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SILVER ECONOMY AND DEMOGRAPHIC SHIFTS: CASE OF MOROCCO

Abstract

Many countries are grappling with the rapid growth of their aging populations, responding to the challenges and opportunities stemming from the global demographic transformation. Much like many low- and middle-income countries, Morocco confronts the dual challenge of swift population aging and a surge in multimorbidity. While academic interest in Africa is on the rise, research on the challenges and opportunities of aging lags. Using a critical literature review, desk research, and correlation analysis on data spanning 1960 to 2050, the research addresses this gap, concentrating on Morocco's aging population and offering insights into healthcare, social protection, economic planning, and intergenerational dynamics. The paper contributes to the broader discussion on population aging and its implications for developing nations, and to offer insights that can inform policy development and societal responses. Additionally, it stresses the immediate measures and policies relevant to addressing the challenges related to aging, stressing the crucial need for proactive measures to ensure societal well-being and recognising the valuable contributions of the elderly.

Keywords: aging population, silver economy, Morocco, emerging market.

SREBRNA GOSPODARKA I ZMIANA DEMOGRAFICZNA: STUDIUM PRZYPADKU MAROKA

Streszczenie

Wiele krajów zмага się z szybkim wzrostem populacji osób starszych, odpowiadając na wyzwania i możliwości wynikające z globalnych przemian demograficznych. Podobnie jak wiele krajów o niskich i średnich dochodach, Maroko staje w obliczu podwójnego wyzwania: szybkiego starzenia się społeczeństwa oraz wzrostu występowania wielochorobowości. Choć zainteresowanie badawcze Afryką rośnie, to jednak badania nad wyzwaniami i możliwościami związanymi ze starzeniem się społeczeństw są wciąż opóźnione. Wykorzystując krytyczny przegląd literatury i metodę *desk research* przeanalizowano dane obejmujące lata 1960–2050. Badania koncentrują się nad zidentyfikowaną luką badawczą dotyczącą starzejącej się populacji Maroka oraz oferują wgląd w systemy opieki zdrowotnej, ochrony socjalnej, planowanie gospodarcze i dynamikę międzypokoleniową. Artykuł wnosi wkład do szerszej dyskusji na temat starzenia się populacji oraz jego implikacji dla krajów rozwijających się, oferując jednocześnie wnioski, które mogą wpłynąć na rozwój polityk i odpowiedzi społecznych. Dodatkowo podkreśla potrzebę natychmiastowych działań i polityk mających na celu sprostanie wyzwaniom związanym ze sta-



rzeniem się, akcentując konieczność proaktywnych działań w celu zapewnienia dobrostanu społecznego oraz uznania wartościowego wkładu osób starszych. Wnioski wyciągnięte na podstawie *case study* Maroka mogą posłużyć jako swoisty drogowskaz dla innych krajów rozwijających się w zakresie tworzenia polityki senioralnej.

Słowa kluczowe: starzejąca się populacja, srebrna gospodarka, Maroko, kraje rozwijające się.

Introduction

Morocco, akin to many nations, grapples with the profound implications of a sweeping global demographic transformation marked by a significant upswing in the elderly population¹. The World Health Organisation's projections from 2018 forecast that from 2015 to 2050, the global population of individuals aged 60 and above is set to surge from 900 million to an astounding 2 billion, with a noteworthy growth spurt among those aged 80 and older². Although life expectancy is increasing worldwide, a growing body of evidence suggests that these additional years do not necessarily equate to good health³. In 2021, the average global life expectancy at birth reached 71 years, indicating a four-year increase since 2000⁴. However, amid these swift changes, the number of years lived in full health, referred to as healthy life expectancy, was only 63.7 years in 2019, revealing substantial disparities among continents (56 years in Africa

¹ Engels T., Baglione Q., Audibert M., Viallefont A., Mourji F., El Alaoui Faris M., *Socio-economic status and stroke prevalence in Morocco: results from the Rabat-Casablanca study*, „PloS One” 2014, vol. 9(2); Loumrhari G., *Ageing, longevity and savings: The case of Morocco*, „International Journal of Economics and Financial Issues” 2014, vol. 4(2), p. 344–352; Sajoux M., Amar M., *Family solidarities and old age in Morocco: New realities, new challenges*, [in:] *Ageing, Lifestyles and Economic Crises*, Routledge 2017, p. 149–162.

²World Health Organization, *Ageing and health*, 2018a, <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>, [accessed: 14.11.2023]; World Health Organization, *Life expectancy and healthy life expectancy. Data by WHO region*, 2018b, <http://apps.who.int/gho/data/view.main.SDG2016LEXREGv?lang=en>, [accessed: 7.11.2019].

³ Mitchell E., Walker R., *Global ageing: successes, challenges and opportunities*, „British Journal of Hospital Medicine” 2020, vol. 81(2), p. 1–9; Paiva M.H.P.D., Pegorari M.S., Nascimento J.S., Santos Á.D.S., *Factors associated with quality of life among the elderly in the community of the southern triangle macro-region, Minas Gerais, Brazil*, „Ciência & Saúde Coletiva” 2016, vol. 21, p. 3347–3356.

⁴ Dattani S., Rodés-Guirao L., Ritchie H., Ortiz-Ospina E., Roser M., *Life Expectancy*, <https://ourworldindata.org/life-expectancy>, [accessed: 29.12.2023].

and 68.3 years in Europe). Moreover, despite women tending to outlive men, their additional years often involve poorer health⁵.

A pressing concern is the preparedness of low-and middle-income countries, such as Morocco, to grapple with the challenges posed by this rapid population aging and the concurrent surge in multimorbidity⁶. By 2050, an overwhelming 80% of the world's older population is projected to reside in such countries⁷. This scenario sharply contrasts with the historical experience of developed nations like France, where it took over a century for the proportion of the population aged 65 or older to double⁸.

Presently, the Asia-Pacific region hosts the highest number of people aged 60 and over⁹. However, Africa is poised to undergo the most rapid aging phenomenon on a global scale¹⁰. By 2030, it is estimated that the population of elderly individuals in Africa will reach 105 million¹¹. In 2019, life expectancy in Africa reached 64.5 years, signifying a remarkable increase since 2000¹². Importantly, the potential life expectancy for those reaching 60 years of age in Africa is 16 to 17 years (with variation between males and females), underscoring that if an individual survives the common causes of childhood mortality, their life expectancy can significantly exceed average population estimates¹³.

Despite burgeoning academic interest in Africa across diverse fields, including economics¹⁴, scholarship on aging in Africa lags behind, enduring challenges

⁵ World Health Organization, 2018a, op.cit; World Health Organization, 2018b, op. cit.

⁶ Barsukov V.N., *From the demographic dividend to population ageing: World trends in the system-wide transition*, „Economic and Social Changes: Facts, Trends, Forecast” 2019, vol. 12(4); He W., Goodkind D., Kowal P.R., *An aging world: 2015, International Population Reports*, U.S. Government Printing Office, Washington DC 2016.

⁷ World Health Organization, 2018a, op. cit.

⁸ Ibidem.

⁹ HelpAge International, *Older people's perceptions of health and wellbeing*, <https://www.helpage.org/download/5c8767c108658>, [accessed: 7.11.2023].

¹⁰ Adamek M.E., Gebremariam Kotecho M., Chane S., Gebeyaw G., *Challenges and assets of older adults in Sub-Saharan Africa: Perspectives of gerontology scholars*, „Journal of Aging & Social Policy” 2022, vol. 34(1); He W., Aboderin I., Adjaye-Gbewonyo D., *Africa aging: 2020*, „International Population Reports”, https://www.census.gov/content/dam/Census/library/publications/2020/demo/p95_20-1.pdf, [accessed: 29.12.2023]; HelpAge International, op. cit.

¹¹ HelpAge International, op. cit.

¹² World Health Organization, op. cit.

¹³ Ibidem.

¹⁴ Canen N., Wantchekon L., *Political distortions, state capture, and economic development in Africa*, „Journal of Economic Perspectives” 2022, vol. 36(1), s. 101–124; McMillan M., Zeufack A., *Labor productivity growth and industrialization in Africa*, „Journal of Economic Perspectives” 2022, vol. 36(1), p. 3–32.

such as widespread poverty and inadequate healthcare for older individual¹⁵. Encouragingly, there has been a noticeable upswing in scholarly literature addressing aging-related issues in Africa over the past decade (2010–2020). Before 2010, studies were sporadic, primarily focusing on subjects like HIV, poverty, role transitions, dementia, and abuse. More recent studies have explored a broader array of aging-related topics, encompassing the need for financial support for older adults¹⁶, familial concerns, and health outcomes. While the number of gerontological scholars focusing on older adults in Africa is gradually growing, there appears to be a lack of robust connections, particularly in Western and Eastern African countries. These efforts, while successful in bringing attention to the dynamics of aging in the region, underscore the need for more extensive collaboration and research spanning various disciplines, countries, and involving academic institutions, government bodies, non-governmental organisations, and civil society groups.

