

Management Of The Retirement System In Algeria As A Tool Of Good Governance

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Abstract:

This article aims to highlight a range of valuable ideas concerning the relation between good governance and the Management and development of the retirement system. The principles of good governance have been applied In the theoretical part to the retirement system in Algeria in order to build an effective strategy to increase the level of employment, to ensure the safety of old age income, to monitor the management operation of the resources of the National Retirement Fund, and to try to improve it to achieve sustainable retirement systems. On the practical side, we have tackled the Algerian retirement system deficit problem analysis by applying an economic study to assess the impact of the employment variable on the revenues of the National Retirement Fund for the period between 1998 and 2016, using the simple linear regression model of EViews, through which we found existent significant linear correlations that provide a clear explanation of the system's current incapacity.

Keywords: Retirement, Employment, Good governance.

Jel Classification Codes: : J26 , C21 , G23 , G30.

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1. INTRODUCTION

The national pension system in Algeria is an integral part of the social insurance system, as the pension fund passes a critical financial position after a significant number of employed workers are pre-retired in the last two years. The most important reason for the imbalance between the revenues and expenses of the pension fund is primarily due to the decline in employment in 2012, with the significant increase in demographic growth and the freezing of employment. All of this is due to the austerity policy adopted by the state because of the decline in oil prices, which is the only resource for financing and developing the economy, and consequently, the percentage of workers' contributions to the retirement fund decreased. In this regard, the issue of managing the pension system in Algeria as a tool for good governance is considered one of the topics which are currently the concern of decision makers and framers, who have to realize it and be aware of all the means and techniques for its application. Thus, this research tries to address the current imbalances, verify their validity and the reason behind their occurrence, and find the desired solutions. The principles of good governance are among the most important means that we must take into account before proceeding with any reform. Good governance is a tool and a means which is represented in a set of principles that we seek to apply, especially in the public sector including the retirement system. These principles must be adhered to in order to build a strategy and fight corruption. The latter exists in all sectors and strongly appears in the public sector since its money is the property of the people. By applying and following these principles, we can improve the fund's management and reach sustainable solutions.

Reserch Problematic

From the importance of the subject of managing the pension system in Algeria as a tool for good governance, the problematic of the study is:

-How can we best manage the pension system in Algeria in order to reach good governance?

Research hypotheses

To become more familiar with aspects of the topic, the following hypotheses are raised:

-The principles of good governance can be applied in order to develop a strategic plan for reforming the pension system and, thus, conserving its resources.

-By applying the principles of good governance, it is possible to influence the variables that are involved in the formation of the National Pension Fund budget, such as employment and, thus, solve the prevailing deficit problem.

2. First: the theoretical framework for the governance of managing the pension system in Algeria

2.1. Good Governance Concept

As globalization escalated in the last decade of the twentieth century and the beginning of the current century and with the increasing severity of financial indebtedness, it is necessary to have the means for reducing this global crisis severity. These means are outlined in the set of principles that lead us to a good governance. The latter is represented in both transparency in governance and the fight against financial corruption (Karim, 2004).

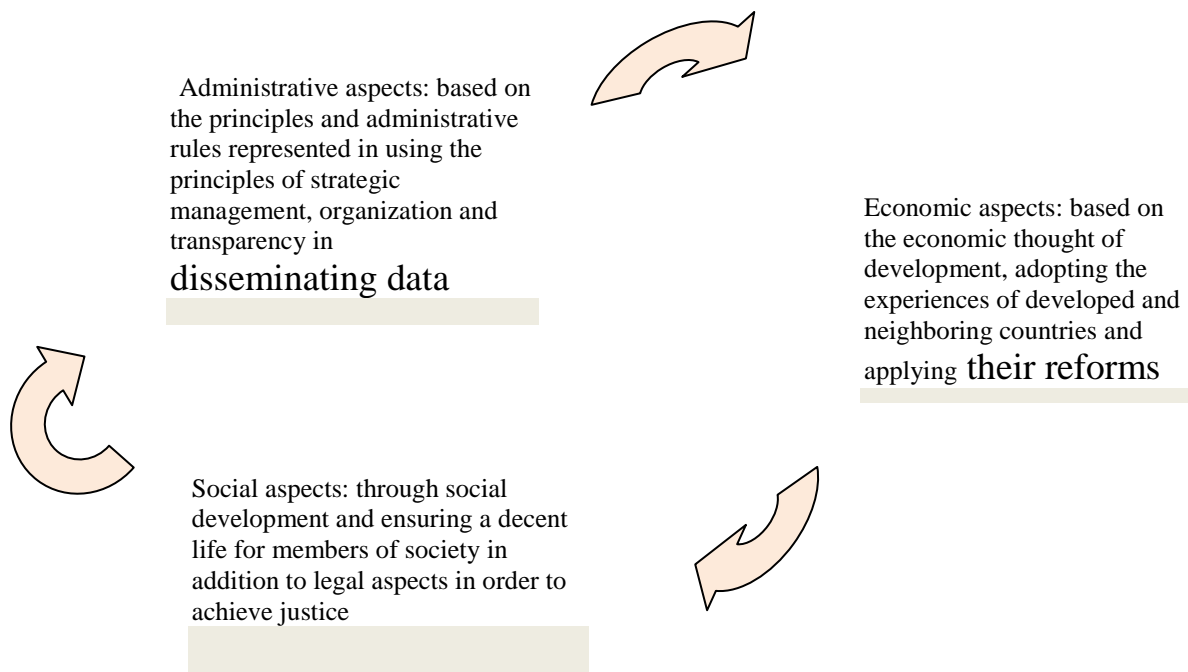
Good governance is one of the most important principles that Algeria seeks to achieve in the future, arriving at sustainable development. Several authors tackled the idea of good financial governance, what have given it several definitions according to the goals of the research. In general, the optimal management of the retirement system relies on a set of methods to correct imbalances in addition to a set of strategies of financing the budget deficit to guarantee transparency and effectiveness, and reduce financial corruption (Alafwi, 2004)

In this regard, we define the good financial governance as an effective management by establishing a set of laws which are legitimate, with the aim of improving the economic and social performance public organizations seek to. The latter must respect the minimum level of transparency in order to fight corruption and reach economic governance (Rizk, 2008).

