

The ageing of the labour market and its impact on the balance of the pension system in Algeria

Leila Adda ¹, and Rachedi Khadra ²

¹ University of Oran 2 Mohamed Ben Ahmed, Faculty of Social Sciences, Department of Demography (Algeria). Email: l.adda@lagh-univ.dz

² Professor, University of Oran 2 Mohamed Ben Ahmed (Algeria). Email: rachedi.khadra@univ-oran2.dz

Abstract---This research aims to study the ageing of the labour market and its impact on the balance of the pension system. In Algeria, demographic changes have resulted in a phenomenon of an ageing workforce, which has impacted the dynamism of the labour market. At the same time, this phenomenon has had direct consequences for pension financing. The National Retirement Fund (CNR), which manages pensions, has recorded net deficits since 2013, shifting from a surplus of -110,540 million in 2012 to a deficit of 85,762 million in 2013. In order to address this deficit, it will be necessary to raise the retirement age, increase the number of working years, raise contribution rates for workers and employers, or diversify funding sources.

Keywords---ageing, population, labour market, CNR, deficit.

Introduction

The global population is ageing faster than ever, particularly in developing countries. According to data published by the United Nations Population Fund (UNFPA), individuals aged 60 and over currently represent 12.3% of the world's population, and this figure is expected to rise to 22% by 2050. Aging is set to be one of the most significant social transformations of the 21st century, presenting the greatest global demographic challenge given its impact on all sectors of society, including the labour market. The ageing population is accompanied by an ageing workforce, with the average age of workers gradually increasing due to declining fertility and birth rates, longer life expectancy and improvements in healthcare programmes. This demographic transformation will also impact pension systems that rely on employee contributions to finance retirement pensions, which will face real challenges related to financial imbalance and long-term viability.

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In Algeria, the labour market is facing the phenomenon of an ageing workforce due to demographic changes, which is reflected in its dynamism. At the same time, the pension system is under increasing pressure due to this evolution. This is further complicated by the fact that a large proportion of the elderly population lacks social security or is in precarious employment, necessitating a re-evaluation of public pension policies. This study seeks to answer the following question:

How does the ageing of the labour market affect the sustainability of the pension system in Algeria?

Our problem statement is based on two hypotheses:

- The ageing workforce puts pressure on pension systems.
- The ageing labour market highlights the need to adapt pension policies.

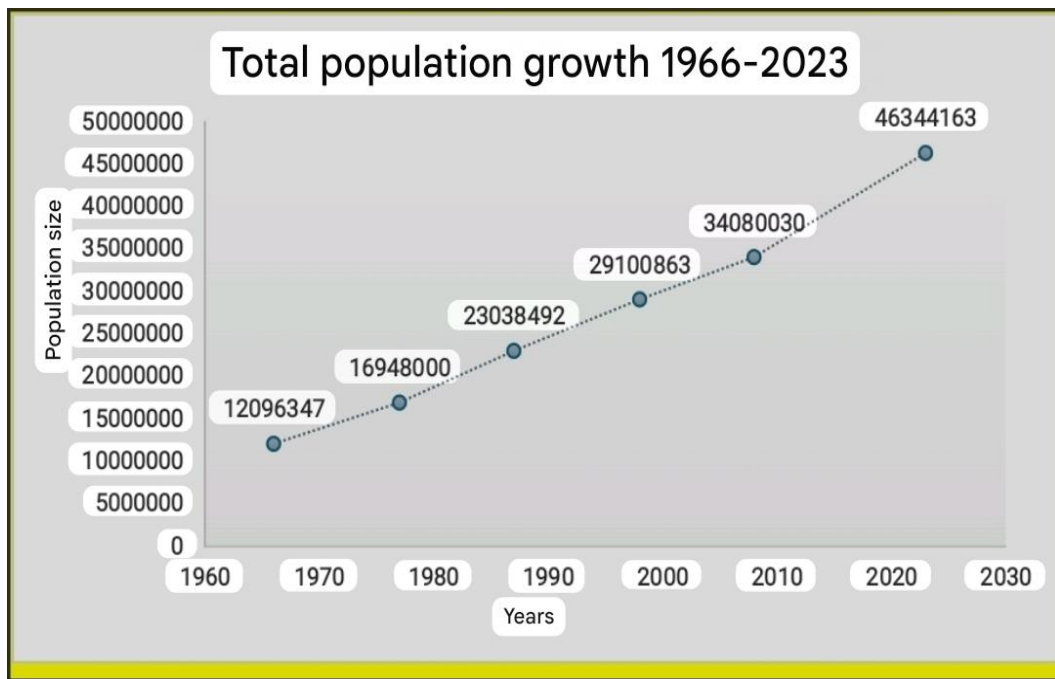
This article aims to study the phenomenon of an ageing labour market in Algeria, analysing its impact on the balance and viability of the pension system, and examining demographic and professional data to understand the challenges posed by this phenomenon.