The choice of Morocco stems from the country's significant demographic changes characterized by an increasing life expectancy and a growing elderly population. This demographic change is important for understanding the silver economy, which focuses on the economic opportunities arising from the aging population. The demographic transition in Morocco is marked by a decline in fertility rates and an increase in the proportion of older adults, which is projected to have profound implications for healthcare, social services, and economic policies. Moreover, Morocco's shifting economy, moving towards a more market-driven model, creates favourable conditions for examining the silver economy. The country has been implementing structural reforms aimed at enhancing economic growth and stability, which are essential for accommodating the needs of an aging population.

In light of these global and regional demographic shifts, this article aims to shed light on the opportunities and challenges presented by the aging population in Morocco. It will explore the unique factors that Morocco must consider in responding to this demographic transformation, particularly in the realms of healthcare, economic planning, social support systems, and intergenerational dynamics. By focusing on the Moroccan context, the authors seek to contribute to the broader discussion on population aging and its implications for developing nations, and to offer insights that can inform policy development and socie-

¹⁵ Adamek M.E., Gebremariam Kotecho M., Chane S., Gebeyaw G., op. cit; Barnard H., *Host countries' level of development and internationalization from emerging markets: A typology of firm strategies*, „Journal of International Management” 2021, vol. 27(3); Kamoche K., Wood G., *International business and Africa: Theoretical and applied challenges, and future directions*, „Journal of International Business Studies” 2023, vol. 54(5), p. 956–967.

¹⁶ Kamoche K., Wood G., *International business and Africa: Theoretical and applied challenges, and future directions*, „Journal of International Business Studies” 2023, vol. 54(5), p. 956–967.

tal responses. The importance of this topic stems from the significance and current relevance of the subject, as manifested in the sociodemographic transformations experienced by Moroccan society, trending towards aging, and the resulting economic and social implications on individuals of all ages, as well as on overall economic development¹⁷. Second, the added value provided by the elderly in the contemporary era, contributing to economic, political, social, and cultural development through their accumulated knowledge and experiences in various fields. Third, the importance of aging as an immediate and pressing global issue from both legal and legislative perspectives. Thus, as Morocco stands at the threshold of addressing the needs and potential contributions of its older citizens, understanding these dynamics and adopting proactive measures is crucial for the well-being of the entire society.

The authors employed mixed research methods. The study uses a critical literature review, desk research, and correlation analysis to effectively address the research gap on aging in Morocco. A critical literature review was chosen due to the limited research on aging in Africa, for example, Morocco, to identify the key gaps and theoretical frameworks. Desk research was selected to systematically collect secondary data to show the different trends without the challenges of primary data collection. Correlation analysis was chosen to examine the relationships between aging and healthcare, social protection, economic planning, and intergenerational dynamics, and to ensure that the study provides a comprehensive and evidence-based understanding of Morocco's aging population.

The data used in this analysis spans from 1960 to 2050 for life expectancy at birth, from 1960 to 2021 for fertility rate, from 1990 to 2021 for the Human Development Index (HDI) and from 1960 to 2022 for gross domestic product (GDP) per capita helps to understand basic tendencies related to society of Morocco. The authors sought to explore trends in the Moroccan population over an extended period, constrained by the availability of data.

The structure of the article consists of an introduction that contextualises the research within the current scientific discourse, followed by a literature review where the authors reference the most important theoretical conceptions within the subject scope. The employed methods and the presented data are subsequently outlined. Results and discussions are presented concurrently. In the conclusion section, the authors delineate the main opportunities and challenges arising from both theoretical and empirical research, while also formulating recommendations for Moroccan policymakers regarding elderly people.

¹⁷ Loucifi S., Hassainate M., *Les conséquences économiques du vieillissement démographique sur les retraites publiques et les dépenses de santé*, „Revue des Sciences Humaines et Sociales de l'Académie du Royaume du Maroc” 2023, vol. 2(1), p. 80–99.

1. Literature review

Population aging is a phenomenon that has garnered widespread acknowledgment as a critical contemporary issue with significant socio-economic implications for governments globally¹⁸. Concurrently, the emergence of the silver economy concept has added a new dimension to the discourse surrounding aging populations. Despite its increasing recognition, the silver economy has yet to attain the same level of prominence as traditional economic indicators like GDP¹⁹.

The Silver Economy report of 2018 emphasises that population aging has not only attracted attention from policymakers but has also become a focal point for entrepreneurs. Researchers from various disciplines, including economists, medical and public health specialists, as well as social politicians and sociologists, have intensified their focus on the challenges and opportunities posed by aging populations²⁰.

Countries are increasingly considering how to leverage an aging population to shape development, address future challenges, and drive economic growth. This contemplation is encapsulated by the term "silver economy"²¹. While some researchers debate the use of the term "silver," emphasising that older individuals constitute an increasingly higher percentage of the total population, the demographic shift induced by aging influences all aspects of modern societies.

The long-term process of society aging, observed for many years, has recently gained intensified attention due to its acceleration. It necessitates the development of systemic solutions for challenges not prominent in younger populations, such as pension system functionality and advancements in medical services for chronic diseases. Simultaneously, it transforms markets, presenting both opportunities and threats to organisations offering products and services in the public and private spheres²².

Aging societies are seen in two ways: as a threat to economic growth or as a chance to prepare for demographic changes.²³ Seniors, in the near future, are

¹⁸ Miński R., Breska R., *Potencjał edukacyjny srebrnej gospodarki*, „Colloquium Pedagogika – nauki o polityce i administracji. kwartalnik” 2021, vol. 4(44), p. 85–104.

¹⁹ Bieńkowska B., *Silver economy – próba oceny stanu srebrnej gospodarki w Polsce*, „Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu” 2018, vol. 528.

²⁰ Błędowski P., *Starzenie się jako problem społeczny. Perspektywa demograficznego starzenia się ludności Polski do roku 2035*, [in:] *Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce*, red. M. Mossakowska, A. Więcek, P. Błędowski, Termedia Wydawnictwa Medyczne, Poznań 2012, p. 11–23.

²¹ Golinowska S., „Srebrna gospodarka” i miejsce w niej sektora zdrowotnego. *Koncepcja i regionalne przykłady zastosowania*, „Zdrowie Publiczne i Zarządzanie” 2011, vol. 1., p. 76.

²² Bieńkowska B., op. cit.

²³ Miński R., Breska R., op. cit.

expected to seek new challenges as active individuals living longer. The extension of life and improvement in health contribute to greater senior activity, challenging the perception of older individuals as a burden and recognising their enormous economic and social potential²⁴.

The global aging process affects nearly all societies to varying degrees, with a forecast indicating that the percentage of people over 60 years old will increase to 21.1%, more than doubling by 2050. Industries and economic segments related to the aging society problem encompass a broad spectrum, from information technologies and healthcare to leisure, travel, and entertainment²⁵. Initially, the silver economy concept focused on adapting businesses to the needs of older people. The silver economy has expanded beyond the silver market to include jobs, independence, health, social integration, and age-friendly financial services²⁶.

Defining elderly people is contextual, with legal thresholds commonly set at 60 or 65. In Morocco, individuals aged 60 and above are considered elderly, and gerontologists propose a typology based on phases of aging rather than arbitrary age thresholds²⁷. Morocco, like other nations, is experiencing a rapid demographic transformation marked by accelerated aging and an increase in the proportion of elderly individuals²⁸. The 2014 General Population and Housing Census in Morocco revealed a 35% increase in the proportion of elderly people from 2004 to 2014, with projections indicating a steady rise in this demographic group²⁹. In Morocco, the elderly add value to families by sharing knowledge

²⁴ Bieńkowska B., op. cit.

²⁵ Bof AM., *The Silver Dollar – longevity revolution primer*, Bank of America Merrill Lynch, www.longfinance.net/images/reports/pdf/bami-silverdollar-2014.pdf, [accessed: 09.12.2023]; Niewiadomska A., Sobolewska-Poniedziałek E., *Srebrna gospodarka – nowy paradygmat rozwoju starzejącej się Europy*, „Ekonomia XXI Wieku” 2015, nr 3(7).

²⁶ Szukalski P., *Trzy kolory: srebrny. Co to takiego silver economy?*, „Polityka Społeczna” 2012, nr 5–6; Rudnicka M., Surdej A., *Gospodarka senioralna. Nowy sektor gospodarki narodowej w Polsce*, Centrum im. Adama Smitha, Warszawa 2013; European Commission, *Growing the European Silver Economy*, ec.europa.eu/research/innovation-union/pdf/active-healthy-ageing/silverco.pdf, [accessed: 09.12.2023]; Golinowska S., op. cit.; Szewczyk M., *The Silver Economy in the context of Corporate Social Responsibility*, „Annales. Ethics in Economic Life” 2018, vol. 21(5), p. 33–43.