Good governance represents the way in which the authority practices the management of the state's economic sources (the sources can be the revenues of the National Pension Fund), in order to formulate possible alternatives of finance and reach sustainable development (Conte, 2003). The governance of the pension system is more comprehensive and larger than the governance of companies and banking institutions; the governance of pension institutions includes major non-financial risks, such as environmental and social factors.

The effect of the principles of good governance on the pension system can be illustrated from the following illustration:

Fig.1. Good Governance Structure of the National Pension Fund's Revenues



Source: Prepared by researchers relying on (Karim, 2004), (Al-Afawi, 2004), (Rizk, 2008).

2.2. The Objectives of the Pension System's Management and Governanc

Retirement systems face financial crisis and deficits in many countries. Among the mentioned reasons that contribute to the crisis are the following:

A-Population aging due to the demographic transition:

Modern society in various parts of the world faces great challenges in dealing with the changes that occur in the successive growth on the structure of the population in the world. Demographic changes at the global level are not limited to the increases in the population that seem very high, but also the increase of population is associated with a number of fundamental demographic variables that are evident in two aspects:

- The continuous decrease in the percentage of children resulting from the decrease in childbearing rates in different parts of the world, with clear differences from one region to another.
- The increase in the human life and this increase led to an increase in the proportion of the elderly among the total population.

Since there is an increase in the average age (life expectancy at birth), and a decrease in fertility rates, these two factors will lead to an increase in the size of the elderly; therefore, the ratio of those referred to retirement will rise sharply and it will be reflected economically and socially. It will be reflected economically by increasing the burden of the government budgets and decisions in participation in the labor market, and socially through the low quality of services that may be provided to the elderly. Also, there are birth rates that are constantly declining, which means a long-term retreat for the workforce; these are expectations of a decrease in the number of contributions to social funds, and a decline in the dependency ratio. All of this led us to think about a package of reforms in the field of

financing in the long term, which requires extensive participation and transparency from various parties, and a good financing policy.

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- The increase in the human life that led to an increase in the proportion of the elderly among the total population.

Since there is an increase in the average age (life expectancy at birth) and a decrease in fertility rates, these two factors will lead to an increase in the size of the elderly; therefore, the ratio of those referred to retirement will sharply rise and it will be economically and socially reflected. It will be economically reflected by increasing the burden of the government budgets and decisions in the labor market participation, and socially through the low quality of services that may be provided to the elderly. Also, there are birth rates that are constantly declining, which means a long-term retreat for the workforce; i.e., expectations of a decrease in the number of contributions to social funds, and a decline in the dependency ratio. All of this led us to think about a package of reforms in the field of financing in the long term, which requires extensive participation and transparency from various parties, and a good financing policy.

The rapid increase in the retired elderly population is one of the factors that all pension systems are experiencing. In general, this creates more risks and uncertainties because it depends on future expectations, and this poses serious problems at the present time for pension systems that have an extension for the long term. However, for the short term, the real direct risk can be explained by the administration's inability to cope with these changes due to the difficulty in providing future information bearing the nature of relative stability and accuracy with an appropriate level of scientific decision-making. This is considered a strategic goal for any rational administration in managing the pension systems. The complexity is that it deals with data of a future dimension in a highly dynamic and sensitive environment, but it differs when dealing with the expenses of the retirement system, which is mainly related to the level of pensions on the one hand, and the number of years in which he/she has a retirement pension as it is the case for the number of retirees. It is generally related to the demographic factor represented in the chance of Life at birth which became crawling to 80 years.

B-Slow economic growth and low structural unemployment

B.1- The problem of the financial sector's low development level:

Banks in developed countries have the ability to direct pension fund savings towards medium and long-term investments. The role of the public sector in providing pensions and appropriate level of financing the pension system partially depends on the level of development of the financial sector and the financial systems. The important thing is that

there is a basic group of banks, insurance companies, developed annual insurance pension markets, and the level of stock markets (stock exchanges) and; therefore, the possibility of investing the assets of pension funds and achieving profits from these investments that bridge the budget deficit.

B.2 - Poor management of pension systems and the problem of incentives:

The problem in pension funds may also be in their financial and administrative lack of independence. It is known that the most important principle that the science of social insurance is built on is the principle of financial and administrative independence of social insurance institutions without political interference of governments (Zerrocki, 2008).

2.3. The functioning of the pension system in Algeria

The national pension system is an integral part of social insurance, which came into effect from January 1, 1984, and is considered as a contributory insurance system which is distinguished by solidarity between active and retired workers, and, thus, operates on the basis of distribution. It is characterized by the fact that it covers all the workers concerned with the measures stipulated in this law, i.e. all of them whatever the type of activity they engage in as the level of performance can reach up to 80% to 100% of the daily wage after deduction of the social security contribution and tax, unification of the legal age for retirement at 60 years. However, it includes some exceptions for some social groups, such as working women and Mujahidin. The minimum retirement pension is based on the minimum guaranteed national wage which is currently set at 75% of the minimum national wage. The maximum period of working years is 32 years in which the approved wage for calculating the retirement pension on the basis of the average monthly wage received in the last five years is prior to retirement, or the estimated average of monthly wage based on the five years in which the concerned received the maximum wage during his professional life if that was more beneficial to the wage workers. Benefits from retirement vary according to the following cases:

- Retirement at 60 years: The workers must fulfill two conditions: they reach 60 years old and must fulfill at least 15 years of work, while a working woman, upon her request, can benefit from retirement at 55 years old. She also benefits from a reduced age estimated at one year for every child raised for at least 09 years in the range of 03 children.

-Relative retirement: Proportional retirement is granted at the request of the wage workers if they meet the following conditions: Age at least 50 years, fulfilling at least 20 years of work and paying contributions to social security, while for working women the age and period are reduced by five years, turning that age into 45 years and the work duration to up to 15 years.

- Unconditional Age Retirement: At the request of the workers a full retirement pension can be availed, provided that at least 32 years of work and insurance are met.

-Retirement Grant: The National Pension Fund provides a grant to each wage worker who is 60 years old, and has not fulfilled the requirements of work and insurance of 15 years. The workers must fulfill 05 years of work and pay contributions to social security. The amount of the grant is determined by the number of years and the sponsored husband

allowance that may be added. The retirement grants are not raised to the minimum, and this grant remains proportional according to the number of years. The amount of the grant can be increased by adding the grant of the sponsored spouse, and this grant is determined by a decision of the minister of Labor, Employment and Social Security.

