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The Algerian retirement system: Between sustainability issues and reform challenges

نظام التقاعد الجزائري: بين قضايا الاستدامة وتحديات الإصلاح

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Abstract:

The Algerian pension system, based on the pay-as-you-go principle, is an essential pillar of social protection in Algeria. However, like many countries, it faces major challenges that threaten its financial sustainability. This article analyses the main issues facing the system, including demographic pressures, economic constraints arising from the structure of the labor market and dependence on hydrocarbons. It examines the challenges associated with reform, highlighting the complexity of striking a balance between financial sustainability and preserving social benefits. The analysis is based on a literature review, an examination of the legal and regulatory frameworks, and an analysis of available data on the demographics and finances of the National des Retirement Fund (NRF). The article concludes with the need for a comprehensive and concerted approach to ensure the future of the Algerian pension system.

Keywords: Algerian retirement system, Pay-as-you-go, Financial sustainability, Demographic ageing, Retirement reform

المخلص

يعد نظام التقاعد الجزائري، القائم على مبدأ الدفع حسب الاستحقاق، ركيزة أساسية للحماية الاجتماعية في الجزائر. إلا أنه، مثل العديد من البلدان، يواجه تحديات كبيرة تهدد استدامته المالية. يحلل هذا المقال القضايا الرئيسية التي تواجه النظام، بما في ذلك الضغوط الديموغرافية والقيود الاقتصادية الناشئة عن هيكل سوق العمل والاعتماد على النفط والغاز. ويبحث في التحديات المرتبطة بالإصلاح، مسلطاً الضوء على تعقيدات تحقيق التوازن بين الاستدامة المالية والحفاظ على المنافع الاجتماعية. يستند التحليل إلى مراجعة المؤلفات وفحص الأطر القانونية والتنظيمية وتحليل البيانات المتاحة عن التركيبة السكانية والمالية للصندوق الوطني للتقاعد النسبي. ويخلص المقال إلى ضرورة اتباع نهج شامل ومنسق لضمان مستقبل نظام التقاعد الجزائري.

الكلمات المفتاحية: نظام التقاعد الجزائري، الدفع حسب الاستحقاق، الاستدامة المالية، الشيخوخة الديموغرافية،

إصلاح نظام التقاعد

1. INTRODUCTION

The retirement system is one of the fundamental components of the modern welfare state, designed to provide economic security for individuals once they have left the labor market. In Algeria, the national pension system is mainly based on the pay-as-you-go mechanism. This system, in which contributions from current workers fund the pensions of current retirees, embodies a pact of intergenerational solidarity that is essential to social cohesion. However, this model is currently under considerable strain. Algeria is undergoing a demographic transition that is weakening the system's funding base, due to a segmented labor market, a large informal sector and heavy dependence on hydrocarbon revenues. Indeed, the recurring deficits of the National

Pensions Fund (NRF) raise crucial questions about its medium- and long-term sustainability.

This article sets out to analyze the issues and challenges facing the Algerian pension system. The central issue can be formulated as follows: Can the Algerian pension system ensure its financial viability in a context of profound demographic, economic and social change?

- What are the structural and cyclical factors that weigh most heavily on the financial equilibrium of the pension system?

- What avenues can be explored to reconcile the imperatives of sustainability and equity?

To do this, we begin with a presentation of the theoretical framework relating to social insurance (Section 1), followed by an explanation of the institutional framework

and functioning of the Algerian pension system (Section 2). We then analyze the major issues relating to its financial sustainability, equity and overall economic impact (Section 3). The next section will be devoted to identifying and analyzing the challenges of reform (Section 4). A discussion will put the results and possible options into perspective (Section 5).

Section 1. Theoretical Framework of Social Protection

Before examining the Algerian pension system in detail, it is useful to place it in the wider context of the theories and models of social protection that have shaped social security systems around the world. These theoretical frameworks make it possible to understand the different rationales (insurance, solidarity, assistance), the objectives (preventing poverty, maintaining living standards, equality) and the possible ways of organizing the system (role of the state, the market, the family, intermediary bodies). These analyses provide complementary reading grids.