²⁷ Miński R., Breska R., op. cit.

²⁸ Sajoux M., *Morocco at the dawn of a new era*, „Ageing, Lifestyles and Economic Crises: The New People of the Mediterranean” 2017, vol. 3.

²⁹ *The First Annual Report on the Status of the Elderly in Morocco*, National Observatory for the Elderly, Ministry of Solidarity, Social Inclusion, and Family, 2018.

and experience, regardless of status, while differing in physical and mental abilities.³⁰

The prevalence of illnesses among the elderly, coupled with the specificities of diagnosing and caring for chronic diseases, presents a challenge in Morocco and globally³¹. Elderly individuals are more susceptible to various health issues, often experiencing multiple diseases simultaneously and using various types of medications concurrently. This necessitates comprehensive and targeted healthcare strategies for effective support and well-being³².

Thus, there is a global awareness of population aging as a critical issue, with the silver economy emerging as a concept to address the challenges and opportunities associated with an aging population. The discussion encompasses the economic, social, and health dimensions, emphasising the need for a comprehensive and nuanced understanding of the aging phenomenon and the development of tailored policies and solutions.

2. Morocco's Approach to Elderly Well-being

In addressing the health status of the elderly population group, as showed in Table 1, the Ministry of Health has taken proactive steps by developing and implementing a dedicated form tailored specifically for this demographic. Preliminary data from this initiative reveal a compilation of indicators that provide insights into the health dynamics of the elderly population in various settings. This contributes significantly to fostering a nuanced understanding of the well-being and healthcare needs of the elderly in Morocco.

Table 1. Health Status of Elderly Individuals in Morocco

Indicators	Urban	Rural	Total
Percentage of Individuals 60 Years and Above	11.4	10.8	11.1
Percentage of Illiterate Elderly Individuals	57.0	84.8	67.3
Percentage of Elderly Individuals Living Alone	6.2	6.1	6.2
Percentage of Elderly Individuals with at Least One	66.3	61.2	64.4

³⁰ Ward L., Gahagan B., *Involving older people in research: empowering engagement?*, [in:] *Critical perspectives on user involvement*, Policy Press, 2011, p. 181–188; Arking R., *Biology of aging: observations and principles*, Oxford University Press, 2006.

³¹ Boe D.M., Boule L.A., Kovacs E.J., *Innate immune responses in the ageing lung*, „Clinical & Experimental Immunology” 2017, vol. 187(1), p. 16–25; Du W.Y., Yin C.N., Wang H.T., Li Z.W., Wang W.J., Xue F.Z., *Cheeloo EcoHealth Consortium, Infectious diseases among elderly persons: Results from a population-based observational study in Shandong province, China, 2013–2017*, „Journal of Global Health” 2021, vol. 11.

³² Ibidem.

Chronic Disease			
Percentage of Elderly Individuals with Diabetes	22.9	15.3	20.0
Percentage of Elderly Individuals with High Blood Pressure	36.4	30.1	34.0
Percentage of Elderly Individuals Victims of Violence	11.7	8.8	10.6
Percentage of Elderly Individuals Engaging in Walking Exercise	27.9	16.9	23.7
Percentage of Elderly Individuals Requesting Free Treatment	71.5	76.7	73.5

Source: *Enquête Nationale sur La Population et la Santé Familiale (ENPSF – 2018)*, Ministère de Santé, 2019.

In line with the government Plan 2016–2021, which focuses on enhancing human development, social cohesion, and the field of health, the Ministry of Health is currently working on developing the national strategy for health and aging within the framework of the Health Plan 2025. This strategy is built on the approach of the right to health, emphasising the needs of the elderly and aligning with the global objectives for healthy aging by 2030.

This plan aims to improve elderly functional capacities through multiple objectives. First, it focuses on the overarching goal of developing and sustaining the general functional capabilities of the elderly population. The plan also supports elderly individuals with disabilities by offering essential health services tailored to their needs. A crucial facet of this initiative involves fostering independence among the elderly, facilitating their ability to carry out daily activities autonomously. The plan prioritizes evaluating the impact and efficiency of measures for healthy aging, aiming to improve elderly well-being and quality of life.

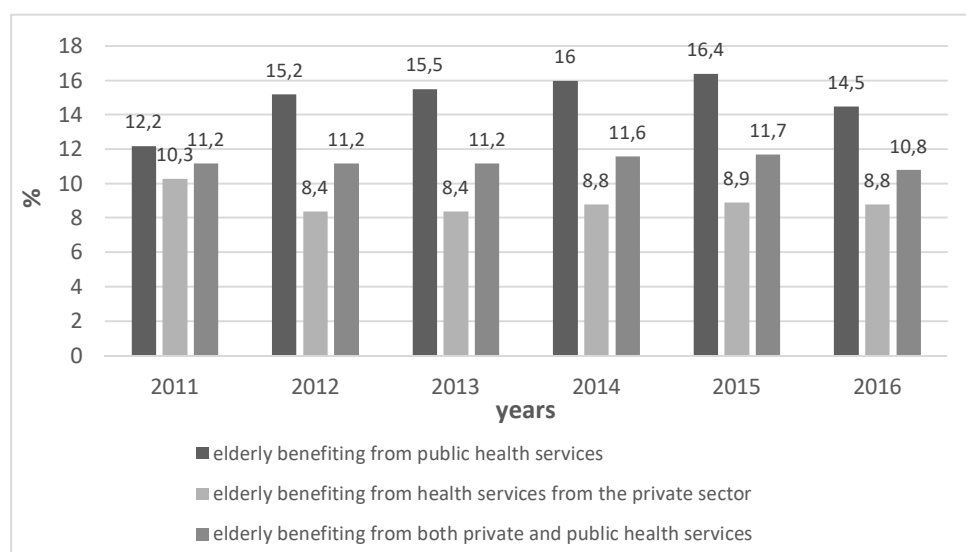
When it comes to health insurance in adherence to the state's commitment, which upholds the fundamental right to health for all societal strata as outlined in international treaties, the government has instituted comprehensive systems for universal health coverage. This initiative encompasses several key components, including mandatory basic health insurance tailored for individuals involved in income-generating activities, recipients of pensions, veterans, and members of the liberation army³³. Furthermore, this commitment has been expanded to encompass professionals, self-employed workers, and non-wage

³³ *The First Annual Report on the Status of the Elderly in Morocco, National Observatory for the Elderly*, op. cit.

earners engaged in specific activities, ensuring a broader reach of health protection. Additionally, a medical assistance system has been implemented, grounded in the principles of social assistance and national solidarity, specifically designed to provide support to the vulnerable, including the elderly. Through these integrated measures, the government aims to actualise the principle of health as a universal right, fostering inclusivity and equitable access to healthcare across diverse segments of the population.

Figure 1, elaborated based on the annual report of the National Health Insurance Agency for the year 2015, illustrates that the number of individuals aged 60 and above benefiting from the mandatory basic health insurance for illness was approximately 927,449 out of the total enrolled, with 8.9% registered in the private sector and 16.4 percent affiliated with the public sector. This percentage decreased to 10.8% of enrolees in 2016, including 8.8% registered in the private sector, compared to 14.5% in the public sector. Regarding the evolution of the percentage of the population aged 60 and above benefiting from this system, the proportion of this age group registered in the public sector increased in 2015 compared to 2011. In 2011, it represented only 12.2%, decreasing from 10.3% for private sector enrolees in 2011 to 8.9% in 2015. Furthermore, the percentage of enrolees in both the public and private sectors decreased from 11.7% in 2015 to 10.8% in 2016³⁴.

Figure 1. Evolution of the Population Aged 60 and Above Subject to Mandatory Health Insurance

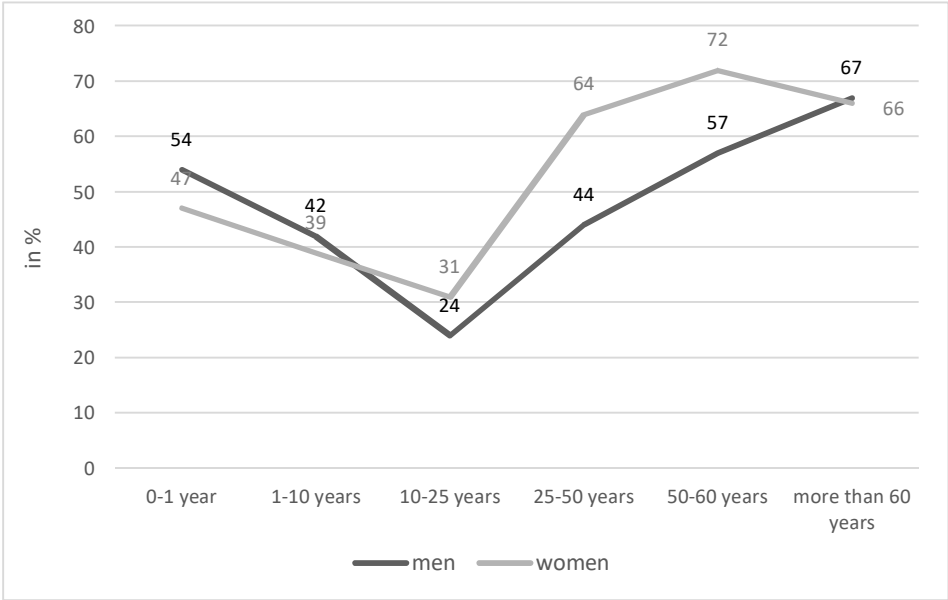


Source: Own elaboration based on *Rapport d'activités de l'Agence Nationale de l'Assurance Maladie (ANAM): 2016*, Agence Nationale de l'Assurance Maladie, 2016.