- **Pre-retirement:** it is specified for the economic sector and it is realized when the concerned reaches 50 years and has worked for 20 years, or has subscribed for at least 10 years. There are some economic institutions that may resort to reducing the number of workers or legally dissolve, but before adopting this procedure, there are other measures that affect the social aspect and must be done. Among these measures is the referral of workers, who meet the following conditions to pre-retirement: The worker involved in this procedure is 50 years old, and has worked for 20 years or has participated in for at least 10 years. Contributions are the primary and only source for fund financing, and this is without using the petroleum fiscal rate of 2%.

2.4. Problems of the pension system in Algeria

The retirement fund goes through this critical financial situation because of the imbalance between incomes and expenses, and to enable it to pay the retirement grants in the coming periods, the state must be a subsidy. The deficit recorded in the resources of the National Retirement Fund shown in Figure 01 is primarily due to: pre and relative retirement since the year 1994 which was the date of approval of relative and pre-retirement by the government to face the difficult economic crisis. This means that the Pension Fund has lost a significant number of contributions as an important and pivotal source of funding. (Hajene 2011).

Table 1. The relative and unconditional age retirement number development during the period 1997-2016

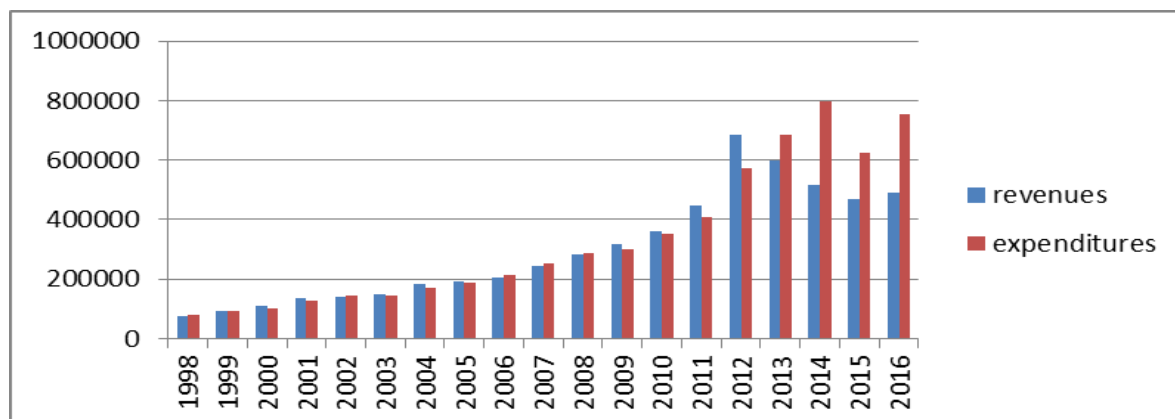
Retirement	Relative retirement	unconditional age retirement	Total
1997	3441	8258	11699
2000	63947	50425	114372
2005	180173	102829	283002
2016	594247	261717	855964

Source: Prepared by researchers based on (CNR, 2017).

Since 1994, Algeria has applied pre-retirement in order to reduce the public sector and fight unemployment by retiring at 50 years old for employees who are about to lay off. In 1997, the relative retirement and unconditional age retirement were applied in order to ease conditions and generalize them to all activists in order to get rid of them and retire before the age of 60 years.

Fig.2. Evolution of revenues and expenditures of pension funds from 1988 to 2016

Unit: one million dinars



Source: Prepared by researchers based on (ONS, 2017)

The issue of demographic growth is very important because it has to do with the workforce, since high population growth often leads to high unemployment rates by increasing the number of new arrivals to the labor market. Since independence, Algeria has witnessed high growth of the population thanks to the improvement of life standards, the spread of health centers, and the provision of medical care. The increase in life expectancy may lead the pension system to pay retired workers' pensions for the coming years with higher percentage, so the workforce represents the first indicator that may affect the pension fund's revenues.

Table 2. Population growth rate from 1985 to 2013

Years\	1985	1995	1998	1999	2000	2009	2010	2011	2012	2013	2014	2015
Growth of population%	3,1	1,9	1,52	1,46	1,4	1,96	2,03	2,04	2,16	2,07	2,15	2,15

Source: Prepared by researchers based on (ONS, 2017)

There is a high percentage of the population ready to retire, and will retire and; thus, the retirement system will face a greater number of retirees in the future due to an increase in life expectancy. This leads to the retirement system to pay higher percentage of retirees' pensions for the coming years, in addition to the proportion of relative and pre-retirement. All of this has led to a deficit in the retirement budget, i.e. expenditures are greater than revenues (Salhi, 2014).

Table 3. Evolution of Life expectancy from 1990 to 2015

YEARS	1990	2000	2008	2009	2010	2011	2012	2013	2014	2015
Life expectancy of males	66,3	71,5	74,8	74,7	75,6	75,6	75,8	76,5	76,6	76,4
Life expectancy of females	67,3	73,4	76,4	76,3	77	77,4	77,1	77,6	77,8	77,8
Life expectancy total	66,9	72,5	75,6	75,5	76,3	76,5	76,4	77	77,2	77,1

Source: Prepared by researchers based on (ONS, 2017)

In light of the current demographic, social and economic challenges, policy makers, administrative organizers and managers of pension systems are discussing strategies to ensure income security of the elderly. Therefore, the main parts involved in the pension sector must review system design, organizational structures, operating procedures, public-private partnerships and financing mechanisms, to make the pension system more effective and achieve the desired goals. Currently, the social protection system cannot achieve its goals without good governance, especially the issue of financial governance which is a central component of good governance. A sound financial management depends on the ability of people to plan, manage and oversee economic pension systems

2.5. Application of the principles of good governance to reform the pension system in Algeria

In order to overcome crisis, the retirement fund must develop a strategic plan to support its efforts in achieving social development that guarantees a decent life for members of society. The strategic plan of the fund consists of a set of main priorities that contribute to achieving social stability for citizens. This plan includes achieving two main goals:

2.5.1 Increasing the provision of pension services through inference from countries' experiences and investing the income of collecting contributions and managing their investments

- **The Norwegian experience:** Norway is a Scandinavian country, and its exports reached about 3 million barrels of oil per day in 2007, which makes it the third largest oil exporter in the world after Saudi Arabia and Russia. In a population of about 4.6 million people, illiteracy rate is Zero, and oil income represents 21 % of Norway's total national income. In 1990, the Norwegian Parliament sought to protect social insurance from deficits and the inability to pay salaries in the future, in order to establish a fund to which all oil and gas sales were transferred, so that Parliament secured a decent income for the Norwegian employee. The value of this fund in April 2007 reached 323.3 billion dollars, and, this makes it the second largest pension fund in the world after the California pension fund (Al-Qasim, 2009).

