

## **Demographic Transition in Morocco and the Emerging Demographic Window of Opportunity, MOUNIB, M.<sup>1</sup>, DINAR, B.<sup>2</sup>**

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### **Abstract:**

Fertility in Morocco has declined in recent decades. Similarly, mortality rates have shown steady and significant declines.

These demographic changes are not without impact. The question arises: To what extent can the demographic transition be an economic opportunity for Morocco?

Using national and international demographic data and based on the demographic transition model and economic dependency ratios, this paper seeks to describe the characteristics of Morocco's demographic transition, examine its effects on the age structure of the population and highlight the economic implications of demographic change in Morocco.

Morocco's rapid demographic transition brings about many changes in the size and age structure of the population that open up the possibility of stimulating economic variables. The demographic window of opportunity is estimated to be open from 2003 and to continue to be open until the year 2055, a period of about 52 years. This demographic window offers opportunities for economic growth through increasing the labor force, encouraging savings and improving human capital.

**Key-words:** Demographic transition, age structure, window of opportunity, Morocco.

## **Transition démographique au Maroc et émergence de la fenêtre d'opportunité démographique**

### **Résumé :**

Au Maroc, la fécondité a connu un fléchissement ces dernières décennies. De même, les taux de mortalité ont accusé des baisses régulières et significatives. Ces changements démographiques ne sont pas neutres.

La question qui se pose est la suivante : Dans quelle mesure la transition démographique peut être une opportunité économique pour le Maroc?

À travers l'exploitation des données démographiques nationales et internationales et en se basant sur le modèle de transition démographique et les ratios de dépendance économique, cet article cherche à décrire les caractéristiques de la transition démographique au Maroc, à examiner ses effets sur la structure par âge de la population future et à faire émerger les implications économiques des changements démographiques au Maroc.

La transition démographique rapide du Maroc entraîne de nombreux changements dans la taille et la structure par âge de la population qui ouvrent la possibilité de stimuler les variables économiques. La fenêtre d'opportunité démographique est vraisemblablement ouverte à partir de 2003 et devrait continuer à l'être jusqu'à l'année 2055, soit une période d'environ 52 ans. Cette fenêtre démographique offre des opportunités de croissance économique à travers l'augmentation de la population active, l'encouragement de l'épargne et l'amélioration du capital humain.

**Mots-clés :** Transition démographique, structure par âge, fenêtre d'opportunité, Maroc.

## Introduction :

The interactions between demography and economy have long been approached through the size of the population and its growth, and little attention has been paid to the age structure of the population. It is only recently that a number of scholars have focused on the effects of age structure on economic variables (Bloom et al., 2003; Bloom & Freeman, 1986; Coale & Hoover, 1958; Groth & May, 2017; Jafrin et al., 2021; Mason, 2005; Sachs, 2002).

The dynamics of the age structure are emphasized during the demographic transition. *“The term “demographic transition” refers to the secular shift in fertility and mortality from high and sharply fluctuating levels to low and relatively stable ones”* (Lee & Reher, 2011, p.1). It *“starts with mortality decline, followed after a time by reduced fertility, leading to an interval of first increased and then decreased population growth and, finally, population aging”* (Lee, 2003, p.170).

The transition to low fertility and mortality rates produces many challenges but also many demographic, social and economic opportunities (Bloom & Williamson, 1998; Elmorchid, 2018; Joe et al., 2018; Navaneetham & Dharmalingam, 2012; Taketoshi, 2020).

The demo-economic literature calls these opportunities a "demographic window of opportunity. Sustained economic growth can be driven by favorable demographic factors, economists then talk about a "demographic dividend. This is in fact the economic advantage that a country enjoys during its demographic transition.

As in many developing countries (Crombach & Smits, 2022), Morocco's demographic transition began with a sharp decline in mortality rates, particularly under-five mortality, before fertility rates fell. Viewed from an economic angle, these demographic changes will not go unremarked, especially since they raise a wide range of issues. The economic implications of changes in the distribution of the population among different age groups in Morocco is one of the issues that merits further study and that we will attempt to address in this paper.

Therefore, our central research question sound: To what extent can the demographic transition be an economic opportunity for Morocco?

This question imply three hypotheses which are to be verified:

H<sub>1</sub>: Morocco's demographic transition followed the classic demographic transition model.

H<sub>2</sub>: Morocco's demographic transition opens up a long window of demographic opportunity for the country.

H<sub>3</sub>: The demographic window of opportunity would foster the demographic gift.

The main objective of the paper is to theoretically examine the demographic transition in Morocco and provide an analysis of the impact of the age structure of the population of Morocco on its economy. Specifically, it seeks to highlight the characteristics of the demographic transition

in Morocco by focusing on changes in the age structure of the Morocco's population, examine its effects on the age structure of the future population, provide evidence on the opening and closer of the demographic window of opportunity, and highlight the economic implications of demographic change in Morocco.

The paper is divided into three sections. The rest is structured as follows: after presenting the theoretical and conceptual framework in the first section, the second one describes the data and the methodology. The third section outlines the results of the research before giving a conclusion to the topic.

## **1. Theoretical and Conceptual Framework**

### **1.1. What is the Demographic Transition?**

The demographic transition is a model that describes the process by which a country or geographic area shifts from a demographic regime characterized by high birth and death rates to a regime with low birth and death rates (Coale, 1973; Haupt & Kane, 2005; Kirk, 1996; Koba et al., 2019; Landry, 1934; Lee, 2003; Lehr, 2009; McFalls, 2007; Notestein, 1945; Olshansky et al., 1998; Sinha & Zacharia, 1984; Thompson, 1929; Warf, 2006). It is the passage from a low stable population to a high stable population following successive decreases in the mortality rate which will be followed later by decreases in the birth rate.

According to the Multilingual Demographic Dictionary of the United Nations, p.127 *"the process of transition from a situation in which both fertility and mortality were relatively high to one in which they are relatively low which has been observed in many countries, is called the demographic transition or population transition. In the process of moving from a pre-transitional stage to a post-transitional stage, there is typically a lag between the declines of mortality and fertility, so that a stage of transitional growth of population results"* (United Nations, 2013).