³⁴ Ibidem.

The average age of the public sector beneficiaries remains higher compared to the private sector beneficiaries for several reasons. This includes limited employment opportunities in the public sector, a higher rate of coverage, and an increased number of pensioners, which is further amplified by the retirement referral rate. Another crucial aspect is understanding the evolution of disease occurrence rates across age groups in both private and public sectors. Figure 2 helps in comprehending how disease rates vary among different age groups specifically within the public sector.

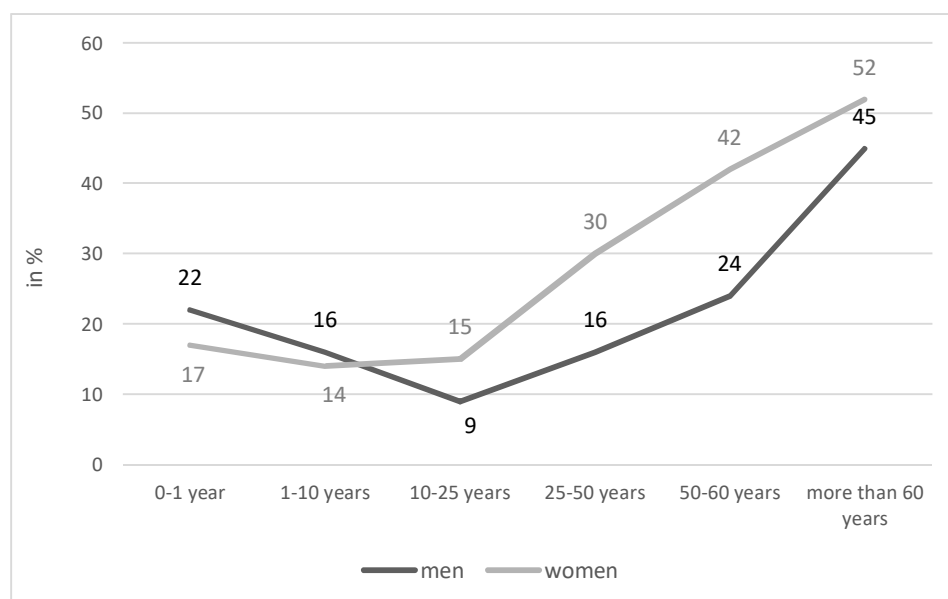
Figure 2. Evolution of the Disease Incidence Rate According to Age Groups in the Public Sector



Source: Own elaboration based on *CNSS – Rapport annuel 2016*, Caisse National de Securite Sociale, 2016.

It is observed that the disease incidence rate increases with advancing age for both genders. In men aged 60 and above, the disease incidence rate is approximately 67%, compared to 66% for women aged 60 and above. Additionally, the disease occurrence rate in women aged 60 and above in the private sector exceeds that of men, with a rate of 52% compared to 45% in men. However, the disease incidence rate remains higher in the public sector for all age groups compared to the private sector (Figure 3). This information highlights the age and gender differentials in disease prevalence and emphasises the need for targeted health interventions and preventive measures across different demographic groups.

Figure 3. Evolution of the Disease Incidence Rate by Age Groups in the Private Sector

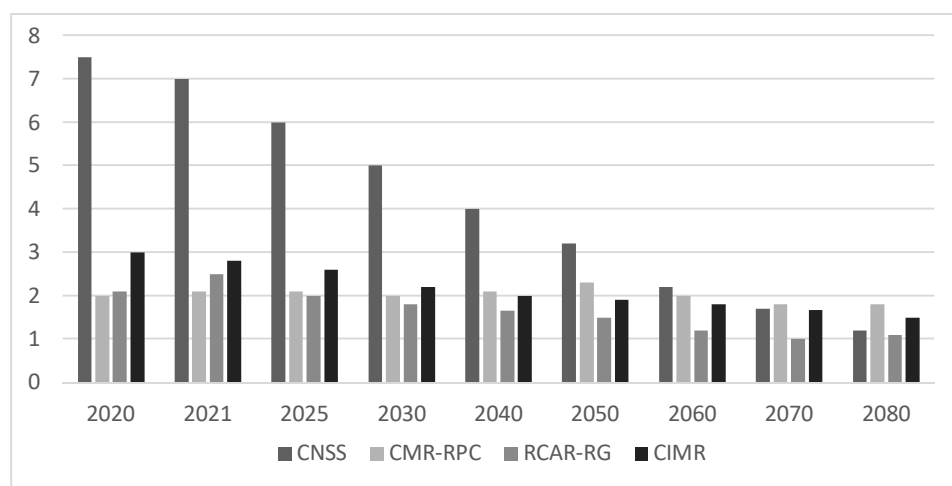


Source: Own elaboration based on *CNSS - Rapport annuel 2016*, Caisse National de Sécurité Sociale, 2016.

The pension system is another crucial factor to check when considering the welfare of elderly people. The viability of a pension system depends on several indicators, among which the demographic ratio holds particular significance. For the basic pension system in Morocco, including the Civil Pension Scheme (CPS), the Collective Retirement Allocation Scheme (CRAS), and the schemes for workers managed by Caisse Nationale de Sécurité Sociale (CNSS), the demographic ratio, defined as the quotient between the number of active affiliates and the number of retirees, allows retirement fund managers and actuaries to analyse and project the long-term contributions of affiliates and pension and benefit expenditures³⁵. As shown in figure 4, this indicator is expected to experience a downward trend for all basic pension schemes by the year 2050, resulting in a shortfall in affiliate contributions and an additional flow of retirement benefit expenses for beneficiaries for at least two decades, given the projected life expectancy data. Actuarial projections for major schemes, as reported by Autorité de Contrôle des Assurances et de la Prévoyance Sociale (ACAPS) in its 2020 activity report with a projection horizon extending to 2080, indicate a degradation of this demographic ratio for basic pension schemes, reaching 1.2 for CNSS, 1.7 for CPS, and 1.1 for the CRAS by 2080.

³⁵ Loucifi S., Hassainate M., op. cit.

Figure 4. Evolution of the demographic ratio of basic and supplementary pension schemes in Morocco from 2020 to 2050



Source: Own elaboration based on *Rapport d'activité de l'ACAPS 2020*, Autorité de Contrôle des Assurances et de la Prévoyance Sociale, 2020.

In 2020, the contribution volume of basic pension schemes, including CNSS, CPS, and CRAS, along with internal schemes, totalled 42.5 billion dirhams, reflecting an increase from 40.8 billion dirhams in 2019. Correspondingly, the benefits volume of basic pension schemes reached 53.2 billion dirhams in 2020, marking a notable rise from 47.9 billion dirhams in the preceding year. However, this growth led to a technical balance deficit of 10.8 billion dirhams in 2020, compared to 7.1 billion dirhams in 2019. Actuarial projections reveal that CPS, facing its first deficit in 2015, is anticipated to deplete its accumulated reserves in the reserve fund by 2028. CRAS and CNSS are expected to encounter their inaugural deficits in 2023 and 2027, tapping into their reserves in 2044 and 2040, respectively.

The 2023 Human Resources report, part of the budget law, discloses that the total number of civil state employees for 2022 is 565,429. Among these, 43.3% belong to the Ministry of National Education, Preschool, and Sports, 27.6 % to the Ministry of the Interior, and 10.8 % to the Ministry of Health and Social Protection. In 2022, civil state personnel aged over 50 in these departments constitute 39.84%, 29.43%, and 30.10 %, respectively. Notably, this age group represents 37.10 % of the total civil state affiliates.

Projections for the next thirty years anticipate a rise in expenses related to basic pensions, particularly within the civil pension scheme. This surge is attributed to imminent retirements correlated with age, with 37.10 % expected to leave public service within the next fifteen years, qualifying for a retirement pension lasting at least two decades. This underscores the positive impact of an aging retiree population on basic retirement expenses.

