its potentials at the national and governorate levels, in addition to shedding

¹ The 2017 census adopted the De-Jure Approach which might affect the comparison with previous censuses since they adopted the de- facto approach.

some light on Egypt's ability to benefit from the demographic opportunity in the near future.

To this end, both the overall demographic dependency ratio and that for young people will be examined and a preliminary demographic dividend index is to be constructed based on quantifying the main components of the proposed framework to create and earn the demographic dividend. This includes policy interventions in empowerment, education, health, economic and job creation areas to be adopted within the context of governance, accountability and political stability. In that direction the World Economic Forum/Global Agenda Council developed a relevant approach «A 3 E Policy Framework to Reap the Demographic Dividend: Empower, Educate, Employ» which will be the focus of this paper.

The data from the 2017 population census will be used to examine the current status at the national level and in various governorates (for both urban and rural areas) in comparison to the situation in 2006 when possible.

Egypt's Demographic Profile

Although mortality rates started to decline in the late forties and continued to do so over the years, the decrease in fertility levels was only noticed in the early seventies.

The data collected in the EDHS (2014) indicated that early childhood mortality levels continued to decline over the past 15 years. Infant mortality levels declined from 33 deaths per one thousand births during the 10-14 years preceding the survey to about 22 deaths per 1000 births in the 5-year period before the 2014 survey. Similarly, under-five mortality levels declined from 39 deaths per 1000 births to about 27 deaths, during the same specified period. Moreover, if the findings of successive surveys are used to examine the trends of infant and child mortality, they confirm that early childhood mortality significantly declined during the past four decades.

Concerning fertility, the estimated TFR by the early eighties was 5.3 children per woman and the results of the successive Egypt Demographic and Health Surveys (EDHS) showed continuous decrease but at a different pace till 2008 where the average number of children per woman was about three children. The period between the mid-eighties and mid-nineties witnessed a rapid decline in fertility levels, which continued to decrease at a slower pace in the following period until 2005. The EDHS (2014) documented the increase in the level of fertility to about 3.5 children per woman, thus reversing the long-term pattern of decline (Table 1). This was the result of the substantial rise in the estimated TFR during the period 2006-2015.

The increase in fertility levels between 2008 and 2014 was noticeable in all residential areas except urban governorates, where the estimated TFR slightly declined to 2.5 children per woman in 2014 compared to about 2.6 births in 2008. Substantial increase in 2014 was observed in rural Lower Egypt (from 3.0 to 3.6 children during the specified period) followed by rural Upper Egypt and the frontier governorates. Overall fertility levels in rural areas increased by about 19% during the period 2008-2014 compared to about 11% increase in urban areas.

Table 1: Total Fertility Rates (Per One Woman) by Urban-Rural Residence and Place of Residence, Egypt (1988 – 2014)

Residence	Egypt Demographic & Health Surveys (EDHS)						
	1988	1992	1995	2000	2005	2008	2014
	86-88	90-92	93-95	97-2000	2003-05	2005-08	2011-14
Urban/Rural							
Urban	3.5	2.9	3.0	3.1	2.7	2.7	2.9
Rural	5.4	4.9	4.2	3.9	3.4	3.2	3.8
Place of Residence							
Urban Gov	3.0	2.7	2.8	2.9	2.5	2.6	2.5
Lower Egypt	4.5	3.7	3.2	3.2	2.9	2.9	3.4
Urban	3.8	2.8	2.7	3.1	2.7	2.6	3.0
Rural	4.7	4.1	3.5	3.3	3.0	3.0	3.6
Upper Egypt	5.4	5.2	4.7	4.2	3.7	3.4	3.8
Urban	4.2	3.6	3.8	3.4	3.1	3.0	3.2
Rural	6.2	6.0	5.2	4.7	3.9	3.6	4.1
Frontier Gov	....	.....	4.1	3.9	3.3	3.2	3.9
Overall TFR	4.4	3.9	3.6	3.5	3.1	3.0	3.5

Source: EDHS (2014), P.45

Such fluctuations in fertility levels during the last forty years has significantly affected the population age-structure (Table 2). The stability of the percentage population distribution by broad age categories is clear for the period 1976-1986 where the percentage population below 15 years of age amounted to 40% and those in the labor force reached 56-57%, while the percentage for 65 year olds and above was around 3-4%. During this period the demographic dependency ratio was about 77% indicating that Egypt was far from entering the demographic opportunity. A favorable trend in the age-structure started in 1996 when the percentage below 15 years of age slightly declined (37.7%) and the percentage population in the labor force increased to about 59%. The same

trend was also noticeable in 2006 when the dependency ratio dropped to 55% indicating that Egypt was about to benefit from the demographic window.