In its classical form, the theory of demographic transition is essentially a description of the motion of the population through different stages (Davis, 1945; Kirk, 1996; Thompson, 1929). In several literature on demographic issues, the demographic transition model is divided into four stages (Chesnais, 1992) as shown in Fig. 1.

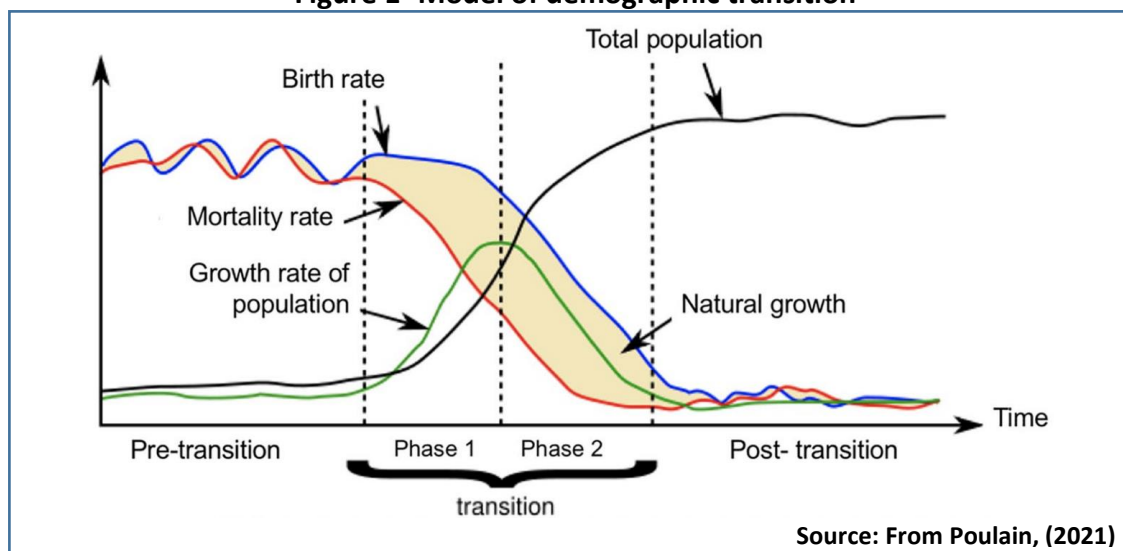
Stage 1 was characterized by high mortality rates sometimes exceeding 40 ‰. These excessive rates were only offset by equivalent or slightly higher birth rates.

In stage 2, which corresponds to the first phase of the demographic transition, the crude death rate falls, the crude birth rate remains very high. As a result, the natural increase rate becomes higher and higher, leading to a "population explosion" (McFalls, 2007).

A country enters the second phase of the demographic transition (stage 3) when the crude birth

rate begins to decline while the crude death rate stays low or continues to decline. During this stage, the natural increase rate which peaked at the end of the previous stage and at the beginning of this stage is declining little by little. During these two phases of the demographic transition, the age structure of the population changes, leading to an increase in the working-age population and a decrease in the shares of dependent populations in the total population (the young and the elderly).

**Figure 1- Model of demographic transition**



Finally, stage 4 marks the modern demographic regime that combines low death and low birth rates. In some countries, the crude birth rate is slightly higher than the crude death rate (as in France and the United States, for example); in other countries, the crude birth rate remains lower than the crude death rate (as in Germany and Japan, for example). Life expectancy at birth increases and changes the age distribution, eventually leading to an aging population (Teitelbaum, 1975). The natural increase rate is again low if not negative. A tendency towards demographic stagnation occurs.

## 1.2. Economic Implications of Demographic Change

During the demographic transition, there is a period in which the share of potentially productive or working-age population (15-64) grows faster than that of potentially dependent people (under 15 and over 64). In fact, before the decline in the share of the 0-14 age group (the young inactive) is offset by the increase in the share of people over 64 (the elderly population), the proportion of people between 15 and 64 (the working-age population) in the total population increases significantly: this is known as the "demographic window. This situation is particularly favorable to the economy of any country and the period is called the "demographic dividend" period.

The evolution of the age structure of the population has different economic implications. A population which is too young requires demographic investments (Sauvy, 1952), investments in education and health that come at the expense of direct productive investments. A large

population of adult age means an increase in the labor force that promotes productive activities and an increase in income and savings that stimulates capital accumulation. A much more elderly population structure induces social expenditures needed to support an aging population, which will again divert saved resources to non-directly productive activities.

As fertility declines and the age structure of the population shifts to adults, the working-age population (15-64) is growing rapidly compared with other age groups (under 15 and over 64). This would enable a country to reap the economic benefits of its demographic transition, which the economic literature has termed the demographic dividend. This demographic dividend emanates from three interconnected mechanisms (Bloom et al., 2001): i) a large labor supply provided on the one hand by the cohorts of young people born during the years of high fertility, and on the other hand by women who become increasingly unattached as fertility declines (Aaronson et al., 2021); ii) an improved human capital due to the increase in per capita investment in education and health of children, made high by the decline in fertility, and finally iii) a high level of individual and national savings that will be injected into the economic circuit by a supernumerary workforce during the demographic transition.

There are several published papers that have analyzed the economic effects of demographic transition. For instance, Bloom & Williamson (1998) analyze the impacts of age structure transition on economic growth in many in several countries. They argue that the demographic dividend represents a substantial part of the east Asian countries' economic miracle (the East Asian Tigers). Bloom et al. (2007) for their part estimate the impacts of the falling fertility on the evolution of per capita income in in South Korea. They find that there is a negative effect of the fertility rate on women's labor supply at all ages which is more significant in the 20-39 age group. With regard to Morocco, Elmorichid (2018) analyzes the effects of demographic gift and finds that this opportunity for development did not come with any real gains.