Caisse Marocaine des Retraites (CMR) forecasts predict that between 2022 and 2025, 43,921 civil state employees will retire, including 22,137 from the education sector, 5,079 from health, and 4,807 from the Ministry of the Interior. A sharp drop in active affiliates will reduce tax revenues, causing a shortfall in social contributions and income tax. The aging process implies a decrease in revenue from salary and employer contributions, contracting the state's public finances. Workforce policies must adapt to replace retiring professionals like teachers and doctors, highlighting the need for skill transfer and senior workforce recognition. ACAPS projections for major basic pension schemes up to 2080 indicate that, while the parametric reform in 2016 balanced the civil pension scheme's pricing for future rights, pre-2016 acquired rights pose a significant burden that could jeopardise its financial viability. The reserve funds available to the civil pension scheme are projected to finance the deficit by 2027–2028.

In conclusion, the operation of basic pension systems, relying on the distribution principle, hinges on solidarity between generations of active and inactive individuals. Demographic factors, particularly aging, and the characteristics of the active population can significantly influence the financial situation of basic schemes. As a result, public authorities need to implement comprehensive strategies and public policies related to pensions, including parametric and systemic reforms for both public and private pension systems, encouragement of senior employment, revaluation of the concept of work hardship (especially in industrial sectors), and expansion of retirement coverage and health insurance for those in the informal sector.

3. Methods and data

In this article, the authors use a comprehensive research methodology encompassing critical literature review and desk research. Critical literature review, a well-established method in the social sciences, involves analysing the existing literature to adapt a new problem to the existing body of knowledge³⁶. This method aims to demonstrate the originality of the chosen research issue, presenting connections, differences, and dependencies with the existing state of knowledge, thereby highlighting the value of the selected topic in deepening existing knowledge.

The research conceptualisation process begins with an in-depth exploration of the existing literature, engaging critically with the views of other scholars who have previously addressed similar or related issues³⁷. Through this process, the authors supplement the review with personal reflections and ideas, establishing a theoretical framework that underpins the research project and situates it within specific theoretical contexts. Additionally, the authors incorporate the desk research meth-

³⁶ Mróz-Jagiełło A., Wolanin A., *Metoda analizy i krytyki dokumentów w naukach o bezpieczeństwie*, „Obronność – Zeszyty Naukowe Wydziału Zarządzania i Dowodzenia Akademii Obrony Narodowej” 2013, vol. 2(6), p. 109–118.

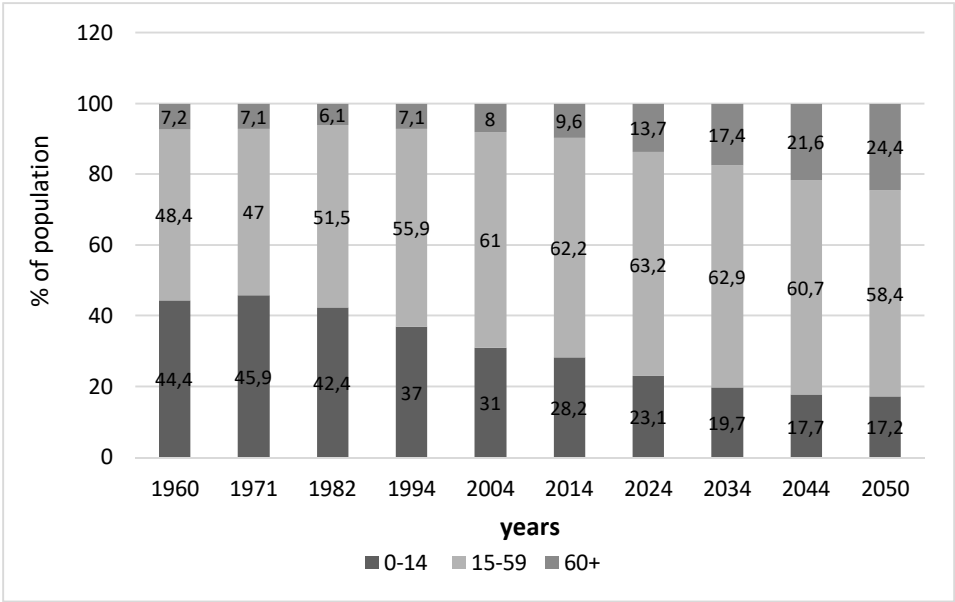
³⁷ Polish Political Science Association, *Metodologia badań politologicznych*, Warszawa 2016, p. 18.

od, which involves the analysis of available data, including compilation, mutual verification, and processing. This serves as a foundation for drawing conclusions intended for policymakers.

The research methodology incorporates a comprehensive array of data sources, primarily relying on theoretical frameworks derived from an extensive review of the existing literature. The articles selected for inclusion in the study were sourced from reputable databases such as Scopus and Web of Science. The initial literature search focused on the broader theme of the silver economy, followed by a refined investigation into literature specific to the circumstances of elderly individuals in Morocco. Supplementary materials were obtained from international and domestic reports, originating from authoritative entities. To enhance the empirical facet of the study, statistical data were incorporated from sources such as the World Bank statistics and other reputable repositories.

The statistical information presented in this study primarily pertains to Moroccan society, providing a comprehensive illustration of the societal structure transformation from 1960 to 2050. Figure 5 visually represents the three principal cohorts in Moroccan society: the pre-working age group (0–14 years), the productive age group (15–59 years), and the elderly group (above 60 years).

Figure 5. Structure of Moroccan Society from 1960 to 2050



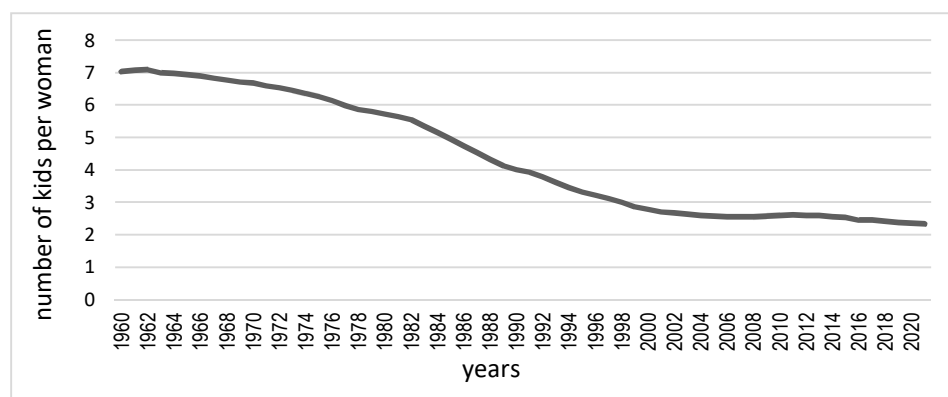
Source: Own elaboration based on *Population and Household Projections Between 2014 and 2050*, High Commission for Planning, 2017.

As delineated in figure 5, the demographic composition of the Moroccan population has undergone substantial changes over the documented years. The data spans from 1960 to 2014 (the most recent general population and housing cen-

sus), with projections provided for years subsequent to 2024. During the interval from 1960 to 1971, a discernible augmentation is evident in the cohorts aged 0–14 and 15–59, juxtaposed with a relative reduction in the elderly demographic. Notably, a persistent decline in the population share of the youngest Moroccans has transpired since 1982, dwindling to less than 20% of the total population by 2034, accompanied by a concurrent reduction in the 15–59 age group. Projections anticipate that, from 2044 onward, the Moroccan population will surpass the 20% threshold in the elderly category. While this percentage may not reach the levels observed in high-income countries and regions such as the United States, Japan, and the European Union, it signifies a noteworthy demographic shift for Morocco, particularly among middle-income nations, where Morocco stands out with one of the above average proportions of elderly population³⁸.

The specific data used for computations are detailed in Annex 1. This annex provides information on life expectancy at birth for the entire Moroccan population, as well as the life expectancies for men and women separately. Additionally, the fertility rate for Morocco is presented in this annex (Figure 6). The dataset is complemented by economic indicators, primarily GDP per capita (Figure 7), as some scholars have established a connection between economic prosperity and life expectancy (Figure 8). Furthermore, the impact of the quality of life, primarily assessed by the HDI, on the well-being of the elderly has been explored. Data pertaining to the HDI for Morocco is also available in Annex 1 (Figure 9). Interpretations of figures will be contrasted to other scholars' findings in the results and discussion part.