Table 2: Percentage distribution by broad age-categories for censuses 1976 – 2017

Census Year	Age Categories			Dependency Ratio
	0-14	15-64	65+	
1976	40,0	56.3	3.6	77.4
1986	40,1	56,6	3,3	76.7
1996	37,7	58.9	3,4	69.8
2006	31,7	64,6	3,7	55.0
2017	34,2	61,9	3.9	61.5

Source: Egypt in Figures 2016, Ref No. 71-01112-2016, Cairo, Egypt, P.12, CAPMAS (2016).

The impact of the changes in fertility levels of recent years on the demographic situation is apparent in the broad age structure between the most recent censuses 2006 and 2017, as can be seen in Table (3). It presents the percentage distribution by broad age-groups, the overall dependency ratios for those two years and the projected population for future years, if such trend continues for a longer period.

Table 3: Egypt Population Characteristics by Age 2006 – 2050

Indicator	2006	2017	2025	2030	2050
Total Population (in Millions)	72.6	94.8	111.5	119.7	153.4
% Age 0-14	31.7	34.2	32.2	29.5	25.4
% Age 15-64	64.6	61.9	61.9	64.0	64.0
% Age 65 +	3.7	3.9	5.9	6.5	10.6
Dependency Ratio %	54.8	61.6	61.6	56.3	56.3
Child Dependency Ratio %	49.2	55.3	52.1	46.1	39.8

Source: For 2006 and 2017, CAPMAS, and for the period 2025 – 2050 UN population Division (UNPD), World Population Prospects for 2017.

The rising fertility levels during the period 2006-2017 led to significant changes in the recent age structure. The percentage population of the age-group (0-14 years) increased by about 2.5 percentage points at the expense of the active population's (labor force) share declining from 64.6 in 2006 to about 61.9 in 2017. The UN Population Division projections, assuming continuous slight decline in fertility levels, show a further decrease in the percentage of the child age group to 32.2, 29.5 and 25.4 in 2025, 2030 and 2050 successively. The

percentage population of the working age group (15–64 years) would be the same in 2025 and increase by 2030 to slightly less than the level observed in 2006. The share of old people (65+ years) will systematically increase during the period under consideration where the percentage of this age group would be around 6.5% in 2030 and about 10.6 by 2050, confirming the need to prepare for the specific requirements of this growing group (health, empowerment to keep them economically active).

The estimated demographic dependency ratios, although fluctuating during the period, were between 55%-62%; a value that falls below the level of (66%) indicating that Egypt could be on the verge of the demographic opportunity and that its age structure can be further generating such a situation leading to the demographic dividend, if relevant economic policies were adopted.

The data also indicate that the child dependency ratios represent the large component of the overall dependency ratios, as can be seen from Table 3. In 2006 and 2017 the child dependency ratio represent about 90% of the overall dependency ratio and gradually decline to 85% and 82% in 2025 and 2030 successively. Its lowest value would be observed in 2050 where the child dependency ratio is around 71% of the overall dependency ratio.

The broad percentage distribution by age categories for overall urban/rural areas of Egypt show some differences between the two areas. The percentage of persons below the age of 15 amount to 30.8% and 36.8% successively, and accordingly the percentages of persons in the labor force amount to 65% in urban areas against 60% in rural area indicating that while there is potential for urban areas to harness the demographic opportunity soon, the demographic situation for rural areas is not supportive and specifically requires further interventions concerning the demographic components of the dividend (Table 5).

Demographic Situation by Governorates

The rising fertility levels in recent years, leading to a higher annual population growth rate at the national level was also noticeable for various governorates but at a different pace. Table 4 presents the reported population in the last two censuses and the estimated annual growth rates, as well as the estimated TFR and the total wanted fertility rate (TWFR) obtained from the EDHS 2014.

Based on censuses' data and growth rates during the period 2006-2017, governorates can be clustered in three groups:

- 1) Six governorates with an annual growth rate of 3% and above, namely Giza at the top (4%), Beni Suef, Fayoum, Suez, Damietta and North Sinai
- 2) The majority of the governorates (17) reached an annual growth rate exceeding 2% and below 3%
- 3) Only 3 governorates achieved an annual growth rate of around 1%. However, two of these governorates were the result of abnormal conditions, namely Qena because of the changes of boundaries with Luxor, and South Sinai as a result of adopting

the de-jure methodology in the 2017 census. Only Cairo governorate achieved an annual growth rate of 1.2%

It should be noted, however, that estimated growth rates reflect the changes in population size as a result of natural increase and possible mobility between governorates. This is clearly noticeable for Giza which is the most growing governorate in 2017 census, although its fertility level is below the national level. The same observation can be seen when we compare the levels of annual growth and the estimated fertility levels by governorates presented in Table 4.