## **2. Data and Methods**

### **2.1. Data**

Our data cover the period 1950-1970 containing population estimates (1950-2020) and projections (2020-2070). The data used is derived from two sources. On the one hand, national data from the various population censuses conducted by the HCP (High Commission for Planning) since 1960, as well as the results of several surveys conducted in Morocco targeting large representative samples. On the other hand, international data from United Nations, Department of Economic and Social Affairs, Population Division (United Nations, 2019) that provides past estimates and future projections in three variants: high, low, and medium (or standard). The results are presented in tables and graphs created using Microsoft Excel software.

### **2.1. Methods**

Theoretically, there is not one approach to determining the precise time of opening and closer of the window of opportunity that is unanimously accepted by scholars. However, two approaches can be distinguished on this subject: the first one stipulates that the window of opportunity opens when the growth rate of the working-age population exceeds the growth rate of the total population and closes when the trend is reversed (Bloom & Williamson, 1998; Mason, 2005; Navaneetham & Dharmalingam, 2012; United Nations, 2017). The second approach, adopted by the United Nations in 2004, places the demographic window of opportunity at the period when the total dependency ratio fluctuates between 40% and 60%, and which will be developed below for the case of Morocco.

For this purpose, a common approach in terms of dependency ratios is necessary. The ratios of economically active and economically dependent age population are commonly used as indicators for determining the demographic dividend. Thus, three types of dependency ratios are calculated. The total dependency ratio (TDR) is calculated by dividing the sum of the population under 15 years and the population aged 65 years and over by the population aged 15 to 64 years. Similarly, the child dependency ratio (CDR) is calculated by dividing the population aged 0-14 years by the population aged 15-64 years, and the elderly dependency ratio (EDR) is calculated by dividing the population aged 65 and over by the population aged 15-64 years (Hobbs, 2004). The TDR and its components (CDR and EDR) indicate the ratio of economically dependent populations in relation to the working-age population. Dependency ratios are expressed as a percentage of the population aged 15 to 64 years.

**Child Dependency Ratio (CDR) = Population aged less than 15 / population aged 15-64**

**Elderly Dependency Ratio (EDR) = population aged 65 or more / population aged 15-64**

**Total Dependency Ratio (TDR) = Population aged less than 15 and population aged 65 or more / population aged 15-64 = CDR + EDR**

### **3. Results and Discussion**

This section discusses the evolution of the demographic transition in Morocco and its implications in economic terms.

#### **3.1. Evolution of the Demographic Transition in Morocco**

Since its accession to independence, Morocco has been through a series of rapid demographic changes. In 1956, the year of its political independence, its population totaled just over 10 million. It tripled in the space of 60 years, growing from 12.3 million in 1960 to 36.9 million in 2020. During this period, the Moroccan population has increased by almost 4 million people each decade. However, the natural growth rate has gradually declined to 1.21% in 2020 after being 3.23%, 2.72% and 1.60% in 1960, 1970 and 2010 respectively. This trend is expected to continue for the next few decades and the natural growth rate would fall to 0.41% in 2050 according to the

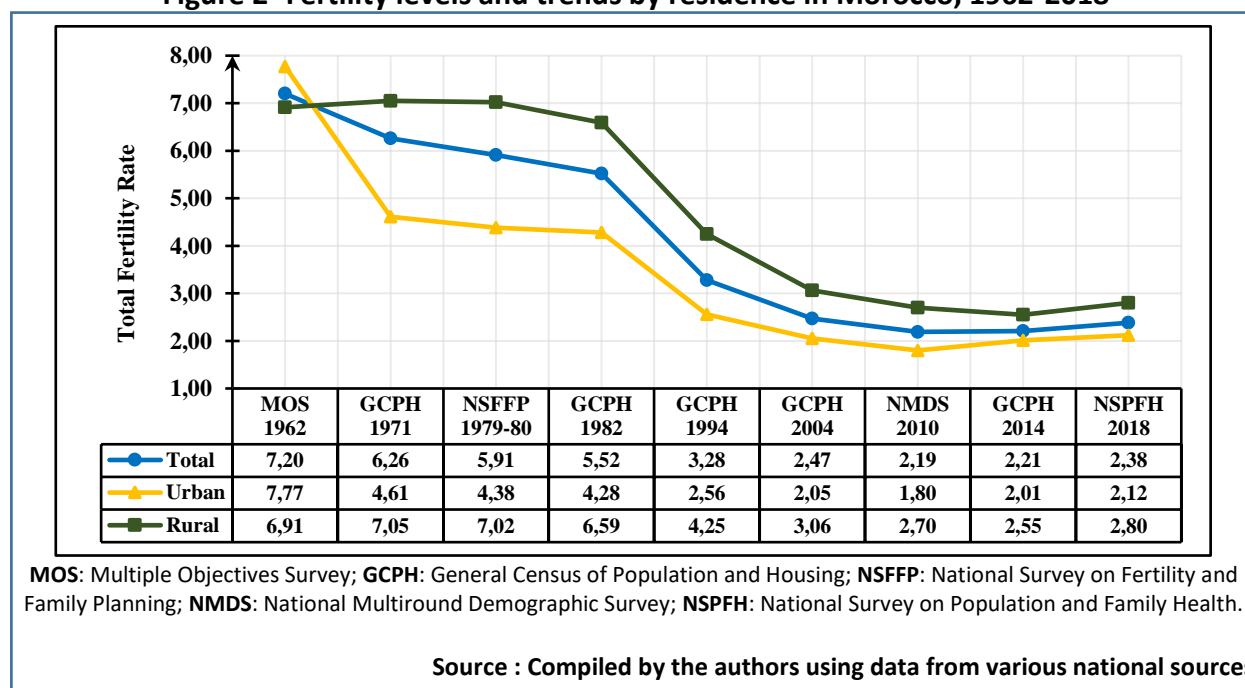


intermediate variant of the United Nations projections.

Like several developing countries, Morocco has experienced a rapid transition in fertility. Fertility as measured by the total fertility rate (TFR), began to decline in the early 1960s. It fell from 7.20 children per woman in 1962 to 5.91 in 1980, to 3.28 in 1994, to 2.47 in 2004, and to 2.38 in 2018. Compared to the 1962 level, the level of fertility in 2018 represents a reduction of nearly 67%.