Norway has succeeded in relying more on saving than spending, and this country considers oil to be a natural resource that belongs to the Norwegian people, but it is also assumed that the younger generations will benefit from it. When the oil fields are depleted, the Norwegians will continue to reap their benefits thanks to the financial gains achieved by the "comprehensive government pension fund". The current retirement age in Norway is 67 years, and there is no option for early retirement within the framework of the national insurance system, knowing that it is characterized by high life expectancy which is 82.1 years old (Bouflih, 2010).

In the context of Norway, we should ask the following question about Algeria: Is it reasonable for the retirement age in Algeria to remain 60 years, while the time the retirement age in Norway reaches 67 years? Should we take a lesson from Norway and avoid the oil wealth addiction?

2.5.2 Protecting the revenues of the retirement fund and activating the role of controlling expenditures

In order to fight corruption, it is necessary to verify the validity of the pension fund budget balances and, hence, achieve the role of effective internal and external monitoring as a tool for good governance.

2.5.2.1 Internal Control in the National Retirement Fund:

The internal control of the National Retirement Fund consists of a general inspectorate managed by a general inspector at the General Directorate and it consists of three 3 to five 5 inspectors. The General Director determines the functions of the General Inspectorate, and its work programs after consulting the Board of Directors, where the inspectors carry out their duties according to the mandate assigned to them to monitor the country's funds. Monitoring can be done by examining a sample of grant and pension files, files of rights holders and professional life files, finding unauthorized work years with a legal work certificate to classify the file, as well as all instruments used by the fund, accounting records, and all bills settled by the treasury or current postal account. They monitor also accounting records and all accounting-related documents.

After that, the inspector records all the notes and deficiencies present at the level of the supervisor. when monitoring is finished, it is necessary to prepare a report from the notes and send it to the director of the agency to be taken into consideration. (Official Gazette No. 42, 2010, p. 7)

2.6. External Control of the National Retirement Fund:

The General Retirement Directorate appoints the external auditor who performs the following tasks:

- He certifies that the annual accounts are regular, correct and in full conformity with the results of the operations of the previous year, with regard to the financial situation, and the property of companies and bodies.
- Checks the validity of the annual accounts and their conformity with the information shown in the management report that the managers provide to contributors, partners, or shareholders.
- Express his opinion in the form of a special report on the internal control procedures approved by the Board of Directors and the directors or the manager.
- Carry out the authentication reports, with or without reservation, on the regularity and validity of the annual documents and their correct picture, or refuse to justify authentication when necessary. (Internal Regulation of the National Pension Fund, 1997, p. 3).

The priorities of the pension system to achieve the strategic plan objectives are as follows :

A. Building a comprehensive pension system: The importance of the pension system lies in being one of the pillars of the main social protection system that aims to achieve social stability and the citizens prosperity. This strategic priority comes as a practical translation of

this importance, which is achieved through a selection of programs under which several projects fall and aim at achieving the governmental goal, which is enhancing social development that guarantees a decent life for members of the society.

B. Financial Sustainability: Financial sustainability must be achieved through an appropriate financing policy and prudent investment management to ensure continued provision of pensions and gratuities to clients.

C. Distinguished retirement services that enrich the experience of the dealers: a distinguished service must be provided, with pension services and retirement benefits that match global levels in terms of quality and efficiency, by working on improving work mechanisms and employing the appropriate systems and staff.

D. Operations and procedures: The fund must be keen on designing and implementing effective and impactful processes, which will contribute to raising the level and quality of services provided to customers, by developing and supporting work procedures, and as much of its operations as possible to enhance productivity.

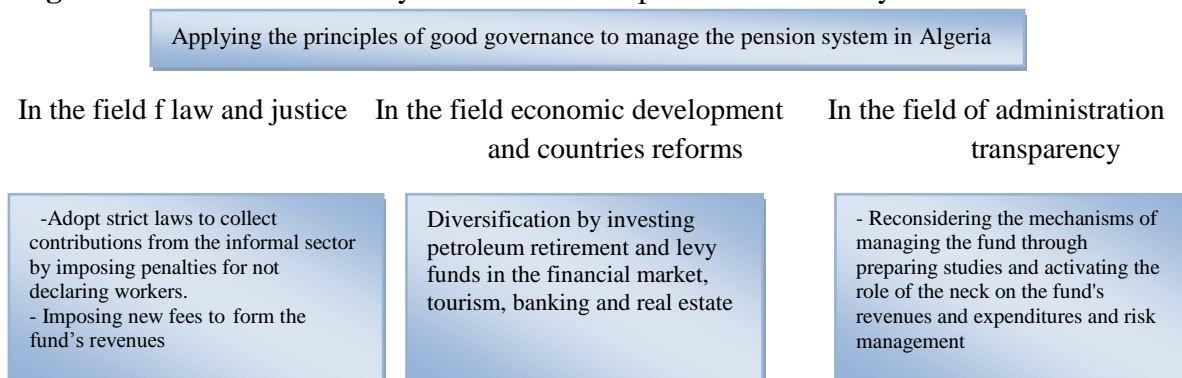
E. Human capital: The fund must work to attract those with professional competencies and develop their skills and capabilities through organized methodologies, and provide them with a physical and moral stimulating work environment to increase work productivity, which contributes to providing high-quality services to customers.