Only two urban governorates, namely Alexandria and Cairo have a TFR of 2.2 and 2.6 children per woman, which is significantly below the national level, while the TFR for 11 governorates were below/or equal to the national level of 3.5 children per woman. For the balance of the governorates the TFR for 12 of them exceeded the national level, out of which the TFR for 4 governorates was above four children per woman. The highest TFR was observed in both Matruh and Faiyum (4.8 and 4.6 successively), which is consistent only with the population growth rate for the last governorate.

It should also be noted that the total wanted fertility rate (TWFR) is below the TFR for all governorates. At the national level, estimated TWFR was 2.8 children per woman, i.e. about 20% less than the national fertility level. The difference varies between governorates, but it generally points out the presence of further possible decline in fertility levels, when RH/FP programs are strengthened.

Table 4: Egypt's Population by Governorates in 2006-2017 & Annual Growth Rates

Governorate	2006 POP in Millions	2017 POP in Millions	ANNUAL GR %	TFR EDHS 2014	Total Wanted Fertility, 2014
Cairo	8.4	9.5	1.2	2.6	2.2
Alexandria	4.1	5.2	2.3	2.2	1.7
Port-said	0.57	0.75	2.7	3.0	2.4
Suez	0.51	0.73	3.5	3.2	2.7
Damietta	1.1	1.5	3.0	3.0	2.7
Dakahleya	5.0	6.5	2.5	3.1	2.3
Sharqia	5.3	7.1	2.8	3.6	2.9
Qaliyubia	4.2	5.6	2.8	3.8	2.8
Kafr El Sheikh	2.6	3.4	2.4	3.4	2.7
Gharbia	4.0	5.0	2.2	3.1	2.4
Monufia	3.3	4.3	2.6	3.5	2.8
Beheira	4.7	6.2	2.7	3.5	2.7
Ismailia	1.0	1.3	2.6	3.7	2.9
Giza	5.7	8.6	4.0	3.3	2.7
Beni Suef	2.3	3.2	3.2	3.9	3.1
Faiyum	2.5	3.6	3.6	4.6	3.6
Minya	4.2	5.5	2.7	3.9	3.0
Asyut	3.4	4.4	2.5	4.2	3.3
Sohag	3.7	5.0	2.9	4.3	3.6
Qena	3.0	3.1	0.5*	3.7	3.1
Aswan	1.2	1.5	2.2	3.6	2.9
Luxor	0.5	1.3	14.8*	3.4	3.1
Red Sea	0.27	0.36	2.8	3.4	2.8
New Valley	0.19	0.24	2.3	3.7	3.1
Matruh	0.32	0.43	2.9	4.8	4.4
North Sinai	0.33	0.45	3.0	.....	.....
South Sinai	0.12	0.10	-1.8	.....	.....
Total Egypt	72.6	94.8	2.6	3.5	2.8

* The growth rates for Qena and Luxor do not represent the actual rates, as Qesm Arment was included in Luxor instead of Qena in the specified period.

Table 5: Percentage Distribution of Broad Age Groups: Overall Egypt, Urban & Rural Areas