It should be noted that fertility levels vary significantly with place of residence. However, a convergence of rates has been observed over the years. In 1971, women from urban areas (4.38 children) gave birth to 2.44 children less than rural women (7.05); in 2018, the urban-rural fertility gap is only 0.68 children. In 2010 and 2014, the TFR was at its lowest levels of 2.19 and 2.21 children per woman respectively, approaching the replacement level fertility which is roughly 2.1 children per woman. This trend drop in fertility was uninterrupted until 2010, although the rate of decrease varies according to the sub-periods selected, as shown in Fig. 2.

**Figure 2- Fertility levels and trends by residence in Morocco, 1962-2018**



This fertility transition, very deep than in other African countries, has led Morocco to a relatively early and rapid demographic transition. To describe this, we present in Fig. 3 the evolution of crude birth rate, crude death rate and natural increase rate in Morocco for the periods 1950-2019 (estimates) and 2020-2070 (projections). An examination of the evolution of these three rates over the past 70 years suggests that Morocco began its demographic transition in the early 1960s. Referring to the classic demographic transition model, the transitional process in Morocco can be summarized as follows (Fig. 3):

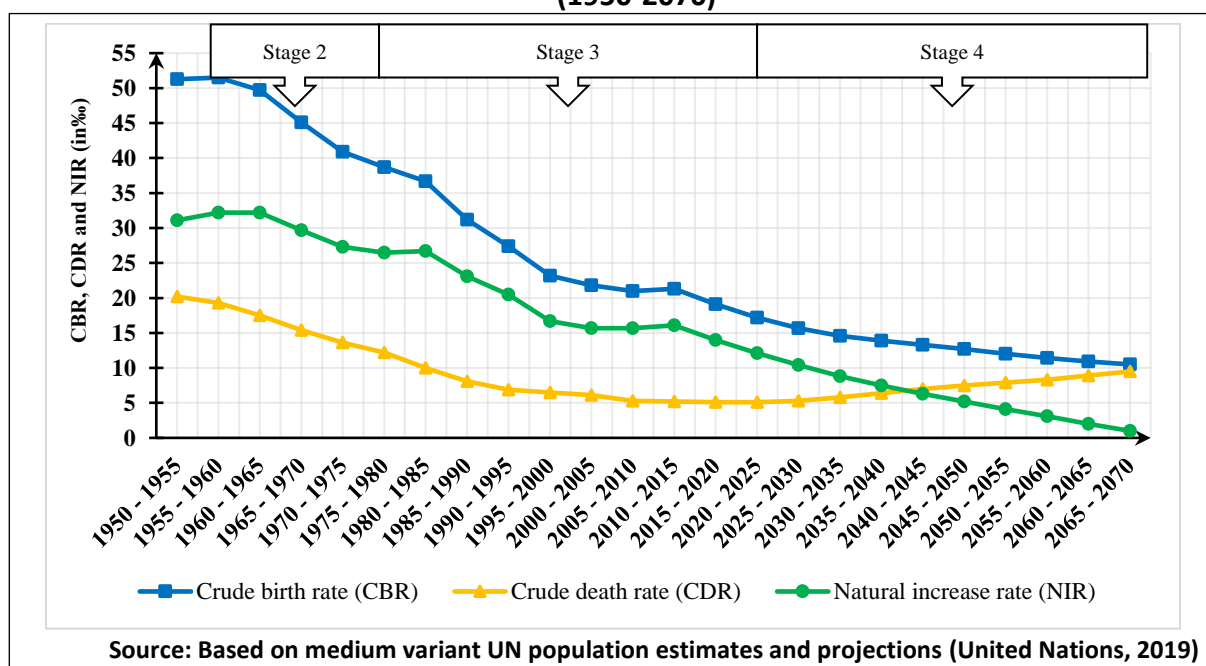
i) The pre-transitional period (the first stage of the demographic transition) lasted until the late 1950s. Under the protectorate, Morocco's demographic history shows strong disparities, on the



one hand between the territories under French occupation (the former southern zone), those under Spanish occupation (the former northern zone), and the province of Tangiers; and on the other hand between the Muslim population, the Jewish population, and the foreign population (Krotki & Beaujot, 1975). However, a few characteristics can be broadly identified: low life expectancy at birth (42.9 years in 1952), high fertility (over 7 children per woman), high crude death rates (over 50‰), and therefore low population growth.

(ii) The period 1960-1980 corresponds to the second stage of the demographic transition. Mortality, initially very high (the crude death rate is about 17.5‰ in 1960-1965 and life expectancy at birth is about 47.0 years) declines rather rapidly, while the crude birth rate, also high (of about 49.7‰ in 1960-1965, corresponding to 7.20 children per woman in 1962) declines almost in parallel until the 1980s.

**Figure 3- Trends in crude birth rate, crude death rate and natural increase rate in Morocco (1950-2070)**



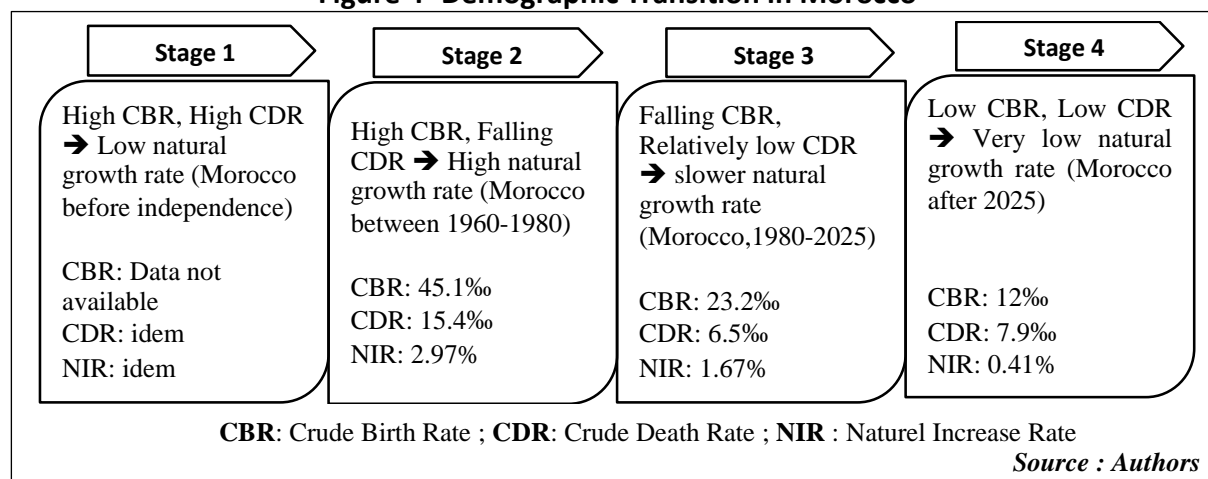
iii) The third stage, which can be placed between 1980 and 2025, is characterized by a simultaneous decline in mortality and birth rates. The total population increases at a rapid rate at the beginning of the stage (of the order of 2.7%) when the surplus of "births" over "deaths" is at its maximum. Thereafter, the gap between the crude birth rate and the crude death rate (natural increase rate) decreases over the years, leaving in its wake a deceleration in the rate of population increase (population growth falls below 1.5% between 2015 and 2020).

