The Pension Reform Proposal for Tunisia - the Case of the general NPSIF Scheme

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Abstract
Given the results of population projection indicating an inevitable aging in the coming years for Tunisia, the general scheme of the National Pension and Social Insurance Fund (NPSIF) which operates according to a mode pay-as-you-go enters a very difficult phase. Thus, its financial results are currently in deficit and also that we perform the simulation until the year 2030 show the increase of the deficit in the case of maintenance of its current legislation. For this reason, we propose reform scenarios to alleviate the most possible deficit of the general scheme of NPSIF.
Keywords: pension projections, Pay-as-you-go, aging

Introduction

The Tunisian pension system is complex because that consists of a large number of schemes. The financing of these schemes is based on an ordinary principle corresponding to pay-as-you-go. This principle is assumed to determine the obligations of every present and future generation and by the government to assure the sustainability of the pension system viability.

After independence and until the 90s, the financing of the Tunisian pension system enjoys a favourable demographic help to expand coverage and improve gradually the retirement rights. Indeed, the growth of the labour force during this period contributes to the persistence of the population ratio between contributors and pensioners.

During these last years, the sustainability of pension became an essential problem for the public authorities. The financial problems may get worse because of the demographic transformations such as reduced fertility and longer life expectancy, as emphasized Houssi (2003) and Houssi (2005). This demographic change is not the only cause of worsening of the financial problems. There are other factors such as the deterioration of the economic situation, anticipated retirement; the entry of young people on the labour market is late due to the longer duration of the studies. Our study focuses on the general scheme of the National Pension and Social Insurance Fund (NPSIF) covering the public sector employees.

Our paper is organized as follows. First, we describe the evolution of the financial situation of the general scheme of NPSIF. We turn then to the projection of the state financial scheme showing the gravity of the future situation under unchanged legislation. And finally, we propose reform scenarios to alleviate the possible maximum deficit of the scheme.

The evolution of the financial position of the general NPSIF scheme

The financial results managed by the general scheme of the NPSIF are characterized by several changes since 1990, until our days. To describe this situation, we divide this period into several intervals:

- 1990-1992: the budgetary balance had weak results; on the other hand, a tendency to fall causes a deficit.

- 1993-1998: the overall balance of NPSIF was deficit in the years 1993 and 1994. Subsequently measures were taken to gradually increase the contribution rate of the general scheme and to restrict the cases of voluntary early retirement with the aim of improving the results. Therefore, these measures were awarded until 1998 to improve the results of the general scheme.

- 1999-2000: the results recorded again a remarkable decline during this period and therefore a new deficit appeared in 2000.

- 2001-2005: this period was characterized by the following financial situation:

Table no. 1. Financial situation of the general NPSIF scheme
during the 2001-2005 period

(Unit: thousand dinars)

	2001	**2002**	**2003**	**2004**	**2005**
Income	578953	651606	747298	843631	907865
Spending	591757	666627	737136	825766	920766
Result	(12804)	(15021)	10162	17865	(12911)

Source: Activity Report of NPSIF for 2005

At the successive challenges of pensions in 2001 and 2002, measures were taken regarding the increase of 2.5% of the contribution rate to the general scheme from July of 2002. These measures have improved the financial regime in 2003, but returned again in deficit in 2005, since the evolution of growth rate of the beneficiaries of pensions was higher than that of the evolution in the number of the active members of the scheme.

- 2006-2010: this period knows the following financial situation:

Table no. 2. Financial situation of the general NPSIF scheme
during the 2006-2010 period

(Unit: million dinars)

	2006	**2007**	**2008**	**2009**	**2010**
Income	1067,736	1202,868	1357,622	1527,198	1694,676
Spending	1105,704	1270,292	1385,680	1547,370	1777,700
Result	(37,968)	(67,430)	(28,058)	(20,212)	(83,024)

Source: Activity Report of NPSIF for 2010

During this period, we can see a deficit, but also a slight improvement with the measure applied in July 2007, to increase the contribution rate. However, this improvement is limited because the deficit increases widely in year 2010 to reach 83,024 million dinars.

The financial difficulty of the general NPSIF scheme is due especially to two essential classes of factors. The first is an endogenous factor in the pension system which is explained by the generosity. This notion of generosity can be measured by the level of pension benefits as the level of annual pension developed by Zaidi et all (2006) or the level

of replacement rate as Hachon (2008). The second is an exogenous factor in the pension system, which is explained by the changing demographic circumstances including the decline in fertility and the increase in life expectancy as emphasized Ben Braham (2009).