Governorates	Overall Egypt %			Urban %			Rural %		
	0-14	15-64	65+	0-14	15-64	65+	0-14	15-64	65+
Total Egypt	34.23	61.91	3.86	30.76	64.99	4.24	36.78	59.63	3.58
Cairo	26.84	68.32	4.84	26.84	68.32	4.84	--	--	--
Alexandria	29.58	65.65	4.78	29.46	65.72	4.81	38.09	60.07	1.84
Port-Said	27.22	66.76	6.01	27.22	66.76	6.01	--	--	--
Suez	32.19	63.72	4.09	32.19	63.72	4.09	--	--	--
Damietta	33.86	62.21	3.93	32.03	63.58	4.39	35.06	61.32	3.63
Dakahleya	33.97	61.72	4.31	31.31	64.01	4.68	35.02	60.81	4.17
Sharqia	35.55	60.86	3.59	33.39	62.98	3.63	36.24	60.17	3.58
Qaliyubia	34.36	62.58	3.06	32.21	64.81	2.97	35.96	60.91	3.13
Kafr El sheikh	34.25	61.82	3.92	31.33	64.17	4.50	35.17	61.08	3.74
Gharbia	32.43	63.21	4.36	28.99	65.89	5.12	33.77	62.17	4.06
Monufia	34.77	61.22	4.01	32.34	63.47	4.19	35.40	60.63	3.97
Beheira	35.16	61.27	3.57	32.09	63.64	4.27	35.83	60.75	3.42
Ismailia	35.66	61.03	3.31	33.20	62.93	3.87	37.63	59.51	2.86
Giza	35.05	61.93	3.02	31.96	64.65	3.39	39.89	57.66	2.45
Beni Suef	38.39	58.04	3.58	35.24	60.82	3.94	39.31	57.22	3.47
Faiyum	39.84	56.97	3.19	36.26	60.21	3.52	40.91	56.00	3.09
Minya	37.17	58.98	3.85	32.91	62.82	4.27	38.11	58.13	3.76
Asyut	36.73	59.64	3.63	33.02	62.92	4.06	38.02	58.50	3.48
Sohag	37.87	58.42	3.71	35.51	60.60	3.89	38.51	57.83	3.65
Qena	35.57	60.41	4.02	32.76	62.88	4.37	36.22	59.84	3.94
Aswan	33.62	62.51	3.87	33.31	62.89	3.80	33.85	62.24	3.91
Luxor	31.82	63.64	4.55	31.09	64.35	4.57	32.31	63.15	4.53
Red Sea	36.18	61.12	2.70	36.19	61.18	2.63	35.76	59.45	4.79
New Valley	33.18	62.33	4.49	32.21	63.53	4.26	34.01	61.31	4.68
Matruh	41.23	56.85	1.92	40.43	57.68	1.89	42.58	55.46	1.96
North Sinai	39.04	58.65	2.31	37.49	60.39	2.12	41.67	55.70	2.63
South Sinai	39.35	58.96	1.69	38.57	59.80	1.63	40.22	58.02	1.77

Source: The 2017 Census results.

The broad age distribution for urban areas of various governorates indicates that three of the urban governorates (Cairo, Alexandria and Port-said) have a percentage population for the age group (0 – 14) below 30% (26.8, 29.5, 27.2%

successively) and a larger size of the labor force category that varies for these governorates between 65.7 and 68.3%, pointing out that these governorates are on the verge of the demographic opportunity's peak. Similarly, the 2017 findings indicate that Gharbia governorate is in the same group since the population that is less than 15 years of age is about 29%. In addition, for a large number of governorates such percentages fluctuate between 31 – 32%. For these governorates, the broad population distribution show a favorable demographic situation that can allow them to benefit from the demographic opportunity if the relevant policies were adopted to absorb the increasing labor force in productive jobs and to enhance the productivity of current workers, as well as to strengthen efforts to further decrease fertility levels in these governorates.

The situation in rural areas of various governorates is clearly reducing the opportunities of these areas to benefit from the demographic opportunity. The percentage of the population that is less than 15 years of age is fluctuating between 33 – 37% in Lower Egypt and is increasing to 36 - 41% for most of Upper Egypt governorates, with some exceptions in Luxor (32.2%) and Aswan (33.9%).

Age Dependency Ratios by Governorate

Examining the overall age-dependency ratios for various governorates, presented in Table 6, as the entry indicator to identify the chances for harnessing the demographic dividend, as elaborated by Bloom and Williamson (1998) and adopted by UNFPA in the preparation of the report “State of the World Population, 2014”. According to their approach based on the dependency ratios, governorates can be classified into three categories that point out the presence and level of the demographic dividend:

- 1) Low age dependency ratios of less than or equal to 60%, actually prevailing in 8 governorates, namely Cairo, Alexandria, Port-Said, Suez, Qalyubia, Gharbia, Aswan and Luxor;
- 2) Relative low dependency ratios that fluctuate between 60 – 66% which is noticeable in the majority of the governorates (11);
- 3) Relative high dependency ratios of over 66%, observed in 8 governorates, namely Beni-Suef, Faiyum, Menya, Asyut, Sohag, Matruh, and both North and South Sinai, which are mainly governorates of Upper Egypt.

According to this analysis, although the national data indicate the presence of the opportunity for the demographic dividend, the situation at the governorate level differs as shown by the wide variations in the values of the age dependency ratios for various governorates. In turn, this situation also reflects the different status of various governorates in the transition process.