Morocco is henceforth characterized by a relatively high life expectancy at birth (74.8 years in 2010) and by a fertility that is approaching the generation replacement threshold (2.19 children per woman in 2010) to such an extent that the country is experiencing one of the lowest population growth rates in Africa (1.25% annual average for the intercensal period 2004-2014).

In 2020, Morocco shows relatively low birth and death rates of 17.2‰ and 5.1‰ respectively, representing an annual natural population growth of about 1.20%. All of these indicators suggest that the demographic transition in Morocco is essentially complete.

iv) Population projections elaborated by the United Nations show that crude birth rates would be only slightly higher than crude death rates over the next fifty years. Indeed, the trend shows the convergence of mortality and birth rates towards low rates and the difference between the two rates would be only 1% by 2070. Between 2050 and 2065, the annual natural growth rate would be below 0.4%, fertility (1.92 children per woman) below the level of generational replacement and life expectancy at birth above 82 years. This is the fourth stage of the demographic transition or modern demographic regime, which combines low mortality and low birth rates. Life expectancy at birth would increase and change the age structure, producing an aging of the Moroccan population. The natural increase rate would again be low.

**Figure 4- Demographic Transition in Morocco**



In sum, Morocco's demographic transition, which fits the classic model, is rapid and not yet complete. This is evidenced by the results obtained in this paper, in which the hypothesis 1 is confirmed. Fig. 4 summarizes the characteristics of each stage of the Moroccan demographic transition. Thus, as Morocco progresses through its demographic transition, the proportions of the three major age groups - youth, working-age population and people over 64 - are changing. A detailed examination of these dynamics is necessary given the potentially significant social and economic challenges they raise.

### 3.2. Age Structure of the Population and the Window of Opportunity

#### 3.2.1. Age Structure: An Overview

A quick overview of a very synthetic age structure indicator such as the median age is useful to realize the magnitude of the demographic changes that have characterized the Morocco's population. The median age of the population which was 17.8 years in 1980 has reached 29.5 years in 2020. With improving life expectancy at birth and fertility remaining stable at low levels,

the upward trend in median age will continue in the future. By 2040, one-half of Moroccans will be over 35.4 years old and this median age will increase to 43.7 years by 2070.

Based on demographic data from United Nations, the medium-variant projection (United Nations, 2019), Table 1 shows the evolution of the age structure of the population of Morocco between 1950 and 2070. Three age groups were considered: young people under 15 years old who are economically dependent on adults, people aged 15 to 64 years old who represent the country's working-age population and finally people aged 65 years and over, a large majority of whom are also dependent on other people to provide for their needs. The age distribution of the population is, in many ways, very useful in forecasting and planning for population needs in certain policy domains such as education, employment and health.

**Table 1- Estimates and Projections (Medium Variant) of Total Population Size and Age Structure of Population , Morocco 1950-2070**

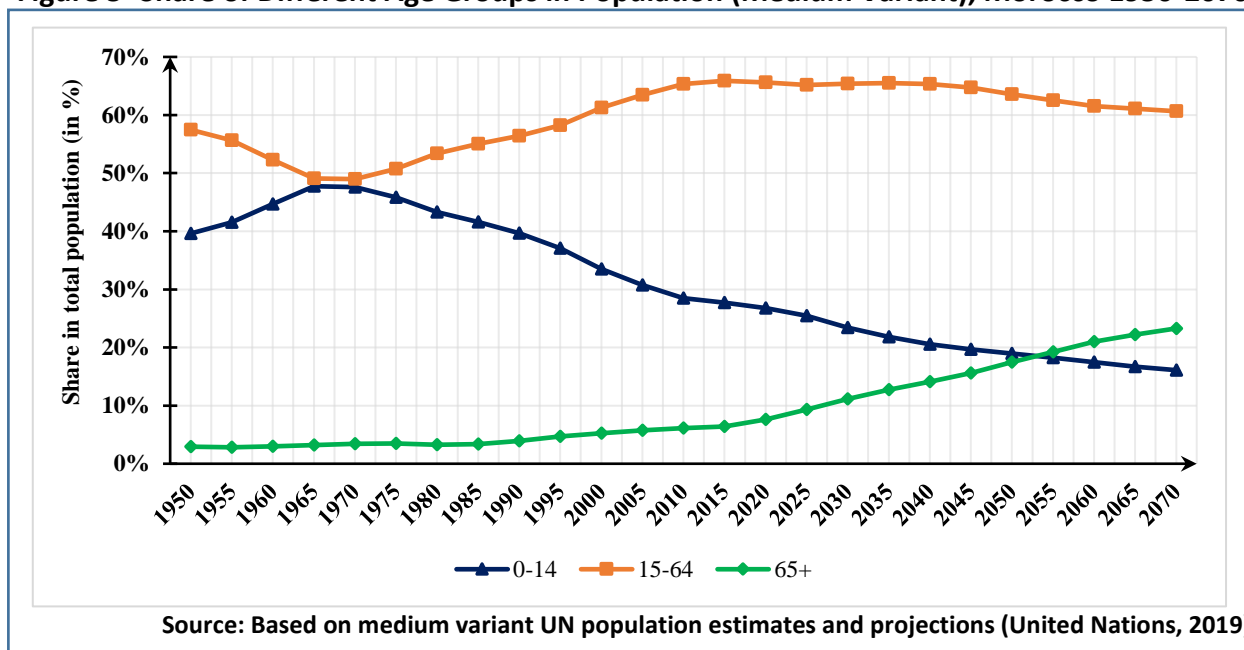
Year	Population size (in 1000)	Population distribution by broad age group (in 1000)			% of population by broad age group		
		0-14	15-64	65 et +	0-14	15-64	65 et +
1950	8 986	3 559	5 164	262	39.61	57.47	2.92
1960	12 329	5 511	6 449	368	44.70	52.31	2.98
1970	16 005	7 615	7 839	551	47.58	48.98	3.44
1980	19 990	8 657	10 675	657	43.31	53.40	3.29
1990	24 807	9 835	13 998	976	39.65	56.43	3.93
2000	28 794	9 643	17 634	1 517	33.49	61.24	5.27
2010	32 343	9 222	21 135	1 987	28.51	65.35	6.14
2020	36 911	9 881	24 223	2 807	26.77	65.63	7.60
2030	40 887	9 584	26 740	4 564	23.44	65.40	11.16
2040	43 973	9 040	28 727	6 204	20.56	65.33	14.11
2050	46 165	8 749	29 359	8 057	18.95	63.60	17.45
2060	47 440	8 280	29 199	9 961	17.45	61.55	21.00
2070	47 761	7 689	28 956	11 118	16.10	60.63	23.28