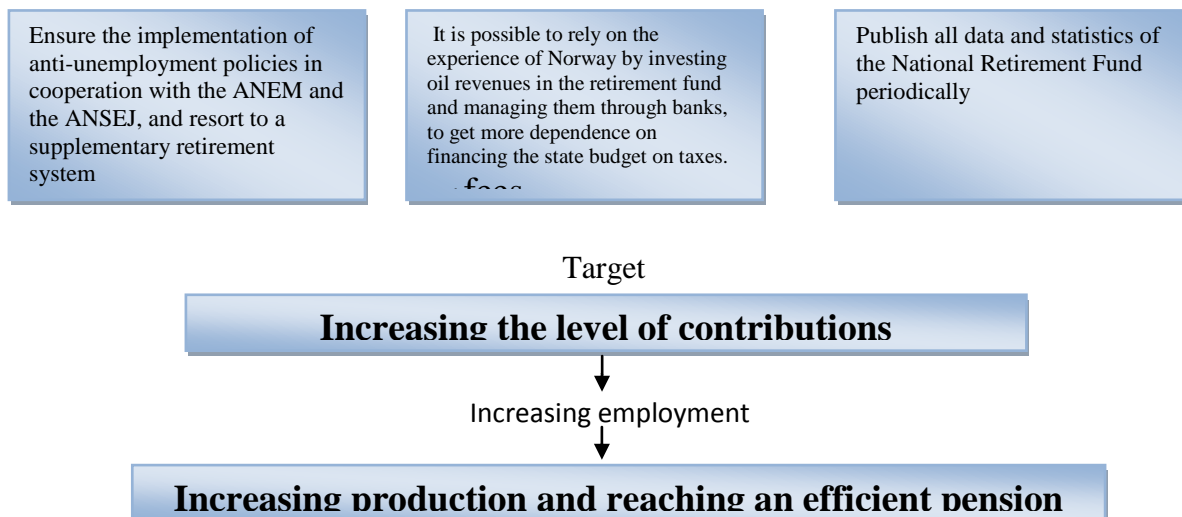
F. Data that supports decision-making: There must be an accurate and reliable data that enables the fund to quickly respond to the requests of each of the partners, and dealers to complete their transactions in a level determined by global standards, through updating the data periodically, and using advanced technical systems that enable them to save and quickly obtain it when needed. This helps in increasing the effectiveness of both business procedures and dealers service.

G. Fundamentals of knowledge and pension awareness: We must develop expertise, skills, information, implicit and clear capabilities available in the internal human capital and work to preserve and publish them, in addition to, promoting the spread of pension awareness among groups of society by enriching the knowledge of dealers with their rights and duties under the retirement law, which contributes to strengthening fund operations and upgrading its services.

H. Financial resources: The financial resources owed to the fund must be collected on time by the control and rationalization of expenditures, which will contribute to the ability of the fund to fulfill future obligations (Akasem, 2011).

Fig.3. An illustrative summary of the relationship between the study variables





3.Axis Two: A standard study of the effect of the employment level on pension fund revenues

3.1.Reserach methodology

In order to assess the efficiency of managing the pension system in Algeria, we used the descriptive approach in the theoretical part by analyzing the critical situation of the National Retirement Fund, presenting the reasons for the budget deficit of this fund, and formulating possible options for financing using the principles of good governance. We have been able to form a strategic plan, using the principles of good governance, through which we demonstrated the most important variables to be taken into consideration and influenced by implementing deep reforms in order to reach an effective and balanced retirement system.

Considering that contributions are the primary source of funding for the National Pension Fund, we will rely in the practical part on the econometric method to study the relationship between the level of employment, and pension fund revenues. Validating the correlation between variables is based on testing and verifying the least squares method hypotheses in order to prove the existence of a clear significant linear correlation that gives a clear mathematical explanation of the deficit which the regime is currently suffering from. We will study the relationship and effect of employment level on pension fund revenues through the data collected in the following table:

Table 4. Evolution of employment and pension fund revenues through the period (1998-2016)

Years	Revenues pension fund (Billion Dinars) R ^{CNR}	Employment (Million persons) EM
1998	76167	26564
1999	90860	22307
2000	109540	22179
2001	135140	23696
2002	141300	27047
2003	148710	39205
2004	183460	57046
2005	190110	65046
2006	204150	96850
2007	244910	125641
2008	284400	319568
2009	317550	456503
2010	360471	471917
2011	445663	872832
2012	683060	504983
2013	599899	457470
2014	671639	479776
2015	668580	487917
2016	705861	488165

Source: Prepared by researchers based on (ONS, 2017)

3.2. Analyzing and interpreting the results of the employment effect on pension fund revenues

The least squares method is applied, and the number of observations starts from 1998 to 2016 based on the Eviews program, the following results are reached:

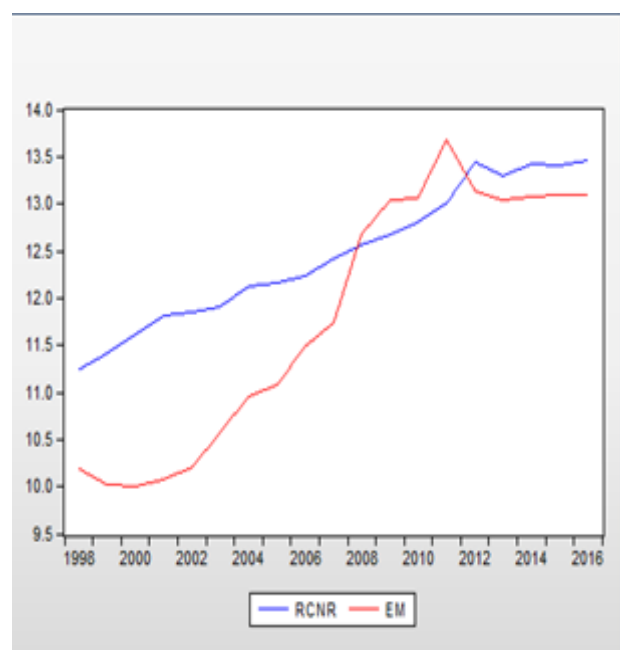
Fig.4. The effect of operating on the revenue fund

Fig.5. The evolution of the retirement budget through the period (1998-2016)

Dependent Variable: RCNR
Method: Least Squares
Date: 04/19/19 Time: 21:33
Sample: 1998 2016
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.543633	0.568725	11.50580	0.0000
EM	0.501718	0.047896	10.47517	0.0000
R-squared	0.865856	Mean dependent var	12.46421	
Adjusted R-squared	0.857965	S.D. dependent var	0.731086	
S.E. of regression	0.275528	Akaike info criterion	0.359048	
Sum squared resid	1.290569	Schwarz criterion	0.458462	
Log likelihood	-1.410954	Hannan-Quinn criter.	0.375873	
F-statistic	109.7293	Durbin-Watson stat	0.630554	
Prob(F-statistic)	0.000000			

Source: EViews 7 Outputs



Source: EViews 7 Outputs

It can be seen from Figure 05 that the probabilities of the variable are significant which means that 0.00 is less than 0.05. We obtained a time series of the variables under study from Table No. 01 where:

EM: represents employment and it is the independent variable.