1. The Founding Models: Bismarck vs Beveridge

Two major historical and conceptual figures dominate the analysis of the origins of modern social protection systems:

Table 01 : Summary comparison of social security systems

Bismarck model	Beveridge model
- Compulsory work-related insurance - Contributions paid by employees and employers - Benefits proportional to previous income Main objective: to maintain workers' standard of living in the face of social risks	- Tax financing - Universality: all citizens - Uniqueness: single administration - Uniformity: flat-rate benefits Main objective: Prevent poverty and guarantee basic security for all (citizenship right)

Source: Our conception

The Bismarckian model of social insurance is based on the principle of compulsory insurance linked to work. Contributions are

paid by employers and employees, and benefits (sickness, retirement, accidents) are generally proportional to previous income. The main aim is to maintain workers' standard of living in the face of social risks. This system is often managed by professional or sectoral funds (corporatist logic). The emergence of social protection systems was strongly linked to industrialization, which led to the migration of people to cities near factories. The aim of these systems was to compensate, as it were, for the loss of the mechanical solidarity provided by the worker's entourage through family members and close friends, but also and above all, to provide an income for individuals who were unable to work beyond a certain age. Indeed, subsistence wage levels and workers' lack of long-term prospects are the key factors that led to the introduction of these systems. Another motivation for the introduction of this system at the end of the 19th century by the German Chancellor was to deal with the rise of socialism¹.

The universal social security model, theorized by William Beveridge in the United Kingdom (1942), aims to provide universal protection covering the entire population (citizens) against the main social risks. It is generally financed by taxation (national solidarity) and provides flat-rate benefits designed to ensure a minimum subsistence income. The three 'U's characterize this model: Universality (all citizens), Unicity (a single administration), Uniformity (flat-rate benefits). The primary objective is to prevent poverty and guarantee basic security for all².

If these two models are ideal-types, most national systems, including the Algerian system, combine elements of both logics. The pension system is fundamentally inspired by the Bismarckian system.

2. Welfare state models and the social rights approach

Alongside the founding models, a number of works have attempted to establish classifications of social security systems. Esping-Anderson's work attempts to

establish a typology of welfare states. The work of T.H. Marshall argues that citizenship cannot be achieved without the consecration of social rights.

Table 2: Welfare state model and social rights approach

Esping-Andersen typology (1990) Welfare state models Criteria: - Degree of decommodification ie: ability of an individual to maintain an acceptable standard of living, regardless of labor market participation, - Degree of social stratification	3 models: - Liberal schemes (targeted assistance, role of the market)→ limited decommodification - Conservative-corporatist systems: strong social stratification (social insurance linked to professional status) - Social democratic schemes (universality - equality) associated with Scandinavian countries: generous benefits → strong decommodification
Theory of social rights T. H. Marshall (1950) 'Citizenship and social class'.	Citizenship: - Civil rights: 18th century - Political rights: 19th century - Social rights: 20th century Social citizenship aims to reduce inequality and widen access to social services

Source: Our conception

Section 2: Description of the Algerian pension system

Algeria's retirement system is consolidated by framework law no. 83-12 of 2 July 1983, which unified the various pre-existing schemes for salaried workers. This comprehensive overhaul of the pension system was made possible by a favorable economic climate, marked in particular by soaring oil prices and an increase in stable employment. This reform was built around three pillars: broadening the base, standardizing structures and substantially improving social benefits³. Decree 85-223, repealed and replaced by Decree 92-07 of 4 January 1992, set out the procedures for merging eight professional social insurance funds. From 1994, the creation of the National fund for non-salaried workers (NFNSW) completed the architecture of the pension system in Algeria⁴. Henceforth, formal salaried employees are affiliated to the NRF, while the self-employed are

affiliated to NFNSW. Our analysis will focus mainly on the general scheme for salaried workers managed by the NRF, which covers the majority of the formal working population.