The rank of the governorates based on the value of the overall dependency ratios, presented in Table 6, shows that all the urban governorates, namely

Cairo, Alexandria, Port-Said and Suez, are highly able to reach the opportunity of benefiting from the demographic dividend. These are directly followed by Luxor and several Lower Egypt governorates.

The success in translating this opportunity into a demographic dividend will mainly depend on the efforts that are being devoted to these governorates to enhance their human capital indicators, including education, health, employment and empowerment of various groups within the community as well as individuals. This is the critical issue in being able to benefit from the demographic dividend, by allowing all people to have the rights and freedom that respond to their potentials and accordingly contributes to economic growth, at all levels, including the household, the community and the country.

Special attention should be given in that respect to the empowerment of women which is crucial for achieving the demographic dividend. Efforts in that respect should include, among other things, reproductive health and rights as well as being free from all forced or coercive actions that affect their lives.

These human capital indicators including empowerment, education and employment are the main components of efforts to develop the demographic dividend index (DDI) to assess the potentials of various governorates in harnessing the demographic dividend.

Table (7) presents overall demographic dependency & child ratios for urban and rural areas of various governorates (2017). The estimated demographic dependency ratios for urban areas of various governorates show that it is below 66% in all governorates, with the exception of Faiyum, Matruh and South Sinai. This indicates that such areas are in a favorable position to benefit from the demographic opportunity if the supportive relevant economic policies are in place.

On the other hand, the dependency ratios for rural areas of only 10 governorates are below 66%, while the ratios for rural areas of the remaining governorates are showing ratios that vary between 67% and 80%. The higher dependency ratios are clearly noticeable in rural areas of most Upper Egypt governorates, where it is around 71% to 75%.

In all cases, however, the child dependency ratios are the main contributor to the overall dependency ratios and its share is larger in rural areas in comparison to urban areas.

Table 6: Overall Demographic Dependency & Child Ratios by Governorates, 2017

Governorate	Overall Dependency Ratio	Child Dependency Ratio	Rank
Cairo	46.37%	39.29%	1
Alexandria	52.33%	45.05%	3
Port-said	49.78%	40.78%	2
Suez	56.93%	50.51%	4
Damietta	60.75%	54.44%	10
Dakahleya	62.03%	55.04%	13
Sharqia	64.32%	58.42%	18
Qaliyubia	59.81%	54.91%	7
Kafr El Sheikh	61.76%	55.41%	12
Gharbia	58.20%	51.31%	6
Monufia	63.35%	56.79%	15
Beheira	63.21%	57.38%	14
Ismailia	63.85%	58.42%	17
Giza	61.48%	56.60%	11
Beni Suef	72.30%	66.14%	25
Faiyum	75.53%	69.93%	26
Minya	69.56%	63.03%	21
Asyut	67.67%	61.58%	20
Sohag	71.18%	64.84%	24
Qena	65.53%	58.87%	19
Aswan	59.98%	53.79%	8
Luxor	57.14%	50.00%	5
Red Sea	63.60%	59.18%	16
New Valley	60.43%	53.23%	9
Matruh	75.91%	72.54%	27
North Sinai	70.51%	66.56%	23
South Sinai	69.61%	66.74%	22
Total Egypt	61.53%	55.29%	.....

Source: The 2017 census

Table 7: Overall Demographic Dependency & Child Ratios for Urban and Rural Areas of Various Governorates (2017)

Governorate	Urban Areas		Rural Areas	
	Overall Dependency Ratio %	Child Dependency Ratio %	Overall Dependency Ratio %	Child Dependency Ratio %
Cairo	46.37	39.29	----	-----
Alexandria	52.15	44.83	63.09	57.17
Port-said	49.78	40.78	-----	-----
Suez	56.93	50.51	-----	-----
Damietta	57.28	50.38	64.17	59.03
Dakahleya	56.21	48.90	63.71	57.59
Sharqia	58.78	53.02	60.87	54.34
Qaliyubia	54.29	49.70	64.93	58.39
Kafr El Sheikh	55.84	48.83	64.62	58.99
Gharbia	51.76	44.00	68.04	63.23
Monufia	57.56	50.96	73.42	69.18
Beheira	57.14	50.44	74.77	68.71
Ismailia	58.90	52.75	78.56	73.05
Giza	54.67	49.44	72.02	65.56
Beni Suef	64.41	57.93	70.95	65.00
Faiyum	66.06	60.21	72.91	66.60
Minya	59.18	52.38	67.11	60.52
Asyut	58.92	52.47	60.66	54.38
Sohag	65.03	58.60	58.33	51.16
Qena	59.04	52.10	68.20	60.15
Aswan	59.01	52.96	63.11	55.47
Luxor	55.41	48.32	80.32	76.79
Red Sea	63.44	59.15	79.52	74.80
New Valley	57.40	50.69	72.36	69.32
Matruh	73.39	70.11	67.69	61.68
North Sinai	65.59	62.08	65.59	62.08
South Sinai	67.23	64.50	67.23	64.50