RCNR: revenues of the retirement fund that represent the dependent variable.

This model takes the following linear formula: $RCNR = 6.543633 + 0.501718 EM$

It appears from the regression relationship that the linear relationship between the two variables is a direct relationship, and it is inferred that employment positively affects retirement. Increasing employment by 1% results in an increase of 50% in pension fund resources, and this is illustrated in Figure 06.

Hypotheses testing of the least-squares method and its credibility

Hypotheses testing was based on a number of statistical tests including R- Squared determination coefficient test, Fischer statistic test F-statistic, significance test, Durbin – Watson self-correlation test, Godfrey Breusch test, and Heteroskedasticity Test ARCH.

- **R- Squared determination coefficient test:** it is considered the most important method to measure the quality of the model, which equals 0.86 in this case. This coefficient indicates the strength of the relationship between the actual values and the estimated values. since the value is close to one, it means that the employment explains the changes that occur in the pension fund revenues with a high percentage. This means that employment explains 86% of the differences that occur in the pension fund, and the rest is within the margin of error.

- **Fischer statistic test F-statistic:** a Fischer ratio has a great value and through probability we find that it is 0.00 which is less than 0.05. This means that the model as a whole is significant, and it is through this test that the validity of the model can be reached to represent the relationship between the dependent variable and the independent variable. For formulating hypotheses, there is:

- The Null Hypothesis: an inappropriate model
- Alternative Hypothesis: an inappropriate model

If we refer to the results of the EVIEWS program, we find that the statistic of Fischer (F statistic) is a significant regression, and this is because $F_{\text{calculated}} > F_{\text{tabulated}}$, Which means that we refuse the null hypothesis and accept the alternative one ; i.e, the model is valid.

- **Significance test :** a test of the significance of the effect of employment on the revenues of the retirement fund. The hypotheses formulation is as the following:
- The Null Hypothesis: Employment has no significant effect on pension fund revenues.
- The Alternative hypothesis: Employment has a significant effect on pension fund revenues.

This is illustrated in the table where we note that $10.47 > 0.0$, and since $T_{\text{calculated}} > T_{\text{tabulated}}$ (Student's table), we accept the alternative hypothesis, i.e, employment has a significant effect on the resources of the retirement fund.

- **Durbin – Watson self-correlation test:** The self-correlation problem is 0.63 which is close to 1 and to confirm if there is a self-correlation problem or not we use the Breusch-Godfrey test.

- **Breusch Godfrey test:** we find that the probability 0.0335 is less than 0.05, that is, there is a self-correlation and the model does not have problem of self-correlation, and it is explained in the following figure:

Fig.6. The results of the Breuch-Godfrey self-correlation problem

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	4.280298	Prob. F(2,15)	0.0338	
Obs*R-squared	6.903532	Prob. Chi-Square(2)	0.0317	
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 05/01/19 Time: 16:59				
Sample: 1998 2016				
Included observations: 19				
Presample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.074384	0.485566	-0.153191	0.8803
EM	0.007273	0.040968	0.177541	0.8615
RESID(-1)	0.644378	0.262145	2.459100	0.0266
RESID(-2)	-0.014174	0.276166	-0.051324	0.9597
R-squared	0.363344	Mean dependent var	-3.68E-16	
Adjusted R-squared	0.236013	S.D. dependent var	0.267765	
S.E. of regression	0.234044	Akaike info criterion	0.118049	
Sum squared resid	0.821649	Schwarz criterion	0.316878	
Log likelihood	2.878538	Hannan-Quinn criter.	0.151698	
F-statistic	2.853532	Durbin-Watson stat	1.789937	
Prob(F-statistic)	0.072405			

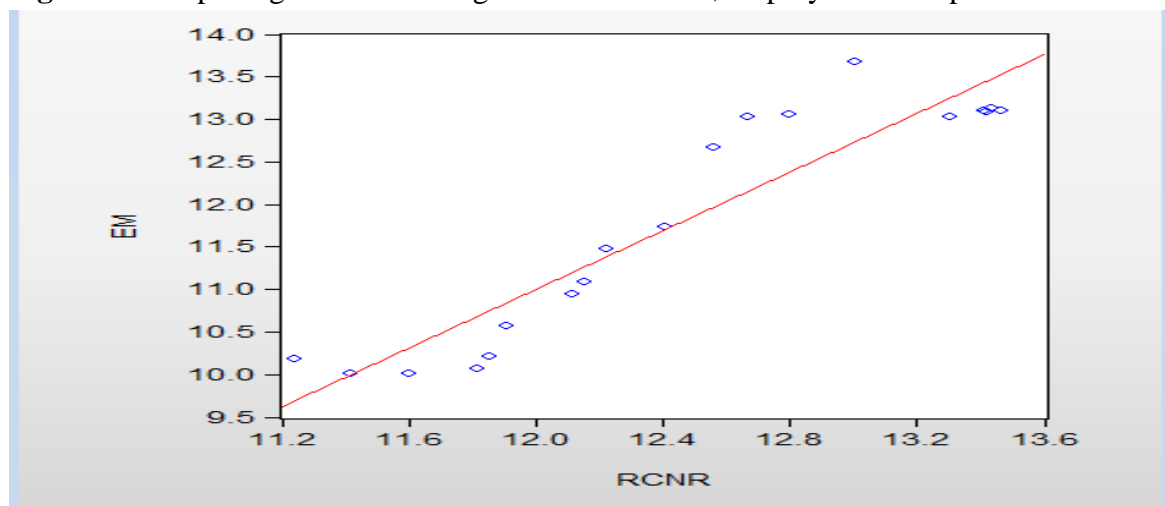
Source: EViews 7 Outputs

Heteroskedasticity Test ARCH: it is the variance Unsteadiness Test and the variance instability problem has given us a result of 0.0514 which is greater than 0.05, which means that there is no problem of instability of variance and the model does not have the problem of variance stability, that is, the model does not have economic problems, which are the problem of self-correlation and the problem of variance instability, as shown in figure 08: **Fig.7.** The results of variance unsteadiness test (Heteroskedasticity test: ARCH).