1. Characteristics of the employee retirement regime

The Algerian pension system is a pay-as-you-go system. This means that the contributions paid by working people and their employers in any given year are used to pay the pensions of retired people in that same year. This principle is based on strong solidarity between working and non-working generations. It means that the system is directly sensitive to demographic (ratio of contributors to retirees) and economic (level of employment and wages) trends.

The table below summarizes the main features of this system:

Table 3: Components of the employee pension scheme

Operating principle	Pay-as-you-go system involving : - Intergenerational solidarity - Sensitivity to demographic trends (ratio of contributors to pensioners) - Sensitivity to economic trends (level of employment and wages)
Calculation of pensions	Average salary for the best 5 years of career
Replacement rate	80% (2.5% of entitlement for each year worked, up to a maximum of 32 years)
Guaranteed minimum pension	Indexed to the minimum wage (20,000 DA)
Pension increases Annual	Article 43 of Law 83-12 amended and supplemented by Article 9 of Law 99-03,

Source: Our conception

The social security system is funded by social security contributions based on salaries. The overall rate of social contributions is 35%, divided between the employer (26%) and the employee (9%). This overall rate, which is collected by the National Social Security Fund (NSSF), is intended to cover all social risks, including the risk of old age. The NRF's revenue comes essentially from the NSSF. More than 53.57% of social security contributions are

used to finance pensions. This rate was only 24.14% in 1985 (7% of an overall contribution rate of 29%).

2. Evolution of the pension system

The 1983 law was amended several times, in particular to adapt it to the context of the Structural Adjustment Plan (SAP), with the introduction of early retirement and proportional retirement. In 2016, a law was enacted to address the financial imbalances in the pension system.

2.1. The pension system during the SAP period

The pension system, and by extension the social security system, quickly came under pressure just a few years after it was restructured. Indeed, the fall in hydrocarbon prices and the depreciation of the dinar had an impact on the economy as a whole. The application of the SAP, with its main objectives of restoring macro-economic and financial equilibrium, the liberalization of the economy and privatization, had damaging social consequences. All of these have had harmful social consequences. These included rising unemployment and job insecurity, with the emergence of atypical forms of employment (fixed-term contracts, temporary work, etc.). The public authorities then amended the law on pensions, introducing measures for early retirement and then proportional retirement.

A. Anticipated retirement

Anticipated retirement was created by the provisions of Legislative Decree No. 94-10 of 26 May 1994. These measures were introduced in response to the need for staff cuts and budgetary austerity. More than 29,000 workers are affected by these cuts. The economic cost of these measures is estimated at 17.23 billion dinars at 31-12-2020⁵.

B. Proportional retirement

Proportional retirement is governed by Ordinance No. 97-13 of 31/05/1997. It was introduced in the context of the restructuring of public companies, which some authors describe as the dismantling of the Algerian public sector⁶.

The provisions of this law set out more flexible conditions for retirement. A worker aged 50 can obtain the right to a proportional retirement after 20 years of work. (45 years and 15 years of work for women). An estimated 976,000 people will benefit from this scheme, generating an economic cost of 4,315.71 billion dinars between 1997 and 2020⁷.

2.2. The 2016 parametric reform

Law No. 16-15, of 31 December 2016, comes at a time of economic crisis, marked by a negative external shock linked to the fall in oil prices on the international markets. Indeed, this law provides a framework for the provisions of previous texts instituting new measures such as early retirement with the aim of limiting the scale of these deficits. To qualify for a full retirement pension, the general conditions under the provisions of this law are summarized in the table below:

Table 5: Contributions of Law 16-15

Law 83-12	Law 16-15
Institution of the general pension regime	Amends and completes Law 83-12
Fixes the legal retirement age (60 for men and 55 for women)	Abolishes the provisions for early and proportional retirement, except for hard jobs
Condition: 15 years' service with at least 7.5 years' contributions paid	Confirms the retirement age and the minimum period of service, but provides for the possibility of extending this period by five years under certain conditions.
Retirement amount calculated on the basis of the best five years	Deduction with a minimum that cannot be less than 75% of the SNMG.