Source: The 2017 census

In sum, the 2017 census findings indicate that the age structure and the demographic dependency ratios for urban areas of almost all governorates and for rural areas of 10 governorates, are leading to the conclusion that they can benefit from the demographic opportunity although the results might be more substantiated if the economic dependency ratios are adopted.

Demographic Dividend Index (DDI)

Harnessing the opportunity of the demographic dividend requires taking advantage of the changes in the age structure leading to an increase of the working-age people at the expense of dependent children, while at the same time adopting a set of public policies that mainly aim to enhance human capital indicators to allow the country to reap the expected economic returns and benefits. The demographic transition leading to continuous decline in fertility need to be matched by simultaneous planned interventions covering the four wheels in Figure (1) to allow the country the awaited dividends.

Figure 1: Pillars for Harnessing the Demographic Dividend



Source: PRB (2013).

Although countries vary with regard to the set of policies that need to be adopted to benefit from the demographic opportunity and secure progress toward achieving sustainable development goals, the experience of many countries indicate that successfully achieving the demographic dividend requires significant attention to three main policy actions; to empower, educate and employ, especially for young people. This should also be within the context of governance, accountability and political stability of the country (Cincotta and Madsen, 2017).

The literature shows wide agreement on the areas that should be covered to enable the benefits of the demographic dividend, but there is no clear agreement about the relevant indicators that can be used to assess progress in

the specific action areas proposed for intervention. The ability to estimate these specified indicators, using relevant available data, can be crucial for developing a demographic dividend index, especially when depending on one source of data, as the census.

To this end, this paper adopted the framework developed by the World Economic Forum/Global Agenda Council (WEF/GAC) to quantify the key pillars for human capital aspects using essentially the data that be obtained from the 2017 census. For each of the three action areas (empowerment, education and employment) one indicator is to be selected to represent the specific area, and if all were combined, they would produce an index for the demographic dividend. These indicators and their definitions are as follows:

- 1) For the area of empowerment, the selected indicator is the “child marriage ratio” estimated as:

$$\frac{(\text{No. of women aged 18-24 years who were married before age 18}) * 100}{(\text{Total no. of women aged 18-24})}$$

- 2) For the area of education, two sub-indicators were used to estimate the overall education indicator. These are:

- Preparatory School Net Attendance Ratio, calculated as:

$$\frac{(\text{No. of children aged 12-14 years attending preparatory school}) * 100}{(\text{Total number of children aged 12-14})}$$

- Secondary School Net Attendance Ratio, calculated as:

$$\frac{(\text{No. of children aged 15-18 years attending secondary school}) * 100}{(\text{Total number of children aged 15-18})}$$

- The geometric mean of the two sub-indicators will be estimated and taken as the indicator representing education (NAR).

- 3) For employment, the selected indicator is the proportion of youth 15 – 24 years of age not in school, employment and training (NEET)². This is calculated as follows:
$$\frac{(\text{No. of NEET youth aged 15 -24}) * 100}{(\text{Total No. of Youth aged 15-24})}$$

Following Zhang, et.al. (2017), the DDI index will be taken as the geometric mean of the selected three indicators for all governorates. The distribution of these indicators is standardized to 1- 100 scales to be comparable across all governorates and the opposite number (subtracted by 100) is applied for both indicators: child marriage and NEET, as these two indicators have an inverse relationship with DDI. Governorates with a DDI value below 0.5 are considered to have low human capital indicators that would deny them the potential benefits of the demographic dividend.

2 The census does not provide data on training and NEET is only limited, in this paper, to not being in school or employment.