Heteroskedasticity Test: ARCH				
F-statistic	4.433862	Prob. F(1,16)	0.0514	
Obs*R-squared	3.905748	Prob. Chi-Square(1)	0.0481	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/01/19 Time: 17:04				
Sample (adjusted): 1999 2016				
Included observations: 18 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.033959	0.018152	1.870841	0.0798
RESID^2(-1)	0.435228	0.206693	2.105674	0.0514
R-squared	0.216986	Mean dependent var	0.062171	
Adjusted R-squared	0.168048	S.D. dependent var	0.056965	
S.E. of regression	0.051958	Akaike info criterion	-2.972313	
Sum squared resid	0.043195	Schwarz criterion	-2.873383	
Log likelihood	28.75082	Hannan-Quinn criter.	-2.958672	
F-statistic	4.433862	Durbin-Watson stat	1.358040	
Prob(F-statistic)	0.051381			

Source: EViews 7 Outputs

- **Diffusion form diagram:** We have drawn through the EVIEWS program the best straight line for both variables, employment and pension fund revenues, to clarify the linear relationship between the two variables, and it appears through the diffusion form diagram that the relationship is direct. The higher the employment level, the higher the pension fund revenues raise, so it is a clear statement that indicates the direct relationship between the two variables.

Fig.8. The simple regression drawing of both variables, employment and pension fund revenues.

Source: EViews 7 Outputs

Figure 10: Sketch of residues and their fluctuations during the studied time period

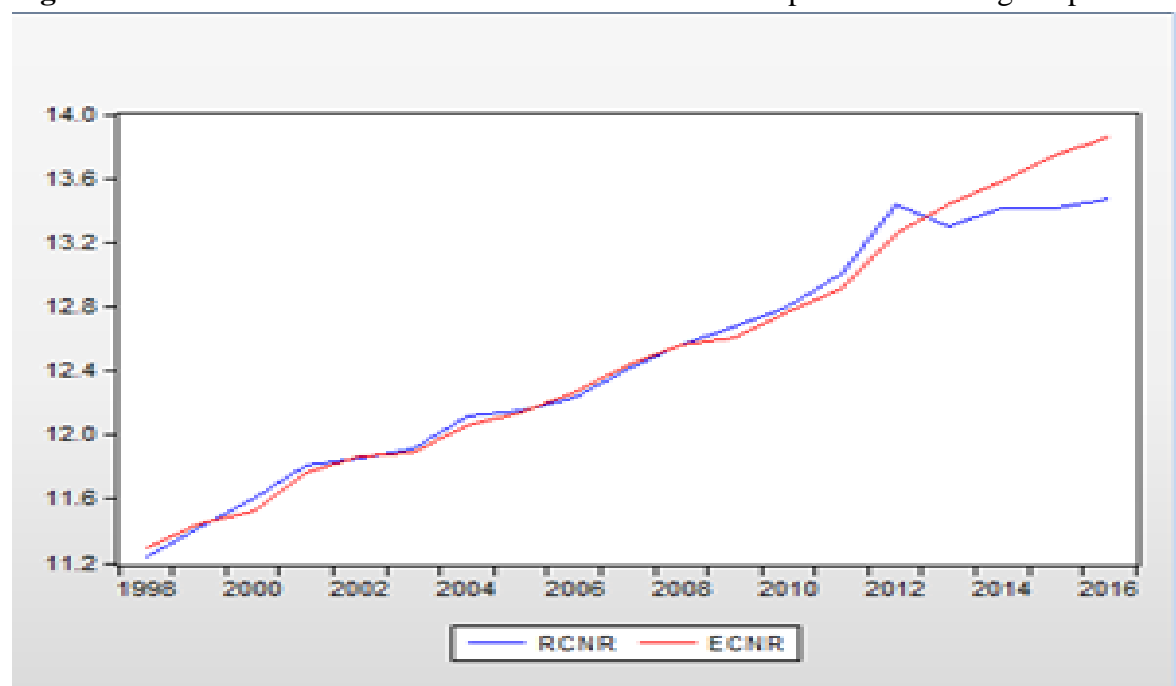
Figure 11: The evolution of the Pension Fund's revenues and expenditures during the period 1988-2016

Fig.9. Sketch of residues and their fluctuations during the studied time period

obs	Actual	Fitted	Residual	Residual Plot
1998	11.2407	11.6548	-0.41411	
1999	11.4171	11.5672	-0.15009	
2000	11.6040	11.5643	0.03977	
2001	11.8141	11.5975	0.21660	
2002	11.8586	11.6638	0.19481	
2003	11.9098	11.8501	0.05967	
2004	12.1198	12.0383	0.08150	
2005	12.1554	12.1041	0.05126	
2006	12.2266	12.3038	-0.07721	
2007	12.4086	12.4344	-0.02575	
2008	12.5581	12.9028	-0.34463	
2009	12.6684	13.0817	-0.41331	
2010	12.7952	13.0984	-0.30319	
2011	13.0073	13.4069	-0.39957	
2012	13.4343	13.1323	0.30200	
2013	13.3045	13.0828	0.22176	
2014	13.4175	13.1066	0.31083	
2015	13.4129	13.1151	0.29783	
2016	13.4672	13.1153	0.35183	

Source: EViews 7 Outputs

Fig.10. The evolution of the Pension Fund's revenues and expenditures during the period 1988-2016