1- Demographic evolution in Algeria:

1-1 Population growth:

Population growth in Algeria between 1966 and 2023 illustrates a profound transformation of Algerian society. Population growth in Algeria between 1966 and 2023 illustrates a profound transformation of Algerian society. There has been continuous and significant demographic growth over the years. In 1966, the population was estimated to be around 12 million. By 1977, ten years later, this figure had risen to nearly 17 million, marking an increase of almost 40%. This growth continued in 1987, when the population surpassed 23 million — an increase of over 6 million compared to 1977. Between 1998 and 2008, the population increased significantly again, reaching approximately 34 million. This upward trend has continued, with the population surpassing 46 million by 2023.

Graph N01: Evolution of the Algerian population, 1966–2023



Source: Established from ONS data

1-2 Age structure by major age group

After independence, the population structure is characterised by a constant decline in the proportion of young people. In 1966, those under 15 years old represented 48.2% of the total population. This percentage gradually decreased from 44% in 1987 to 28% in 2008 and 30.3% in 2023. Conversely, the proportion of the working-age population (15–64 years old) has increased, rising from 45.1% in 1966 to 64.4% in 2008 and reaching approximately 59.1% in 2023. Meanwhile, the proportion of seniors (aged 65 and over) has grown slowly but steadily, rising from 36.7% in 1966 to around 10.5% in 2023.

Table 01: Structure of the population by major age group in Algeria, 1966–2023 (%)

Age Group	1966	1977	1987	1998	2008	2023
0-14 years	48,2	47,9	44	48	28	30,3
15-59 years	45,1	46,4	50,2	45,1	64,4	59,1
60 years and older	6,7	5,8	5,7	7,0	7,4	10,5

Source: Established from ONS data

This evolution reflects the transition to an increasingly ageing society, raising new social and economic challenges, particularly with regard to pensions.

1-3 Determinants of population growth

Statistics show that Algeria has entered the second phase of demographic transition. This phase is characterised by a significant decline in birth and death rates, resulting in a gradual slowdown in natural population growth. In 1966, the crude birth rate (CBR) was 50.12 per 1,000 inhabitants, meaning there were just over 50 births. During the same period, the crude death rate (CDR) was 15.87 per 1,000 people, indicating a relatively high mortality rate. The natural growth rate, representing the difference between these two rates, was 34.2%, reflecting rapid population growth.

Over the decades, however, a significant decline in the birth rate has been observed. It fell from 34.6 per 1,000 inhabitants in 1977 to 20.58 per 1,000 inhabitants in 1987, subsequently dropping to 19.32 per 1,000 inhabitants in 2023. This decline reflects several major societal changes: improved education, particularly among women; broader access to contraception; and delayed marriage. These factors have changed women's reproductive behaviour, which was once conducive to high fertility and is now changing continuously in favour of reduced fertility¹. Meanwhile, the mortality rate has also dropped significantly, from 15.87 per 1,000 people in 1966 to 4.15 per 1,000 people in 2023. This decline is generally attributed to medical advancements and improved living conditions.

Table 02: Evolution of Crude Birth, Death, and Natural Growth Rates 1966–2023

Years	Crude Birth Rate (‰)	Crude Death Rate (‰)	Natural Increase Rate (‰)
1966 (a)	50,12	15,87	34,2
1977 (a)	45,02	14,36	31,7
1987 (a)	34,6	6,97	27,6
1998 (a)	20,58	4,87	15,7
2008 (a)	23,62	4,42	19,2
2023 (b)	19,32	4,15	15,1

Source:

- (a) ONS, Retrospective 1962–2020. (b) ONS, Algerian Demography 2020-2023, Statistical Data, N01030.
 (b) ONS, 'Algerian Demography 2020-2023', statistical data, N01030.