Table 8: Distribution of Governorates According to the Dependency Ratio (DR), Human Capital Indicators and DDI, Based on Egypt 2017 Census

Governorate	DDI Rank	DDI Index	DR Rank	Depend. Ratio %	NAR %	NEET %	Female Child Marriage %
Cairo	1	77.7	1	46.37	62.9	20.43	2.78
Alexandria	9	73.5	3	52.33	56.9	21.8	5.13
Port-said	2	75.5	2	49.78	62.6	21.81	5.62
Suez	3	75.2	4	56.93	60.9	23.12	3.05
Damietta	5	74.7	10	60.75	60.5	18.72	9.71
Dakahleya	13	72.7	13	62.03	61.0	19.51	15.0
Sharqia	14	72.6	18	64.32	59.9	20.50	13.6
Qaliyubia	4	75.0	7	59.81	61.2	20.02	7.67
Kafr El Sheikh	12	72.8	12	61.76	61.6	23.08	13.73
Gharbia	7	73.7	6	58.20	60.7	22.26	8.98
Monufia	10	73.4	15	63.35	59.0	20.89	8.02
Beheira	21	66.5	14	63.21	53.9	26.22	17.85
Ismailia	15	72.2	17	63.85	57.4	23.62	8.18
Giza	16	71.4	11	61.48	56.2	19.52	12.81
Beni Suef	25	64.4	25	72.30	49.4	20.07	22.47
Faiyum	24	65.0	26	75.53	52.0	19.12	26.36
Minya	23	65.8	21	69.56	52.7	25.65	17.58
Asyut	26	63.6	20	67.67	47.5	28.23	13.43
Sohag	22	65.8	24	71.18	49.3	25.61	11.88
Qena	20	69.0	19	65.53	55.2	23.14	13.31
Aswan	17	71.3	8	59.98	58.8	26.74	7.76
Luxor	19	70.3	5	57.14	56.7	25.97	7.45
Red Sea	6	73.9	16	63.60	57.7	21.63	5.20
New Valley	8	73.6	9	60.43	62.8	29.08	5.62
Matruh	27	60.2	27	75.91	41.7	26.01	21.1
North Sinai	18	71.1	23	70.51	53.8	17.02	13.64
South Sinai	11	72.8	22	69.61	60.1	21.08	8.60

Estimated DDI values for all governorates exceed 60%, indicating that the specified human capability priority areas (empowerment, education and employment) are being taken into consideration within current efforts to harness the demographic dividend, but at different levels. Further assessment of the DDI indicates:

- 1) The highest DDI value is observed in Cairo (78%) followed by other urban governorates (except Alexandria) showing a DDI estimate that slightly varies around 75%. Qaliyubia and Dameitta can also be included in this group with an estimated DDI of about 75%;
- 2) Similarly, other governorates of Lower Egypt (except Beheira) also have a DDI that is above 72%, confirming that the three dimensions of human capability is being taken into consideration;
- 3) All governorates of Upper Egypt are showing DDI values that fall below those of Lower Egypt. It varies between 71% (Giza and Aswan) to 64% (Beni Suef and Asyut), indicating that further attention should be given to the various components of human capacity in these governorates;
- 4) Border governorates estimates for the DDI are above 71%, with the exception of Matruh which has the lowest DDI value of 60%.

Variations in the values of the DDI for various governorates can be explained by the levels of the selected indicators to represent the three priority action areas. The empowerment indicator, represented by female child marriage, shows a high percentage in Upper Egypt governorates and Matruh, which is also coupled by high levels of NEET (without the training component); thus leading to low values of the DDI and confirming that harnessing the demographic opportunity in these governorates requires intensified attention to the human capability indicators.

The consistency between the two pillars of the demographic dividend, namely the demographic opportunity and the human capability components, can be examined through the ranks of the indicators presented in Table 8 for all governorates. The comparison between the two ranks indicates:

- 1) The rank of the two indicators, DDI and age dependency ratio (DR), show a complete match for some governorates, which are Cairo, Port-Said, Dakaheyia, Kafr El Sheikh, Beni Suef, and Matruh. This indicates similar conclusions for both indicators although in different directions. For urban governorates they should continue in their current efforts to achieve further progress in strengthening human development capability indicators, while for other governorates further attention should be given to work on the two pillars, namely to intensify FP programs and at the same time improve human development capabilities;
- 2) Governorates that differ in the ranking of both indicators by one or two places, which are Suez, Gharbia, Ismalia, Faiyum, Minya, Sohag, Qena, and New Valley. The programs for these governorates should also be considered along the observation previously stated;
- 3) The large differences between the ranks of the two pillars of the demographic dividend should be given serious attention, especially for those assuming a higher ranking with regards to the human development indicators and should have better results concerning age dependency ratios accordingly.

- 4) Alexandria deserves special attention among the last group. The age dependency ratio is well below the limit that allows the governorate to benefit from the demographic opportunity, and according to the EDHS (2014), it achieved almost the replacement level (2.2 births per woman) indicating that the governorate is going in the right direction concerning the demographic opportunity, but its performance in the area of human development capabilities (although high) needs further attention to match its achievement in the demographic components.