Simulation of the general NPSIF scheme, horizon 2030
Methodologies and Assumptions

In order to test the financial position of a pension scheme, it must project over time expenditures and revenues in order to determine the evolution of its result. For this reason, in recent years different models have emerged to achieve this type of simulation. The models developed by the World Bank and the International Labor Office are considered the most appropriate. The actually model used here is called PROST "Pension Reform Simulation Toolkit" developed by the World Bank. PROST model allows us to simulate the evolution of financial and demography parameters of the general NPSI scheme. The use of the PROST model helps us first to determine the expenditures and revenues of our general NPSIF system in the next 20 years and secondly, whether our system is viable and sustainable in the short and medium term.

In our paper, year 2010 is taken as a basis for projections. Concerning the projection of the number of active, we assumed that it grows on average 2.5% per year according to the latest statistics of the national Institute of Statistics. For the projection of the pensioners[1], we have based on the statistics of the general NPSI scheme over the last 5 years and therefore, we have assumed that retirees evolves of 4.5% on average per year, widows increase of 4% on average per year and orphans is growing by 7% per year. For the financial projections, we assumed an evolution of the average wage rate of 4.5% per year according to the Tunisian economic context. Also, the pensions of retirees, widows and orphans are supposed evolve at the same rate as the average salary according to the principle of equalization[2] performed by the public sector.

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[1] We take account of these different categories of pensioners because collected contributions are designed to cover the different risks. This means that there is no contribution to each risk.

[2] Equalization allows the pension to revise by incorporating into the base of liquidation. The result increasing in the surcharge is a former permanent part of the remuneration, or an allowance or bonus that the retiree had not seen in his retirement

From the data on the number of assets and the average wage, we calculated the payroll for each year. The latter is multiplied by the rate of contribution respecting the general scheme of CNRPS. To determine the contributions are written the follows:

$$COT_t = SM_t \tau_t L_t$$

where:

COT_t: contributions; SM_t: the average wage; τ_t the contribution rate and L_t: the number of active.

On the other hand, we multiplied each average pension with the relative number of pensioners, to obtain the total expenditure for each category of the general NPSI scheme. Subsequently, we added these different expenditures to the total expenditures of benefits that are formalized as follows:

$$PREST_t = PMR_t \times R_t + PMO_t \times O_t + PMSS_t \times CS_t$$

where:

$PREST_t$: benefits; PMR_t: the average pension of retirees; PMO_t the average pension for orphans and $PMSS_t$ pension average of surviving spouses

Finally, the projection of cash flows comprise firstly the technical result which is defined as the difference between contributions and benefits, on the other hand, the net result is obtained by summing the initial technical result reserves and financial product[3] and by deleting the management fees. These management fees represent a certain percentage of payrolls. They are 1%[4] of payroll. Thus, the nominal interest rate used in the calculation of the financial products is estimated at 5.5%.

Result of projection

The projection of the demographic report showed that the general NPSIF scheme is in a state of maturity since this report would mark a decline during the projection period. Indeed, the number of contributors compared to pensioners regress continuously during the forecast period from 2.87 in 2010, to 2.09 in 2030, as shown in the graph below.

[3] Compensation investments are money market rate
[4] According to the estimation made by the Centre for Research and Study of Social Security in Tunisia.