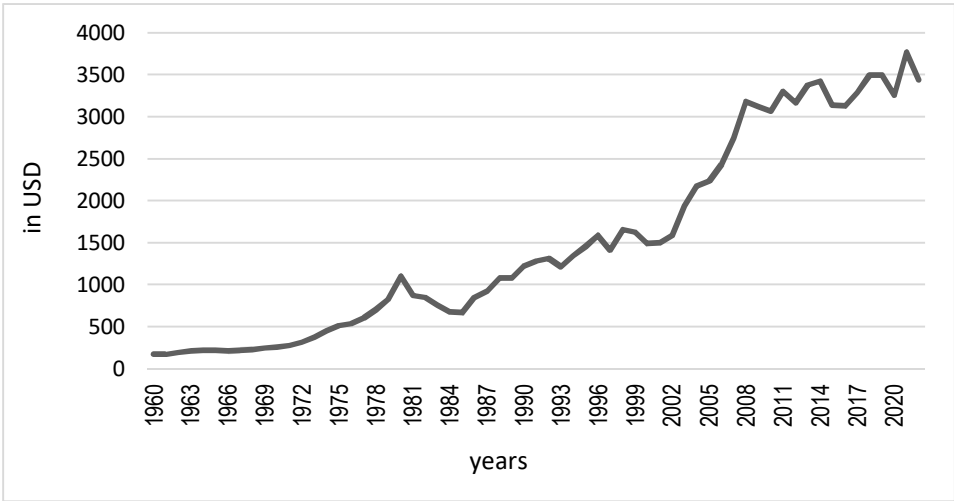
Figure 6. Fertility rate for Morocco between 1960–2021



Source: Own elaboration on World Bank Data, <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=MA>, [accessed: 29.12.2023].

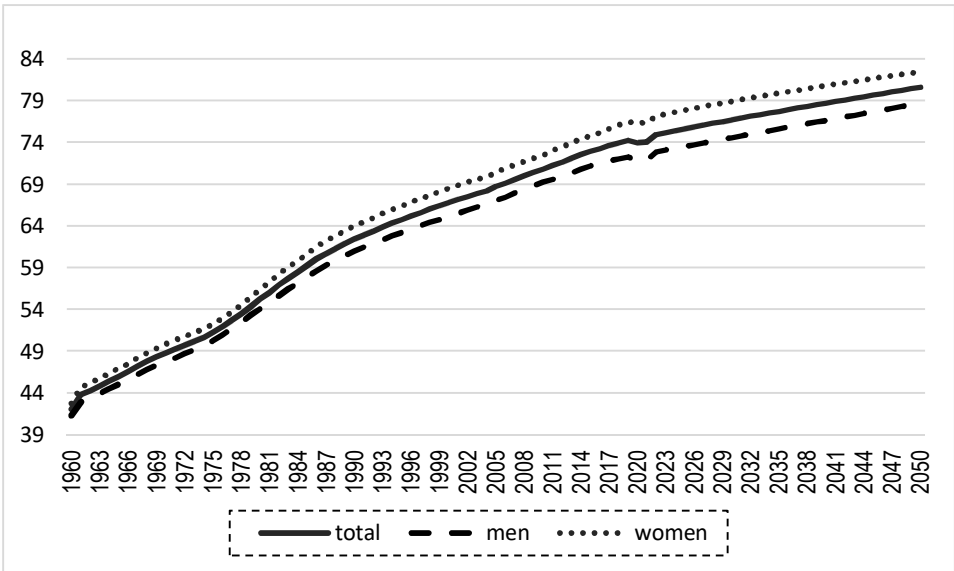
³⁸ Abyad A., *Ageing in the Middle-East and North Africa: Demographic and health trends*, „International Journal on Ageing in Developing Countries” 2021, vol. 6(2).

Figure 7. GDP per capita for Morocco between 1960-2022 (in USD current prices)



Source: Own elaboration on World Bank Data, <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MA>, [accessed: 29.12.2023].

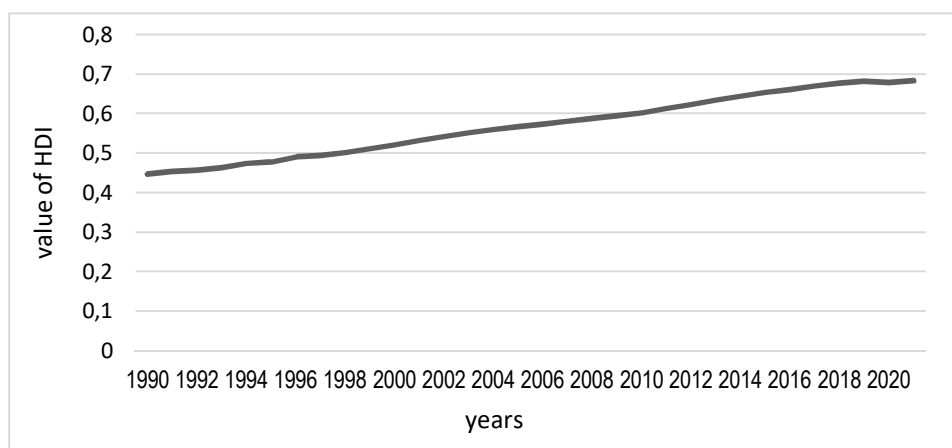
Figure 8. Life expectancy at birth for Morocco (total, women, men) in 1960–2050 (years)



Source: Own elaboration on World Bank Data, <https://data.worldbank.org/indicator/SP.DYN.LE00.IN>, [accessed: 29.12.2023].

and Database.Earth, <https://database.earth/population/morocco/life-expectancy>, [accessed 29.12.2023].

Figure 9. Value of HDI for Morocco between 1990–2021



Source: Own elaboration on United Nations Development Programme, <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>, [accessed: 29.12.2023].

4. Results and discussion

The first body of literature, represented by studies such as those conducted by Bloom et al.³⁹, Daniele et al.⁴⁰, Cutler et al.⁴¹ and Čepar and Troha⁴², asserts a detrimental impact of population aging on economic growth. This view argues that an aging population will shrink the workforce, slowing labor force growth and affecting productivity. Loumrhari's analysis for Morocco, spanning from 1981 to 2010, demonstrates that the onset of an aging population is likely to diminish private savings, with heightened life expectancy playing a contributory role in fostering this savings dynamic⁴³. Consequently, an exacerbation of population aging is theorised to engender a reduction in the national savings rate⁴⁴. The primary concern here is the potential contraction of private savings

³⁹ Bloom D.E., Canning D., Fink G., *Implications of population ageing for economic growth*, „Oxford Review of Economic Policy” 2010, vol. 26(4), p. 583–612.

⁴⁰ Daniele F., Honiden T., Lembcke A.C., *Ageing and productivity growth in OECD regions: Combatting the economic impact of ageing through productivity growth?*, OECD Paris 2019.

⁴¹ Cutler D.M., Poterba J.M., Sheiner L.M., Summers L.H., Akerlof G.A., *An aging society: opportunity or challenge?*, „Brookings Papers on Economic Activity” 1990, vol. 1990(1), p. 1–73.

⁴² Čepar Ž., Troha M., *Impact of population ageing on education level and average monthly salary: The case of Slovenia*, „Managing Global Transitions” 2015, vol. 13(3), p. 281–299.

⁴³ Loumrhari G., op. cit.

⁴⁴ Heijdra & Ligthart, 2006 Heijdra B.J., Ligthart J.E., *The macroeconomic dynamics of demographic shocks*, „Macroeconomic Dynamics” 2006, vol. 10(3), p. 349–370;

and its subsequent impact on economic growth, necessitating the Moroccan government's awareness and the formulation of policies aimed at promoting private savings. A decline in personal savings is expected to reduce capital investment, directly slowing economic growth. Scholars also contend that population aging may lead to a reduction in interest rates, as capital is anticipated to shift from more aged nations to those with a less pronounced aging demographic⁴⁵.

In contrast, the second body of literature, represented by scholars like Nagarajan et al.⁴⁶ and Maity and Sinha⁴⁷, posits a favourable correlation between population aging and economic growth. This view highlights how higher life expectancy and lower fertility rates can positively affect economic growth. While a decline in fertility rates is acknowledged as having a negative influence on economic growth, the amplification of life expectancy is deemed to exert a predominant positive influence⁴⁸. The transformation of the family model in Moroccan society over the years, marked by a decline in fertility rates and an increase in life expectancy, exemplifies these dynamics. In 1960, the average Moroccan woman bore 7.04 children, a figure that diminished to 4.018 after three decades, and further decreased to 2.328 children in 2021. Concurrently, within the same temporal span, life expectancy exhibited a noteworthy growth from 42.017 in 1960 to 74.042 in 2021 (with the female cohort registering a life expectancy of 76.40) (Figure 6 and Figure 8). Of particular interest is the robust and negative correlation (-0.98501^{49}) discerned between life expectancy at birth and the fertility rate in Morocco. This correlation signifies a marked tendency for the fertility rate to decrease with an increase in life expectancy. In traditional societies like Morocco, having more children was seen as an investment for future support, with larger families providing a stronger network in old age. With social and medical advancements, better welfare, longer life expectancy, and increased reliance on state support and personal savings, the link between life expectancy and fertility rates has changed significantly. Despite a

Miles D., *Modelling the impact of demographic change upon the economy*, „The Economic Journal” 1999, vol. 109(452), p. 1-36; Hviding K., Mérette M., *Macroeconomic effects of pension reforms in the context of ageing populations: Overlapping generations model simulations for seven OECD countries*, OECD, Paris 1998.