¹ Mohamed GAID Demographic and Economic Situation: Evolution and Perspective: Case of Algeria, Journal of Applied Economics and Statistics, Volume 8, No. 1, 2011, p. 23.

The natural growth rate follows this trend logically. It gradually decreased from 34.2 per 1,000 people in 1966 to 15.1 per 1,000 people in 2023. This evolution indicates that, although the population continues to grow, the pace of this growth is slowing significantly. This phenomenon is typical of societies in advanced demographic transition. Notably, there was a slight increase in the birth rate in 2008, reaching 23.62 per thousand people, accompanied by a rise in the natural growth rate to 19.2%. This rebound is linked to the recovery of fertility following the ‘black decade’.

The decline in the mortality rate has impacted life expectancy at birth. During the early years of independence, life expectancy was estimated at 42.75 years. This figure reached 66.13 years in 1987, with an average of 65.11 years for men and 67.19 years for women that same year. This increase is due to improvements in healthcare and living conditions over the previous two decades. According to the National Office of Statistics (ONS), life expectancy has increased significantly, reaching an average of 79.6 years (78.2 years for men and 81 years for women), after experiencing a slowdown during the Coronavirus crisis. Currently, the number of individuals aged 60 and over is estimated to be more than 4 million, and this figure is expected to reach 6 million in the coming years. The gradual ageing of the population leads to profound socio-economic changes that require adjustments to pension systems.

Table N03: Evolution of life expectancy in Algeria, 1966–2023

	1966	1977	1987	1998	2008	2023
Total	42,75	49,25	66,13	69,33	75,6	79,6
Men	42,35	48,29	65,11	67,75	74,8	78,2
Women	43,16	50,28	67,19	71,03	76,4	81

Source: [Country Economy](<https://fr.countryeconomy.com>)

ONS, Algerian Demography 2020 - 2023, Statistical Data, N01030

2- Situation of the Labor Market in Algeria

The labor market is a fictitious space where the demand for employment from the active population meets the supply of jobs from productive units. Its dysfunction results in a complex problem known as unemployment².

The evolution of the labor market in Algeria has been marked since the second half of the 1980s by a profound imbalance between the supply and demand for employment. This deep imbalance is the result of a serious socio-economic crisis³.

This critical phase coincided with the arrival of the baby boom generation in the job market, exacerbating the situation. By 2000, the unemployment rate had reached a record high: of an active population of 8.6 million, 28 per cent, or almost 2.3 million people, were unemployed. Fortunately, this catastrophic situation did not last. The country's subsequent prosperity in terms of investment and economic recovery has favoured the creation of thousands of jobs⁴.

Between 2001 and 2014, the activity rate fell by 12.95%. This decline is primarily due to the fall in birth rates experienced by the country in the 30 years prior to 2000, resulting in a significant proportion of the population being under 15 years old while the working-age population decreased. Furthermore, the reduction in activity rates among young people, primarily due to longer periods of education, has

² LAHCENE Bouriche and Chaib Bounoua, Determinants of the Labor Market in Algeria: A Quantitative Analysis of Supply and Demand Structures (2009–1980) The MECAS Journal, No. 6, December 2010, p. 53.

³ Kouider BOUTALEB, The Labor Market in Algeria: The Weight of Informal Employment, Journal of Economics and Management, Volume 1, No. 1, March 2002, p. 108.

⁴ HAMZA Cherif Ali, Population and Employment in Algeria: Recent Trends and Perspectives RRES, F:B, No. 01, November 2007, p. 10.

significantly contributed to the decline in the number of active individuals relative to the working-age population. Meanwhile, the employment rate grew significantly, rising from 21.20% in 2003 to 28% in 2013 — an increase of 7 points during this period. The employment rate (also known as the employment-population ratio), which is defined as the ratio of the employed population to the population aged 15 and over, increased nationally from 34.70% to 39% between 2003 and 2013. In 2014, it stood at 60.10% for men and 12.30% for women. The impact of the decrease in first-time job seekers on the unemployment rate between 2001 and 2014 is shown by the unemployment rate by age group. For the 25–29 and 30–34 age groups, the unemployment rates were 16.90% and 23.07% respectively in 2014, more than double the proportions in 2001⁵.