Source : Our conception

This very brief table shows the minor changes made by the 2016 text to the 1983 framework law. This can be described as a 'return to the rule'⁸. It appears that the main provision is the deletion of the early retirement and proportional retirement schemes.

Section 3: Main economic and social challenges of Algerian pension system

The Algerian pension system is at the heart of several interconnected issues, covering

financial, social and economic dimensions. We focus on two fundamental issues.

1. Demographic imbalance:

Algeria is undergoing a rapid demographic transition. Life expectancy at birth has risen considerably, from less than 41 years in 1960 to more than 76 years in 2023 (World Bank). At the same time, although the population remains young, the fertility rate has fallen compared with previous decades, from 7.50 in 1960 to just 2.83 in 2022 (United Nations). These two trends combined are leading to a gradual ageing of the population and a rapid increase in the number of retired people, estimated at an average of 17,000 new pensioners per month. At the same time, growth in the number of working people paying into the system is struggling to keep pace, not least because of the difficulties young people have in entering the formal labor market. The youth unemployment rate is high. It is up than to 25%. Furthermore, according to data from the ONS (2024), current trends in the number of people aged between 20 and 34 will see a decline of more than one million between 2015 and 2023 (i.e. 11.52%), leading to a fall in the number of marriages over the same period⁹. The ratio of contributors to retirees, a key indicator of the viability of a pay-as-you-go system, has deteriorated from 10 to around 2¹⁰. Demographic projections indicate that this trend will continue, automatically worsening the financial deficit if structural reforms are not undertaken.

This demographic imbalance is tending to worsen for two reasons. Firstly, because of the deterioration in the demographic dependency ratio. Secondly, because of the net migration deficit.

1.1. Demographic dependency ratio

This ratio refers to the number of people of working age (60 and over) who are dependent for every 100 people of working age. It can be used to compare the viability of pension systems over time and space.

An upward trend in this indicator is indicative of financial difficulties and, by extension, additional pressure on the

working population, usually as a result of the ageing of the population. This was the case in Algeria, as the table below shows:

Table 6 : Population structure at 01 July (thousands)

	2008	2023	multiplier coefficient
<15 ans	9737,2	14062,2	1,44
15>pop<60	22287,6	27415,4	1,23
>60 ans	2564,9	4866,6	1,90
Totaux	34589,7	46344,2	-
RDD	11.5	17.7	

Source : Our conception according NSO data
The table above shows that the increase in the working-age population is less significant than that of the non-working population. In fact, the working-age population increased by a factor of 1.23 over the period under consideration, while the population too young to work increased by a factor of 1.44. The data therefore show that the population too old to work almost doubled over the period, with a multiplier coefficient of 1.90. In fact, the proportion of this section of the population rose from 7.4% to 10.5% of the total population over the period in question. This shows the extent of the ageing of the population. As a result, the demographic dependency ratio rose significantly, from 11.5 to just 17.7. This trend is set to continue over the coming years, as the statistics show. Indeed, analysis of the structure of the working-age population shows a considerable fall in the number of people in the 15-30 age bracket, compared with an increase in the 30-60 age bracket, which will put pressure on the working population over the long and medium term. According to Mendil (2020), this pressure will continue for three decades (i.e. until 2050), due to the baby boom generation retiring from 2020 onwards¹¹.

1.2. Net migration

Analysis of demographic variables must not neglect the effects of migration. Migration flows have repercussions on pension systems, by affecting the level of the working population and therefore economic growth. Indeed, when young people leave a

country to offer their labor force to companies in the rest of the world (non-resident companies), this represents a shortfall in terms of the number of contributors and therefore a deterioration in the demographic dependency ratio.

So, a negative migratory balance (as was the case for Algeria), means that the number of emigrants is greater than the number of immigrants. In other words, the country is losing inhabitants through migration (migrationdataportal.org-en).