⁴⁵ Liu W., McKibbin W., *Global macroeconomic impacts of demographic change*, „The World Economy” 2022, vol. 45(3), p. 914–942.

⁴⁶ Nagarajan N.R., Teixeira A.A., Silva S.T., *The impact of an ageing population on economic growth: an exploratory review of the main mechanisms*, „Análise Social” 2016, p. 4–35.

⁴⁷ Maity S., Sinha A., *Linkages between economic growth and population ageing with a knowledge spillover effect*, „Journal of the Knowledge Economy” 2021, vol. 12, p. 1905–1924.

⁴⁸ Prettnner K., *Population aging and endogenous economic growth*, „Journal of Population Economics” 2013, vol. 26, p. 811–834.

⁴⁹ Own calculation with usage of Ms Excel.

negative correlation between life expectancy and fertility rate, the amplification of life expectancy is deemed to exert a predominant positive influence on economic growth. Additionally, the shift towards prioritising individual labour productivity in the face of population aging enhances investment opportunities in human capital⁵⁰. This enhancement is attributed to an increase in the years dedicated to education, thereby augmenting social capital positively⁵¹. Moreover, the economic potential of the older population includes the possibility of this group of people becoming more involved in job creation, employment growth and social activity⁵². As evidenced by the data provided in Annex 1, in 1990, upon the introduction of the HDI, Morocco attained a score of 0.447⁵³, correlating with a life expectancy of 62.45 years. By 1998, with an HDI of 0.501, life expectancy had surpassed 66.02 years. Remarkably, in 2021, the HDI reached its highest level at 0.683, concurrently witnessing a life expectancy exceeding 74 years (Figure 8 and Figure 9). It is noteworthy to underscore that life expectancy constitutes one of the components of HDI; thus, an augmentation in life expectancy is anticipated to correspondingly elevate the HDI.

The third cohort of scholars, including An and Jeon⁵⁴ and Barro and Holger⁵⁵, contends that the association between population aging and economic growth is complex and lacks definitive conclusions. As life expectancy extends from 60 to 69, there is a consistent ascent in GDP per capita growth. However, beyond a life expectancy threshold of 70, the growth rate of GDP per capita exhibits a decline, albeit remaining superior to countries characterised by lower life expectancies. From 1986, a period coinciding with the attainment of a life expectancy surpassing 60 years (60.04), until 2007 (69.80), a discernibly swift ascent in GDP per capita is evident (Figure 7 and Figure 8). Additionally, an analysis of the correlation between GDP per capita and life expectancy at birth reveals a robust and positive relationship, with a substantial correlation coefficient of 0.925148. Subsequently, as life expectancy exceeds 70 years, the trajectory of GDP growth demonstrates a notably diminished rate. An inverted U-shaped relationship, signifying a non-linear correlation, is discerned in some studies. Futagami and Nakajima argue that population aging, when examined through an endogenous growth model incorporating life-cycle savings, does not

⁵⁰ Choi K.H., Shin S., *Population aging, economic growth, and the social transmission of human capital: An analysis with an overlapping generations model*, „Economic Modelling” 2015, vol. 50, p. 138–147.

⁵¹ Fougère M., Mérette M., *Population ageing and economic growth in seven OECD countries*, „Economic Modelling” 1999, vol. 16(3), p. 411–427.

⁵² Golinowska S., op. cit. p. 77.

⁵³ Own calculation with usage of Ms Excel.

⁵⁴ An C.B., Jeon S.H., *Demographic change and economic growth: An inverted-U shape relationship*, „Economics Letters” 2006, vol. 92(3).

⁵⁵ Barro R., Holger W., *Data appendix for economic growth in a cross section of countries*, unpublished, National Bureau of Economic Research, 1989.

inherently impede economic growth⁵⁶. This complexity requires a deep understanding of how demographic shifts interact with economic trends.

Beyond the dichotomy of positive and negative effects, scholars like Poterba emphasise the role of education in the face of population aging⁵⁷. As the aging population prioritises individual labour productivity, investment in education and human capital becomes crucial for technological advancement and overall national growth⁵⁸. Moreover, an aging population is theorised to facilitate industrial structural upgrading⁵⁹ and stimulate technological innovation through two distinct mechanisms: the learning-by-doing effect and the labour scarcity induced by population aging, prompting a shift in economic growth patterns with an emphasis on technological progress. This transformative process triggers the reallocation of societal resources, fostering technical progress and innovation to enhance economic efficacy⁶⁰. In Morocco, where education durations have increased over the years, the potential for technological progress is evident. As of 2010, Moroccan children, on average, received an education for 13.7 years, a duration that increased to nearly 15 years by 2019⁶¹. It is noteworthy to underscore that the duration of schooling for women in Morocco is comparatively lower than that for men. This discrepancy is attributable to the traditional allocation of social roles, wherein women may not necessitate higher education to fulfil roles as wives, mothers, and caretakers of households. Moreover, the concept of the silver economy, as outlined in the Bonn Declaration, suggests that the older population, with better education and living conditions, presents opportunities for economic growth. Investment in solutions tailored to seniors, such as friendly working conditions, adapted infrastructure, and healthcare, is crucial for harnessing the economic potential of the elderly.

Despite these potential opportunities, challenges affecting the elderly in Morocco are multifaceted. The absence of a specific legal framework, low educational attainment, limited social and health coverage, and gender disparities hinder

⁵⁶ Futagami K., Nakajima T., *Population aging and economic growth*, „Journal of Macroeconomics” 2001, vol. 23(1), s. 31–39.

⁵⁷ Poterba J.M., *Demographic change, intergenerational linkages, and public education*, „The American Economic Review” 1998, vol. 88(2), p. 315–320.

⁵⁸ Boucekkine R., De la Croix D., Licandro O., *Vintage human capital, demographic trends, and endogenous growth*, „Journal of Economic Theory” 2002, vol. 104(2), p. 340–375; Gradstein M., Kaganovich M., *Aging population and education finance*, „Journal of Public Economics” 2004, vol. 88(12), p. 2469–2485.

⁵⁹ Boriss S., Konstantin A., Kholodilin U.T., *Does aging influence structural change? Evidence from panel data*, „Econ. Syst.” 2011, vol. 35, p. 244–260.

⁶⁰ Lee R., Mason A., *Fécondité, capital humain et croissance économique au cours de la transition démographique*, „European Journal of Population/Revue européenne de Démographie” 2010, vol. 26, p. 159–182.

⁶¹ Statista, *Years of schooling a child of school entrance age is expected to receive in Morocco from 2010 to 2019*, <https://www.statista.com/statistics/1308180/expected-years-of-schooling-in-morocco/>, [accessed: 29.12.2023].

the overall well-being of the elderly. Moreover, there is a need for further research and a standardised legal framework to address these challenges comprehensively. The attention to elderly issues in Morocco is growing, but more concerted efforts are required, especially in the face of an aging population⁶². In addressing the specific health needs of the elderly, the Ministry of Health in Morocco has undertaken several measures, including early detection of chronic diseases, establishment of geriatric units, and provision of mental health services. These initiatives underscore the commitment to elderly healthcare and signify a recognition of the evolving healthcare landscape necessitated by an aging population.

Thus, the economic impacts of population aging are multifaceted, with scholars presenting varying perspectives on the relationship between aging and economic growth. While challenges persist, such as the potential contraction of private savings, there are also opportunities, particularly in harnessing the economic potential of the elderly through education, technology, and tailored solutions. The evolving demographic landscape in Morocco calls for a comprehensive approach that addresses challenges, capitalises on opportunities, and ensures the well-being of the aging population.

5. Conclusions

Morocco is currently undergoing a demographic transformation characterised by accelerated aging, leading to an increased prevalence of illnesses among the elderly. This underscores the urgent need for comprehensive healthcare strategies. Despite these challenges, the Ministry of Health is taking proactive steps through initiatives and the development of a national strategy for health and aging within the Health Plan 2025 framework, aiming to enhance the quality of care provided to the elderly.

The economic implications of aging on pension systems in Morocco are substantial, affecting demographic ratios, contributions, benefits, and deficits in basic pension schemes. Projections indicate a potential shortfall, particularly in the civil pension scheme, where pre-2016 acquired rights pose a significant burden. Consequently, the implementation of comprehensive strategies and policies for both public and private pension systems become crucial to address these impending challenges. Contrasting perspectives on the relationship between population aging and economic growth are evident. Some studies suggest a detrimental impact due to a declining working-age population, while others argue for positive correlations, emphasising the potential for increased life expectancy to enhance economic growth. The role of education is highlighted as a mitigating factor against the negative effects of aging, and the transformative potential of an aging population in stimulating technological innovation is acknowledged.