Conclusions and Policy Directions

Available data, at various levels, confirm the dynamics and changing nature of the demographic situation. This essentially requires the integration of the demographic component into overall national development plans and strategies since the various pillars of the demographic dividend would factor in several aspects of public and private policies. This would include, among others, economic management, education, health, gender equality, youth, ageing and urbanization.

Examining both the DR and DDI indicators confirms the previous requirement. It shows that a large number of Egypt governorates are on the right direction to harness the benefits of the demographic dividend. However, the data also indicate that these governorates are at different levels of the demographic transition. Accordingly, relevant public policies to affect both sides of the demographic dividend (demographic and human capital development) should be adopted either to sustain the current progress or to reverse directions in some other governorates.

The previous analysis allowed us to identify priorities for intervention, at the governorate level, within the two sides of the demographic dividend, namely demographic and human capabilities. These can be specified as follows:

- 1) Population and family planning programs need to be intensified in almost all the governorates of Upper Egypt, especially Beni Suef, Faiyum, Minya, Asyut, Sohag, and the three border governorates, namely Matruh and both North and South Sinai, which need to be given the highest priority. The analysis of the DDI also indicates that it is necessary to give serious attention to the human capital development in these governorates;
- 2) Relevant data for Alexandria should be further examined to assess its contradictory situation obtained from assessing both indicators concerning the DR and the DDI. Although its performance was acceptable in the DR, its achieved record in the DDI does not match;
- 3) Within Lower Egypt, Behira, Sharkia, Dakahlia and Kafr El Sheikh governorates should also be given priority attention to cope with both pillars of the demographic dividend;
- 4) Generally, second priority attention should be given to all governorates affected by either high DR or low DDI as shown in Table 8;

- 5) Finally, governorates that performed well in both pillars (DR and DDI) need to be given due attention to sustain such progress and to maximize the benefits of the favorable dependency ratio, in addition to useful as well as effective investment in the various components of the human development capabilities.

The analysis by urban/rural areas of each governorate showed the existence of a large potential in urban areas of most governorates to harness the benefits of the demographic dividend, while in rural areas only 10 governorates can be in that position. Priority of interventions also needs to be harmonized with such findings.

To increase efforts to harness the demographic dividend, activities should cover the two pillars of this opportunity. Clearly, the initial stage for the demographic component of this window of opportunity is to increase the working age population at the expense of the dependent population, especially for young age-group (0 -14) years which can be achieved through effective, quality and comprehensive RH/FP programs that respond to the need and requirements of various families.

The second pillar to translate the demographic opportunity into dividend is to adopt policies to strengthen human development capabilities. To this end, experiences of other countries indicated that policies should aim at:

- 1) Assessing economic sectors and their ability to grow and focus on those labor-intensive categories to create sufficient productive jobs to absorb the growing labor-force.
- 2) Enhancing the potential and power of women and create supportive environments to encourage their participation in the labor force.
- 3) Promoting structural transformation and greater productivity through widening the shift toward non-traditional sectors.
- 4) Stimulating small and medium enterprises, which can play a significant role in opening opportunities for young entrants to the labor force.
- 5) Enhancing the skills and capabilities of the young generation to increase their opportunities in the labor market. This includes:
 - Expanding and enhancing the quality of education, at all levels, as well as providing more vocational training to help develop key workforce skills. Moreover, education programs must be responsive to the changing needs of the global economy by refocusing efforts on special topics such as engineering, mathematics and science to enhance competitiveness.
 - Investing in improving the health of various population categories to ensure effective participation in the labor force and high-level productivity. In turn, these programs should also respond to the needs of women which would impact the demographic situation.

It should also be noted that to achieve such goals, high political support and governmental commitment, at all levels, need to be secured throughout the development and implantation of various policies and programs covering components of the planned intervention.

The findings and conclusions concerning the demographic aspect is based on the demographic dependency ratios (age ratios) which might be misleading and do not represent the actual situation. Further analysis should be carried out based on the economic dependency ratios. Required data for such analysis might be obtained from the economic activity module included in the 2017 census long form that was adopted on a 10% sample and would produce relevant required data.

Moreover, further work to assess the relevancy of the selected variables to represent the various components of the human development capabilities and continuous refinement of measurement, as well as the combination of data from various sources might be crucial in enhancing the success of intervention programs. Moreover, expanding the analysis to sub-governorate areas will also be instrumental in identifying geographic priority areas for intervention.

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