**Source: Based on medium variant UN population estimates and projections (United Nations, 2019)**

Currently, the age structure of the population of Morocco is characterized by a period of youth bulge with a continuous decline in the share of children. As can be seen in Fig. 5, the share of the working-age population (age 15-64 years) in the total population continues to increase while that of children (age 0-14 years) continues to decrease. The proportion of the elderly population (age 65+) increases slightly until 2020 when it will experience a rapid and huge increase according to United Nations projections.

In more detail, the proportion of population under age 15 years represented 47.5% of the total population in 1970, a slightly lower proportion than that of the 15-64 age group which was 49%. Since then, the share of the 0-14 age group has been declining over time to 26.7% in 2020 and would be 16.1% in 2070 although its numbers will stabilize at around 9 million people during the period 1980-2060.

**Figure 5- Share of Different Age Groups in Population (Medium Variant), Morocco 1950-2070**



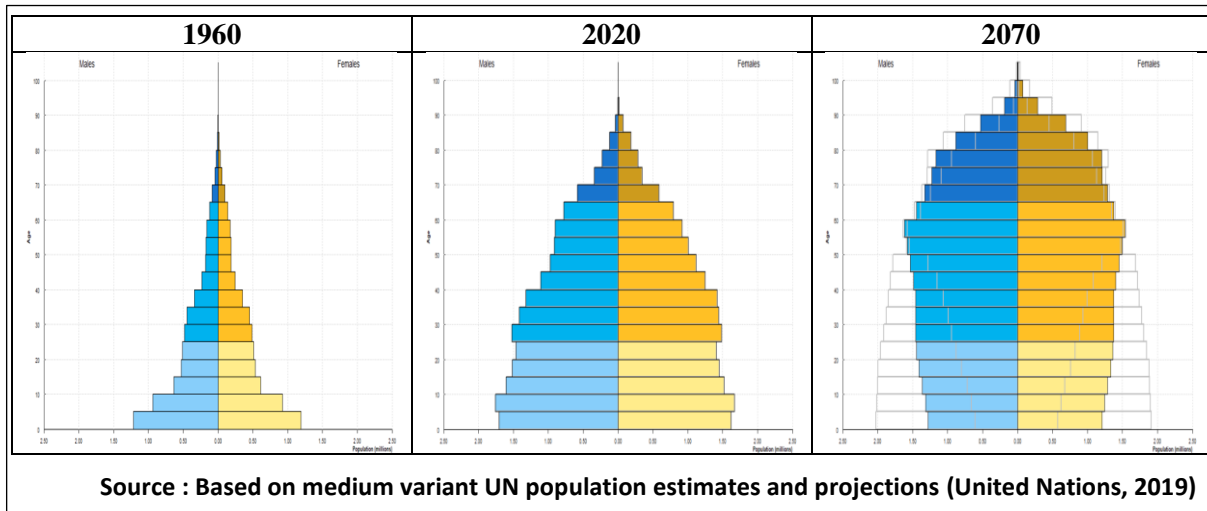
In contrast, the 15-64 age group, the potentially productive population, doubled between 1980 and 2010 and is expected to triple by 2050. In absolute numbers, the working-age population increased from 10.6 million in 1980 to 21.1 million in 2010 and is projected to be 29.3 million in 2050. In percentages, the share of the working-age population has increased gradually from 53.4% in 1980 to 65.6% in 2020 and would begin to decline since then. In 2070, the population in working ages is expected to still represent more than 60% of the total population (Figure 5).

With regard to people over 64, there has been a steady increase in the proportion and absolute number of this age group. From just over half a million people in 1970 (3.4% of the total population), the number of elderly population exceeded 2.8 million in 2020, or 7.6% of the total population. This is a rapidly growing population at a higher rate than other age groups, the significant increase in life expectancy at birth in Morocco explains much of this increasing proportion of elderly population. According to United Nations projections, the share of the elderly people will increase significantly from the year 2020 and this trend is expected to continue in the coming decades indicating that the proportion of the elderly population will exceed 10% of the total population from the 2030s and 23% from the 2070s.

The changing age structure of the population can be best illustrated by population pyramids. From a broad-based pyramid, Morocco is gradually moving towards an aged structure (Figure 6). In 1960, Morocco had an age structure of the population typical of a country with high fertility and high mortality, its age structure is dominated by children under age 15 years (classic pyramid). Currently, we can see that the base of the pyramid is shrinking while the center is widening without a significant increase in the share of the population aged 65 and over (pyramid 2020). The pyramid shape would disappear little by little in the following decades giving way to an age

structure characterized by a more and more pronounced narrowing of the base and an increasingly high share of elderly population (the age pyramid would take a cylindrical shape by 2070).