In 2024, the labour market is characterised by a workforce of 12 million, one fifth of whom are women. The employment rate stands at 36.4%, with a continuous increase in the female employment rate, which has reached 14.3%. According to the statistics agency, the active population, as defined by the International Labour Organization (ILO), is estimated to be 13,814,000 people nationwide. For the first time, the female active population has exceeded three million, reaching 3,163,000 — 22.9% of the total active population.

The labour force participation rate (or economic activity rate) for those aged 15 and over is estimated at 41.7%. By gender, this is estimated at 63.9% for men and 19.2% for women. The employed population is estimated at 12,055,000, of whom 2,359,000 are women. The number of employed women continues to grow, making up 19.6% of the total workforce, according to the National Office. The employment rate (also known as the employment-population ratio), which is defined as the ratio of the employed population to the population aged 15 and over, has reached 36.4% nationally. By gender, this figure is 58.2% for men and 14.3% for women.

The ONS estimates that the unemployed population is 1,759,000, with the national unemployment rate reaching 12.7%. Disaggregated by gender, the unemployment rate is 9% for men, but rises to 25.4% for women. Disparities are also observed by age and education level. The youth unemployment rate (for those aged 16–24) is 29.3%⁶.

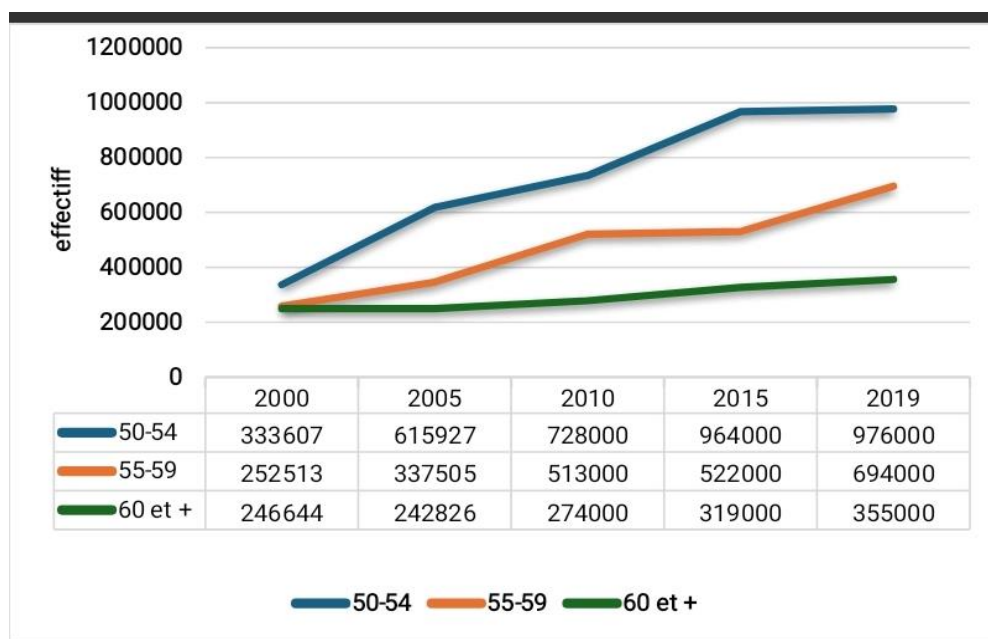
2.1 Share of seniors employed in the labour market

The beginning of the 21st century has seen significant growth in age groups approaching retirement. The 50–54 age group has grown substantially, increasing from 333,607 in 2000 to 976,000 in 2019 — nearly quadrupling in size over 20 years. This is attributed to an improvement in life expectancy. The 55–59 age group increased from 252,513 in 2000 to 513,000 in 2010, finally reaching 694,000 in 2019. This is another notable increase, albeit at a slower pace than the younger age group. Those aged 60 and over have seen relatively little growth compared to the other categories, starting at 246,644 in 2000. There was a slight decline until 2005 (242,826), followed by a gradual increase: 274,000 in 2010, 319,000 in 2015, and 355,000 in 2019.

See Graph N 02 for the evolution of the share of seniors employed from 2000 to 2019.

⁵ SABEUR CHOUIREF Mokhtaria, Analysis of the Labor Market in Algeria between 2001-2014 , إفاق للعلوم , Volume 4, No. 2, March 2019, pp. 393-397.

⁶ Algerie.eco, February 28, 2025.



Source: Established from ONS data

With an increasing elderly population, society is likely to experience pressure on pension systems. This could be an early sign of the need to implement pension policies.