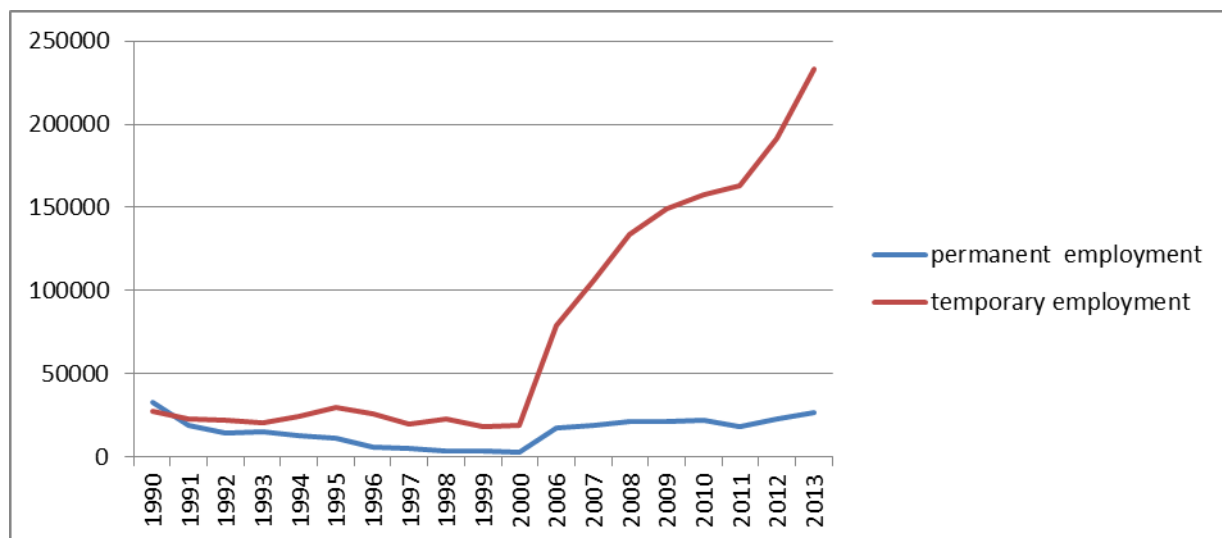
Source: EViews 7 Output

The form of residual drawing or error limits during the studied time period indicates some fluctuations or some problems in some years as they went out of the way where they are allowed to move in 1998 and from 2008 to 2011, at the time that "The economic crisis of 2007 and some disturbances occurred in the economy". and from 2014 to 2016, it indicates some imbalances in the economy during that period, and when the results of the pension fund's budget were dropped, we reached the following explanations:

- Before 1998 to 1999: A large number of retirees were referred to this stage as the relative retirement and unconditional age requirements. Since 1994, pre-retirement has been applied in order to reduce expenditures in the public sector, but the negative repercussions of intensive exit to retirement before reaching the legal age were experienced by the retirement fund during the coming years, because it was an obligation to pay a significant value of pensions and grants in return for a significant decline in the number of contributions. Also, in 1997 the relative retirement and unconditional age retirement requirement was applied in order to ease the conditions and generalize them to all activists, to get rid of workers who retire before 60 years and resort to work contracts for a limited period.
- The period from 2008 to 2011: We find the effects of the economic crisis in 2008, and then the recovery in 2011. Thus, contributions are the main source of funding for the National Retirement Fund without mentioning the percentage of petroleum fiscality that reaches 2% and, thus, the fund's expenses increased against the revenues that decreased.
- The period from 2014 to 2016: Following the return of low oil prices, the budget of the National Retirement Fund went to record a deficit, because of the weak development in oil resources in 2015 compared to the expenses of the fund, Which is increasing at a rate that exceeds the rate of the fund's resources increasing, as it is mentioned in Figure 11.

Considering that contributions are the main source of funding for the National Pension Fund, the development of investments can be observed through the following form:

Fig.11. Evolution of the number of permanent and temporary investments during the period 1990-2013



Source: Prepared by researchers based on (ONS, 2017)

Through this figure, an increase in permanent and temporary employment can be observed starting from 1998, but despite the increase in the number of employment positions, the problem of the pension fund deficit has not been solved. This is also due to the applied employment policy that does not provide permanent employment positions, in addition to being unable to meet the demand of extra employment positions. Most of the employment positions are temporary or pre-employment contracts as DAIP, CTA 1998 that are the most important programs currently applied for integrating young people with university degrees who enter the job market for the first time. DAIP pre-employment contracts do not provide contributions for retirement and; therefore, despite increasing the number of employments, this may not contribute to improving the retirement fund revenues as expected (Shalali, 2004/2005).

Despite the existence of linear significant correlations that shows a clear explanation for the deficit that the system is currently facing, we must verify these figures and the percentage of the deficit achieved through the monitoring of internal and external auditors. Even though Algeria is currently suffering from corruption in many sectors, by applying these principles the fund management can be improved.

3.CONCLUSION

The issue of the management of the pension system as a tool of good governance is a central issue for social and economic development of the country currently, because it represents an effective management of the pension system, by following a set of principles and laws that are legitimate for the system including:

- In the field of law and justice: strict laws can be issued to collect the contributions of the informal sector by imposing penalties for workers non- declaration, and new fees can be imposed and included in the formation of the fund's revenues. Besides, it is important to ensure the implementation of anti-unemployment policies in cooperation with the ANEM and the ANSEJ for a supplementary retirement system.

- In the field of economic development and countries reforms, it is possible to rely on the experience of Norway by investing all oil revenues in the pension fund, and managing them in the long term, and by relying more on financing the state budget by taxes and fees. It can also be diversified by investing pension funds and petroleum collections in the financial market, tourism, the banking and real estate system.

- In the field of management and transparency, the mechanisms for managing the fund must be reviewed through preparing long-term studies, activating the role of risk management, controlling the revenues and expenditures of the retirement fund, and periodically and transparently publishing the data and statistics of the National Pension Fund.

From what was previously discussed, a number of results have been reached and can be summarized in the following:

In theory: By applying the principles of good governance, we can intervene by preparing a strategic plan that includes all aspects of the system in order to reduce the severity of the deficit in the retirement fund and maintain its revenues for sustainable development, and this confirms the validity of the first hypothesis, by applying a set of principles that can influence the level of increasing employment and, thus, improving the efficiency of the pension system in Algeria.

in practice: By applying an econometric study, we were able to judge the degree of influence between the employment variable and pension fund revenues, which is a strong linear direct correlation, and this confirms the validity of the second hypothesis, and, thus, we were able to link between the trends of the level of employment and pension fund revenues, so the effect can be realized through passing a set of monitoring laws and ensure their implementation within the framework of good governance.

Finally a set of recommendations can be presented as follows:

- Inviting the social security institutions to apply the principles of good governance that are based on accountability, transparency in the dissemination of data, the ability to predict and activate the role of risk management.

- Reconsidering and investigating the efficacy of the social protection system, and, especially, verifying if the benefits go beyond their real destination.

- Creating a training center specialized in social security issues.

- Inviting the social security institutions to implement the reforms of the developed countries.

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