**Figure 6- Population Pyramid, Morocco (1960, 2020 and 2070)**



In sum, the results indicate that until the 1980s, more than 40% of Morocco's population was made up of children under age 15 years. With the fall in fertility since the 1980s, the relative share of children has been declining and that of the working-age population has been increasing reaching its peak in 2020. Beyond this year, demographic projections indicate that the share of the working-age population will remain high over the next 50 years and that of the 0-14 age group will gradually continue to decline. Furthermore, Morocco's population is going to experience significant aging in the coming years as the share of elderly population is expected to exceed the share of children under age 15 years by 2050. These demographic changes significantly increase the share of working-age population as never before, creating a momentary favorable age structure for the demographic dividend.

### 3.2.2. Emerging Window of Opportunity in Morocco

In the course of the demographic transition, a period emerges when the share of working-age population (15-64) grows more rapidly in relation to potentially dependent ages (under 15 and over 64 years). Before the fall in the proportion of the children under 15 years is offset by the increase in the proportion of the elderly population, the share of working-age population (population economically active) in the total population increases significantly. Economists termed this change in population as “window of opportunity”. This situation is especially beneficial to the economy of any country as it offers opportunities to capture demographic dividend, the latter being defined as the potential economic benefits provided by changes in the age structure of the population during the demographic transition, when there is an increase in the working-age population and a concomitant decrease in the dependent age population.

As can be seen from Table 2 and Figure 7, the total dependency ratio increased to its peak in 1970 and has been declining since then in line with the decline in the child dependency ratio. Nevertheless, it has remained at a relatively stable level since 2010, but it is expected to increase in the next few decades as the elderly dependency ratio increases.

In 2020, the TDR in Morocco was 52.4%, i.e., there are 52.4 persons in the “dependent” ages for every 100 people in the productive ages (15-64). This number is made up of 40.8 individuals aged 0-14 and 11.6 individuals over the age of 64. Between 1970 and 1990, the ratio was fairly high but declining from 104% to 77%. Between the two years, more than 90% of the dependent age population were children under 15 years, mainly due to high fertility rates experienced during the time period.

**Table 2- Dependency ratios, relative share of child and elderly dependency ratio in Morocco, 1950–2070**

Year	Dependency ratios (in %)			Relative share (in%)		
	CDR <sup>(a)</sup>	EDR <sup>(b)</sup>	TDR <sup>(c)</sup>	0-14	65 +	Global
1950	68.9	5.1	74.0	93.1	6.9	100.0
1955	74.7	5.1	79.7	93.7	6.4	100.0
1960	85.5	5.7	91.2	93.8	6.3	100.0
1965	97.3	6.5	103.8	93.7	6.3	100.0
1970	97.2	7.0	104.2	93.3	6.7	100.0
1975	90.4	6.8	97.2	93.0	7.0	100.0
1980	81.1	6.2	87.3	92.9	7.1	100.0
1985	75.6	6.1	81.7	92.5	7.5	100.0
1990	70.3	7.0	77.2	91.1	9.1	100.0
1995	63.7	8.1	71.8	88.7	11.3	100.0
2000	54.7	8.6	63.3	86.4	13.6	100.0
2005	48.4	9.1	57.5	84.2	15.8	100.0
2010	43.6	9.4	53.0	82.3	17.7	100.0
2015	42.1	9.7	51.8	81.3	18.7	100.0
2020	40.8	11.6	52.4	77.9	22.1	100.0
2025	39.1	14.3	53.4	73.2	26.8	100.0
2030	35.8	17.1	52.9	67.7	32.3	100.0
2035	33.3	19.4	52.7	63.2	36.8	100.0
2040	31.5	21.6	53.1	59.3	40.7	100.0
2045	30.4	24.1	54.5	55.8	44.2	100.0
2050	29.8	27.4	57.2	52.1	47.9	100.0
2055	29.1	30.7	59.9	48.6	51.3	100.0
2060	28.4	34.1	62.5	45.4	54.6	100.0
2065	27.4	36.3	63.7	43.0	57.0	100.0
2070	26.6	38.4	65.0	40.9	59.1	100.0

<sup>(a)</sup> Child Dependency Ratio (CDR) = Population aged less than 15 / population aged 15-64

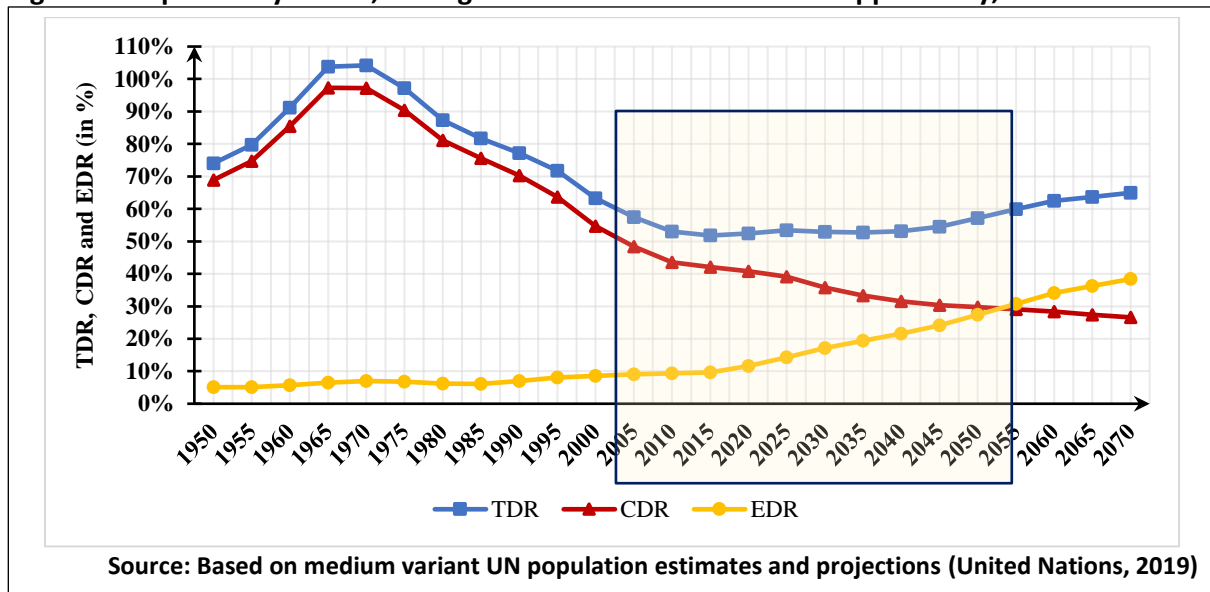
<sup>(b)</sup> Elderly Dependency Ratio (EDR) = population aged 65 or more / population aged 15-64