3- Impact of Workforce Aging on the Pension System

As people age, more and more of them leave the workforce and begin receiving pensions, while the number of contributing workers does not increase at the same rate. This creates an imbalance in the funding system.

3-1 Annual growth rate of retirees

Between 2010 and 2018, the number of retirees increased from 2,169,892 to 3,216,648, nearly doubling in eight years. This represents an average annual growth rate of almost 5.4%, which is particularly high for a pension system. This evolution reflects several factors: the expansion of system coverage, the large-scale retirement of certain generations, and the gradual ageing of the population.

Table N04 shows the evolution of the number of retirees and their annual growth rate in Algeria between 2010 and 2018

Years	Number of Retirees	Annual Growth Rate of Retirees
2010	2169892	4,55
2011	2183149	0,61
2012	2312801	5,93
2013	2475671	7,04
2014	2623547	5,97
2015	2766750	5,45
2016	2971641	7,4
2017	3159952	6,33
2018	3216648	1,79

Source: ONS, Statistical Yearbook of Algeria, Nos. 033 and 035.

Calculated from ONS data.

At the beginning of 2010, the growth rate was 4.55%, indicating a significant increase in the number of retirees compared to the previous year. Growth slowed sharply in 2011 to 0.61%. There was a strong rise in growth in 2012 to 5.93%, followed by a peak in 2013 at 7.04%. This peak is attributed to a significant wave of early retirements and a large influx of the baby boomer generation.

From 2014 to 2017, the annual growth rate remained between 5.97% and 6.33%, confirming the structural trend of an ageing active population. However, in 2018, there was a break in this dynamic, with a significant slowdown in growth to 1.79%. This decrease indicates a change in retirement eligibility conditions.

Graph N03 shows the evolution of the annual growth rate of retirees in Algeria from 2010 to 2018.



Source: Established from Table No. 04.

The rapid and sustained increase in the number of retirees during this period poses a challenge to the financial viability of pension systems. The faster the retired population grows, the more difficult it becomes for the fund to maintain financial balance, particularly if the number of contributors is not growing at the same rate.

3.2 Annual deficit of the National Pension Fund

The Algerian pension system, which dates back to the colonial period, is a Bismarckian system in that it is mandatory, occupational and contributory. Employees in both the public and private sectors, as well as self-employed individuals, are subject to compulsory coverage. Pensions are defined benefits, meaning they are calculated based on the number of years of contributions and a reference salary. Funding is provided through a pay-as-you-go system, whereby revenues finance pensions in the same

period. These revenues come from the contributions of active workers⁷. However, the system has been experiencing financial deficits since 2013, as shown in Table N0 05, despite having recorded a budget surplus prior to this. Between 2010 and 2012, the fund reported positive balances of -10,404 and -110,540 respectively. This indicates that revenues exceeded expenditure.

However, the financial situation of the system reversed in 2013. It entered a phase of increasing deficits year after year. The deficit reached 155,100 in 2014, rising to 265,500 in 2015, 312,600 in 2016, 486,400 in 2017, and finally reaching its highest level of the period at 555,500 million in 2018.

Table N05: Evolution of the Coverage Rate of Retirees in Millions of DA

Years	Revenues	Expenses	Annual Deficit
2010	360471	350067	-10404
2011	445663	406601	-39062
2012	683060	572520	-110540
2013	599899	685661	85762
2014	648000	803100	155100
2015	644000	909500	265500
2016	724300	1036900	312600
2017	699000	1185400	486400
2018	714800	1270300	555500

Source: ONS, Algeria in Numbers (N044, N048, N049).

Conclusion

The ageing of the labour market poses a significant risk to the stability of pension systems. As the pension system is linked to demographics and the labour market, achieving a balance within the system is necessary. In Algeria, the phenomenon of ageing in the labour market has gained momentum in recent years, resulting in an increase in the number of retirees and putting pressure on the pension fund. This situation threatens to exacerbate the funds' financial deficit and jeopardise the sustainability of the entire system.

Rather than being a matter for discussion, increasing the retirement age or raising contributions is now a necessity. Addressing the impact of labour market ageing on the balance of the pension system requires a long-term, comprehensive vision, as well as the establishment of adequate financing mechanisms alongside the existing benefit structures, and the revitalisation of the employment sector, which has a direct impact on pension system balances.

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