Algeria's net migration, according to United Nations data, was negative over the entire period from 2000 to 2024. On average, over the entire period, almost 24,000. This puts a strain on the labor force, especially as most of the migrants are young people, most of whom are graduates because of the difficulties of entering the labor market. The unemployment rate among young graduates is among the highest. This constitutes a paradox (negative correlation between level of qualification and employment).

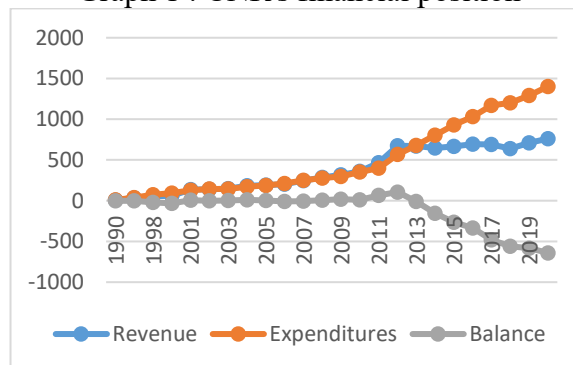
2. The Structural Deficit of NRF

As a result of the demographic transition, among other things, the NRF is suffering from structural deficits. These are not the result of simple cyclical fluctuations, but rather of underlying trends. Covering these deficits with State subsidies, while necessary in the short term to ensure the payment of pensions, is not a sustainable solution and is a burden on public finances. According to the IMF, between 2018 and 2020, the Treasury paid back an average of 3% of GDP per year to the CNR to cover its financing deficit¹². From 2019 the government will cover the NRF's incessant financing needs through long-term loans from the National Investment Fund created by Article 56 of Ordinance 09-01 on the 2009 Supplementary Finance Act. The Finance Act 2025 consolidates the share capital of the NIF, which increases to 275 billion dinars (instead of 150 billion). Article 183 of this law stipulates, in accordance with organic law No. 18-15 on finance laws (LOLF), that Treasury loans intended to cover the NRF's financial

deficits are subject to preferential financing conditions in terms of repayment period and applicable rates.

The graph below shows changes in NRF's financial position. The figures are expressed in current terms in billions of dinars

Graph 1 : CNR's financial position



Source : Our conception according Omrani and al. (2023) and NSO data

The graph 1 shows an almost uniform increase in both expenditure and revenue between 1990 and 2010, resulting in a situation where the financial balance is almost in equilibrium. From 2011 onwards, expenditure and revenue have grown considerably, but disproportionately. In fact, revenue exceeded expenditure between 2011 and 2012, generating a surplus, which can be explained by the increase in the proportion of social security contributions allocated to pensions. Another explanation is linked to the creation of a national social security fund under the provisions of Article 67 of the 2000 Finance Act, whose sources of funding include tobacco tax.... Revenues more or less stabilized from 2012. However, the gap between revenue and expenditure widened considerably and irreversibly from 2013 onwards, with revenues tending to more or less stabilize while expenditure increased uniformly.

Section 4 : Reform challenges

Faced with the issues described above, the Algerian pension system must meet several major challenges to ensure its sustainability and effectiveness.

4.1. The Unavoidable Demographic Challenge

The main challenge is to adapt the system to the reality of demographic ageing. This is a

major trend that cannot be tackled directly in the short term. The challenge is therefore to manage the consequences on the ratio of contributors to retirees. Palier (2014), outlines some of the ways in which certain countries are overcoming this challenge. Firstly, increasing the number of births, by advocating policies that enable women to reconcile work and family life (e.g. Sweden), helps to maintain an adequate replacement rate. However, the effects of this policy only become apparent after two decades. Secondly, encouraging immigration with the aim of improving the demographic dependency ratio (USA and Canada) helps to improve the ratio of working people to retirees. Thirdly, advocate employment policies to support pensions. These are either geared towards the working population (reducing unemployment and increasing the employed population), or by raising the retirement age. This challenge can also be overcome by acting on the parameters of the system (age, length of contribution, level of pensions)¹³. However, these solutions can have harmful social consequences.