<sup>(c)</sup> Total Dependency Ratio (TDR) = Population aged less than 15 and population aged 65 or more / population aged 15-64 = CDR + EDR

**Source: Based on medium variant UN population estimates and projections (United Nations, 2019)**

The total dependency ratio continued to decline after 1990, mainly due to the decline in the population under age 15. As a logical result of the rapid decline in fertility from the 1980s onward, this ratio reached 63% in 2000 (86% of children and 14% of elderly) and it is expected to return to the same value by 2060, although its composition will change drastically in favor of the elderly (45% of children and 55% of elderly). From the 2060s onward, the total dependency ratio will begin to rise again as a result of the pronounced increase in the population aged 65 years and over.

**Figure 6- Dependency Ratios, Timing and Duration of Window of Opportunity, Morocco 1950-2070**



Based on these analyses and referring to the United Nations approach which considers that the window of opportunity lasts as long as the total dependency ratio fluctuates between 40% and 60%, the demographic window of opportunity is probably opening in Morocco in 2003 when the dependency ratio was 59.1%, and is expected to remain open until 2055 when the dependency ratio would be 59.9% (the period denoted by the box in Figure 6). After 2055, the TDR would again fluctuate outside the 40%-60% range. This result confirm the hypothesis that Morocco's demographic transition opens up a long window of demographic opportunity for the country.

During this demographic window of opportunity, Morocco will benefit from an increasingly large working-age population and the Moroccan economy will be able to capture more savings, not to mention the economic returns from an eventual enhancement of human capital. Many of these demographic, social and economic opportunities are visible today and will be even more visible in the future. If these opportunities are captured in time and managed properly, they will bring undeniable benefits to Morocco's economy. The third hypothesis according to which the demographic window of opportunity would foster the demographic gift is also confirmed.

However, this demographic gift (or demographic dividend) is not automatically captured especially since the window of opportunity is time-limited and not recurring. In absence of an



enabling environment and appropriate economic policies, Morocco risks missing its demographic opportunity and its economic development with it. Failure to capitalize on the opportunity would not only be a deception in itself, but could also have negative effects.

### **Conclusion and perspectives:**

Demography is inextricably linked to economy and the relationship between the two disciplines has been the subject of several studies since antiquity and down to our time (Mounib & Dinar, 2022). This study has made a twofold contribution. First, we have characterized demographic transition throughout the period 1950-2070 in Morocco. Second, we have examined the potential implications of these demographic transition on its economy.

According to the demographic transition model, Morocco has reached the third stage of its demographic transition which has resulted in many important changes in the age structure of the population and has opened a window of opportunity for the Kingdom.

The demographic transition is occurring in Morocco even as the issue of economic development becomes more pressing than ever. Alongside these major and rapid changes in the size and age structure of its population, Morocco is also facing economic and social challenges that it must confront. Though the demographic transition offers the possibility of benefiting from the window of opportunity, it also poses big challenges to the Morocco's economy especially with regard to improving human capital and providing gainful employment.

The demographic transition taking place in Morocco has resulted in many changes in the size and age structure of the population that open up the opportunity to reap the demographic dividend. On the one hand, the share of the population aged less than 15 years has decreased from 44.7% of the total population in 1960 to 26.7% in 2020. On the other hand, the share of the working-age population (15-64 years) has increased from 52.3% in 1960 to reach 65.6% of the total population in 2020. This brought the size of the working-age population from 6.4 million to 24.2 million over the same time period.

The demographic window of opportunity can be harnessed by employing the huge labor force in an efficient manner, by encouraging personal and national savings in order to finance more productive investments and by investing appropriately in education, professional training and health infrastructure to improve the quality of human resources in the country. In Morocco, several studies have shown a robust positive relationships between investment in education and human capital and economic growth (Baya, 2022; Ben Samoud & Assi, 2021)

If the huge working-age population is successfully absorbed into the labor market, it may constitute a "demographic bonus" that offers the ability to capitalize on the demographic dividend in Morocco. However, if the insertion of this workforce fails, it could represent a significant social risk and even a major threat to the country's political stability. As Courbage

(2012, 2015) argues, there is a strong link between the demographic changes and the "Arab Spring" that many Arab countries have experienced since 2011. For him, demographic transitions in these countries are bearers of huge democratic evolutions and revolutions.

Our analyses highlight the importance of considering demographic changes in in the study of economic issues. Nevertheless, we acknowledge several limitations of this paper. First, a part of our data take population projections by age as inputs. These demographic projections are based on some assumptions about future changes, which if erroneous have an influence on the outcome. Second, our attention is restricted mostly to describing the process of demographic transition in Morocco without seeking to explain the root causes of these demographic changes. Finally, This paper does not claim to have treated the underlying issues in any great detail, but it has attempted to provide a sufficient overview of these issues.

In conclusion, the present essay contributes to the existing literature by analyzing the emerging of the Demographic Window of Opportunity in Morocco. In any case, our projections results suggest a demographic transition model that can be used by other researchers to study the economic impacts of demographic changes in Morocco. The paper is intended to encourage other scholars to take a more active part in the study of demographic and economic issues that are already largely ignored in Moroccan academic circles and to enable them follow discussions of the issues in some more advanced texts.

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