⁶² *The First Annual Report on the Status of the Elderly in Morocco, National Observatory for the Elderly*, op. cit.

Despite these opportunities, challenges facing the elderly in Morocco, such as the absence of a specific legal framework, low educational attainment, limited social and health coverage, and gender disparities, are significant and require urgent attention. A nuanced understanding of the complex interplay between demographic shifts and economic trajectories is crucial. Therefore, comprehensive approaches are needed to capitalise on opportunities, address challenges, and ensure the well-being of the aging population in Morocco. In the domain of health services, a comprehensive set of recommendations can be formulated to address the evolving needs of the elderly population. First, there is an imperative to strengthen healthcare systems, particularly to confront the challenge of incomplete epidemiological transition, with a specific emphasis on persistent efforts to combat infectious diseases, particularly affecting the elderly. Ensuring universal access to healthcare services is identified as a critical objective, accompanied by the provision of appropriate and sustainable social support to cater to the diverse needs of the elderly. Lifelong preventive measures are recommended to forestall or delay age-related disabilities and the onset of chronic diseases. Additionally, the facilitation of a healthy transition into aging is underscored through the provision of affordable health insurance and comprehensive health education. Tailored healthcare services for mentally impaired elderly individuals are highlighted as an essential component. The enhancement of training for specialists in geriatric medicine and the qualification of general practitioners in the same field are pivotal for a well-equipped healthcare workforce. To broaden accessibility, there is a call for the expansion of geriatric medicine services in regional and local hospitals, alongside the establishment of specialised centres dedicated to providing necessary therapeutic, psychological, health, medical, and social care for the elderly. Special attention is given to the preparation of individuals approaching retirement through the development of programs that encourage the continuation of activities and the use of leisure time for healthy aging. Lastly, the reinforcement of prevention, rehabilitation, and care programs for elderly patients is advocated to ensure comprehensive and effective support for their overall well-being. These recommendations collectively aim to shape a responsive and inclusive healthcare landscape that promotes not only the longevity but also the quality of life for the elderly.

As for social protection and care, a set of recommendation can be delineated to enhance the well-being of the elderly. This includes the establishment of a financial safety system through retirement pensions, wherein contributions are made during their active working years. The scope of social protection is urged to be widen, extending coverage to all social categories, with a specific focus on the elderly. Efforts to streamline access to home care services and proximity services are emphasised, with ongoing improvements and developments in these vital areas. Families are encouraged to receive support, ensuring a conducive environment for the protection and care of the elderly within the familial context. Acknowledging the right of the elderly to work, recommendations em-

phasise guaranteeing employment opportunities in alignment with legal provisions and promoting income-generating activities. Furthermore, special support is proposed for widowed and unmarried elderly women, focusing on identifying avenues to address their multifaceted social, economic, and psychological needs. These recommendations collectively aim to establish a comprehensive framework for social protection and care, encompassing financial security, healthcare, and broader social well-being for the elderly.

Limitations and future research

The research may be constrained by the limited availability of data related to demographic trends, healthcare, and economic indicators, as certain recent data cannot be located on the national portal of Morocco. Additionally, the research data primarily focus on Morocco, and the findings may not readily apply to other regions or countries due to unique socio-economic and cultural factors. Thus, future research could undertake comparative studies across different regions or countries could be undertaken to provide a broader understanding of the impact of aging on socio-economic and healthcare systems, considering diverse cultural and socio-economic contexts.

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Annex 1. Selected statistics for Morocco in years 1960–2050

	life expectancy at birth					
	total (years)	men (years)	women (years)	fertility rate (kids per woman)	GDP per capita (in USD)	HDI (value between 0 and 1)
1960	42.02	41.26	42.76	7.04	172.60	
1961	43.79	42.89	44.69	7.072	167.17	
1962	44.30	43.40	45.20	7.088	191.22	
1963	44.82	43.90	45.74	7.000	208.09	
1964	45.39	44.47	46.32	6.969	213.76	
1965	45.97	45.03	46.92	6.93	219.48	
1966	46.56	45.62	47.52	6.895	208.52	
1967	47.19	46.22	48.17	6.844	214.98	
1968	47.78	46.79	48.78	6.782	224.75	
1969	48.31	47.31	49.34	6.72	244.29	
1970	48.81	47.79	49.85	6.675	257.73	
1971	49.24	48.20	50.32	6.61	276.51	
1972	49.72	48.70	50.77	6.533	314.00	
1973	50.17	49.17	51.21	6.465	376.78	
1974	50.67	49.68	51.70	6.373	452.06	
1975	51.24	50.27	52.26	6.271	516.60	
1976	51.94	50.97	52.94	6.139	537.81	
1977	52.70	51.73	53.72	5.998	604.34	
1978	53.50	52.48	54.56	5.874	705.19	
1979	54.35	53.29	55.47	5.802	825.64	
1980	55.22	54.07	56.42	5.734	1097.66	
1981	56.04	54.83	57.30	5.652	874.79	
1982	56.90	55.65	58.21	5.552	847.33	
1983	57.72	56.44	59.07	5.354	758.47	
1984	58.49	57.17	59.87	5.154	675.02	
1985	59.29	57.92	60.72	4.96	666.72	
1986	60.04	58.64	61.51	4.746	846.91	
1987	60.71	59.29	62.21	4.538	928.50	
1988	61.32	59.86	62.86	4.327	1076.09	
1989	61.90	60.42	63.46	4.139	1081.97	
1990	62.45	60.96	64.02	4.018	1219.42	0.447

1991	62.95	61.46	64.52	3.937	1282.58	0.453
1992	63.40	61.92	64.97	3.806	1317.33	0.457
1993	63.87	62.34	65.49	3.612	1217.43	0.463
1994	64.35	62.80	65.99	3.468	1348.54	0.475
1995	64.74	63.18	66.38	3.33	1455.95	0.478
1996	65.24	63.69	66.88	3.219	1585.72	0.49
1997	65.63	64.08	67.27	3.12	1416.90	0.494
1998	66.02	64.44	67.68	3.009	1658.47	0.501
1999	66.41	64.78	68.13	2.871	1627.14	0.511
2000	66.79	65.14	68.53	2.796	1492.38	0.521
2001	67.18	65.54	68.90	2.715	1500.36	0.532
2002	67.55	65.93	69.24	2.67	1590.49	0.542
2003	67.92	66.31	69.59	2.632	1936.09	0.552
2004	68.23	66.66	69.87	2.598	2177.80	0.56
2005	68.70	67.08	70.40	2.568	2237.58	0.567
2006	69.13	67.45	70.88	2.559	2433.21	0.573
2007	69.60	67.94	71.34	2.55	2751.42	0.581
2008	70.05	68.41	71.76	2.549	3180.17	0.588
2009	70.46	68.85	72.14	2.578	3118.14	0.594
2010	70.83	69.24	72.49	2.586	3067.85	0.603
2011	71.27	69.60	73.02	2.609	3302.45	0.614
2012	71.68	69.93	73.52	2.598	3164.00	0.624
2013	72.12	70.37	73.98	2.594	3377.64	0.635
2014	72.54	70.79	74.39	2.548	3430.53	0.644
2015	72.92	71.17	74.78	2.531	3139.23	0.654
2016	73.28	71.50	75.18	2.451	3132.95	0.661
2017	73.66	71.78	75.66	2.451	3288.50	0.67
2018	73.99	72.03	76.09	2.415	3492.67	0.676
2019	74.27	72.25	76.45	2.382	3498.58	0.682
2020	73.92	71.76	76.31	2.353	3258.27	0.679
2021	74.04	71.89	76.40	2.328	3767.52	0.683
2022	74.97	72.90	77.18		3441.99	
2023	75.20	73.11	77.41			
2024	75.43	73.33	77.65			
2025	75.65	73.55	77.87			
2026	75.87	73.75	78.09			
2027	76.09	73.97	78.31			
2028	76.30	74.18	78.52			

2029	76.51	74.39	78.73			
2030	76.72	74.60	78.93			
2031	76.93	74.80	79.13			
2032	77.14	75.01	79.33			
2033	77.34	75.21	79.53			
2034	77.55	75.43	79.72			
2035	77.74	75.63	79.90			
2036	77.94	75.84	80.09			
2037	78.14	76.05	80.27			
2038	78.34	76.26	80.46			
2039	78.54	76.46	80.64			
2040	78.73	76.67	80.82			
2041	78.92	76.87	80.99			
2042	79.11	77.08	81.16			
2043	79.30	77.29	81.33			
2044	79.49	77.50	81.50			
2045	79.68	77.70	81.67			
2046	79.87	77.90	81.83			
2047	80.06	78.11	81.99			
2048	80.25	78.32	82.16			
2049	80.43	78.53	82.31			
2050	80.62	78.74	82.47			

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