For Algeria, it is essential to rebalance the migration balance, focus on employment policies that promote youth integration and entrepreneurship. Regarding the fertility rate, although it has seen a dramatic decline, it remains above the global average and is close to the average rate of North African countries in 2024.

4.2. Expanding the social contribution

This challenge is crucial to improving revenues. It involves:

A. Creating formal jobs:

Stimulating economic growth in sectors that create sustainable, declared jobs, in particular through economic diversification to reduce dependence on hydrocarbons. widening the contribution base is preferable to increasing contribution rates. Employers may be reluctant and tend to limit their demand for labor, thereby accentuating structural unemployment, or to avoid paying social security contributions by not declaring themselves. Moreover, social

security evasion is considerable in Algeria, particularly in the private sector. According to the National Economic, Social and Environmental Council (NESEC, 2016), the rate of non-affiliation with social security for private sector employees is almost 76%¹⁴. This evasion can be explained by several factors: on the one hand, the short-sightedness of individuals who tend to prefer the present to the future by underestimating distant social risks. Added to this is the process of privatization combined with weak control mechanisms¹⁵.

B. Combating the informal economy:

Putting in place incentives (administrative simplification, appropriate tax arrangements) and tighter controls to bring some informal workers and businesses into the formal system and thus into the tax base. This is a complex challenge affecting the very structure of the Algerian economy. Digitization and digitalization can contribute to the formalization of the informal economy.

C. Improving the activity rate:

Encouraging greater participation in the labor market, particularly by women, young people and even senior citizens. The Finland experience is relevant in this respect. In Algeria, the overall activity rate was 42.2%, with a rate of 66.8% for men and 17.3% for women¹⁶.

D. Optimizing recovery of contributions:

Strengthen the collection capacities of the NRF and social security bodies to combat fraud and social evasion. Many employed citizens remain without social security cover, either through lack of foresight and underestimation of social risks, or to benefit from a higher current income to the detriment of social security cover. According to Dupuis et al (2010), in Algeria, the rate of coverage of the population by pension systems in 2004 was 57.4%. This ratio expresses the number of contributors in relation to the employed working population. It is comparatively higher than the rates calculated for Tunisia and Morocco¹⁷.

Section 5 : RESULTS AND DISCUSSION

Our analysis of the issues and challenges facing the Algerian pension system highlights a fundamental tension between the need to ensure long-term financial sustainability and the objective of maintaining an adequate and equitable level of social protection. Given the scale of the structural imbalances, particularly demographic and economic, the 2016 parametric reform appears to be a necessary but potentially insufficient response. The Algerian situation is not unique; many countries with pay-as-you-go systems are facing similar challenges. However, the specific context of heavy dependence on hydrocarbons and a large informal sector adds a particular complexity to the analysis. Economic diversification, the formalization of employment and the broadening of the contribution base thus appear to be almost sine qua non conditions for relieving the pressure on the pension system in the long term, but they are part of broader economic policies.

Reform options, whether parametric or structural, all have advantages and disadvantages. For example, raising the retirement age improves finances but can penalize worn-out workers or those who started working young. Increasing contributions affects labor costs and purchasing power. Introducing capitalization can complete the system but risks increasing inequalities if it is not well designed.

CONCLUSION

The Algerian pension system is at a crossroads. Faced with the dual pressures of an ageing population and an economy struggling to generate enough formal jobs, its financial equilibrium is structurally threatened. Although parametric measures have been taken, notably in 2016, they do not appear to be sufficient to guarantee the long-term sustainability of the system while maintaining a decent standard of living for retirees and ensuring fairness between generations.

The challenges are many: adapting the system to demographic realities, broadening the contribution base by combating

informality and boosting employment, and finally, defining and implementing reforms that are socially acceptable. Meeting these challenges requires a clear strategic vision and political will.

The sustainability of the pension system is closely linked to the implementation of broader economic and social policies aimed at economic diversification, job creation and the reduction of inequalities. The solutions lie not only in technical adjustments to the system's parameters, but also in the country's ability to transform its development model.

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