Figure no.1. A demographic report projection
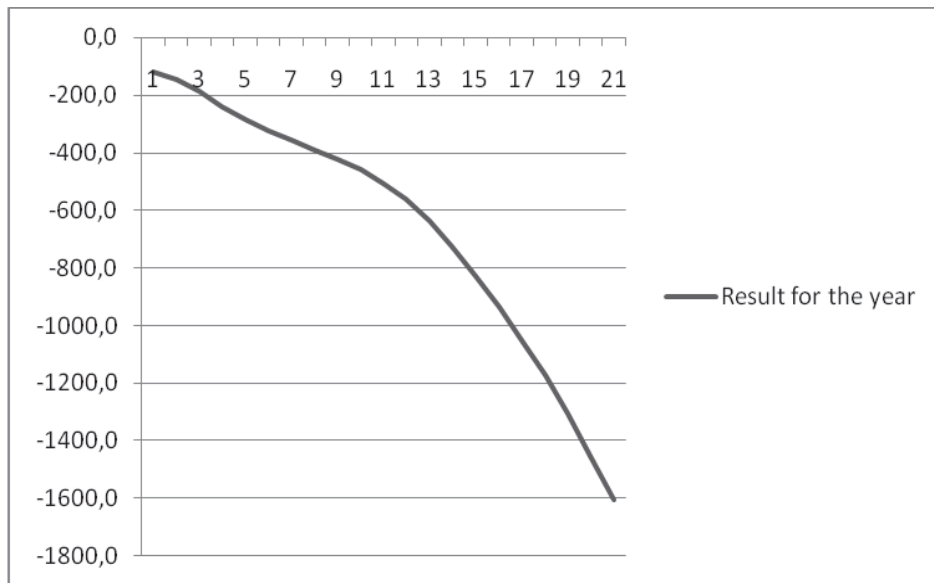of the general NPSI scheme
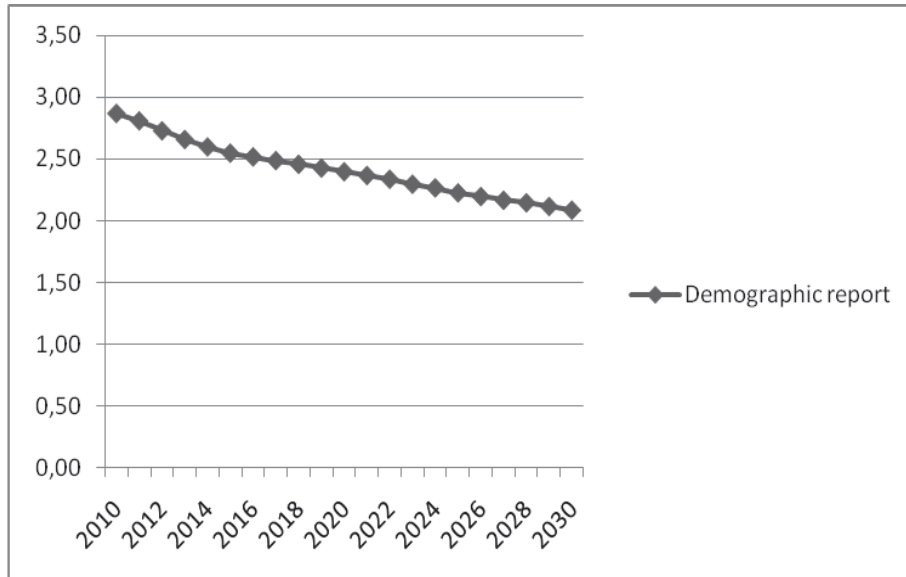
With the PROST model, we simulated the level of contributions and the benefits of the general NPSI scheme based on the assumptions mentioned above. The evolution of the contributions and benefits will follow this pattern.

Figure no. 2.   Projection of the contributions and benefits
of the general NPSIF scheme (millions of dinars)
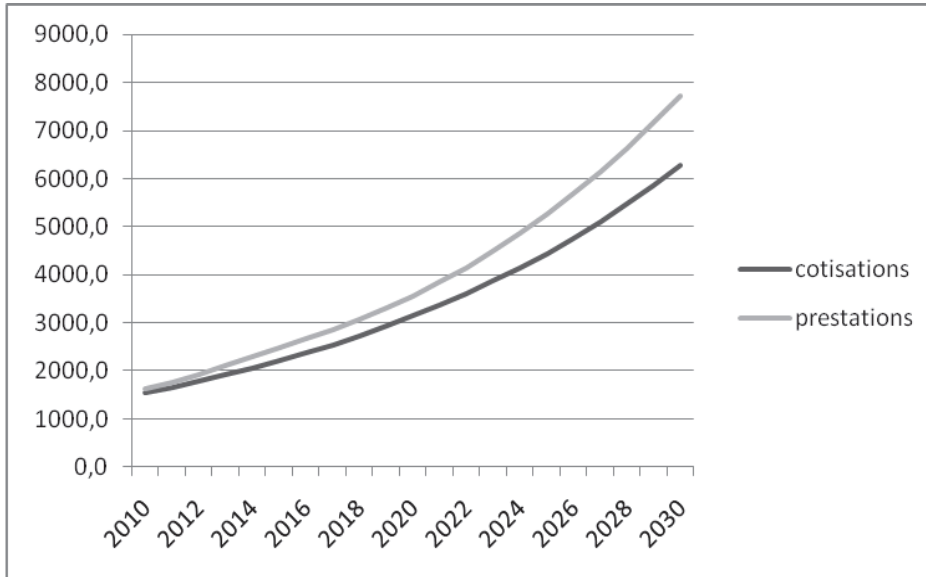
     According to this graph, we noticed that there is a discrepancy between contributions and benefits. Thus, the significant increase in benefits is a cause of simultaneous two variables: the average pension and the number of pensioners that are positively correlated and follow the same trend. The slight increase in contributions is due primarily to maintenance the contributing population growth throughout the projection period. Therefore, this mismatch between contributions and benefits will lead to a deficit in the net result for the projection period, as evidenced by the graph below.

Figure no. 3. Projection of the net result of the general
NPSIF scheme (millions of dinars)

According to the simulation, we found that the general NPSIF scheme have already a deficit in the first year of the projection. Also, this deficit will accumulate from one year to another until the last projection period to reach the value of 1606, 3 million dinars.

Finally, the simulation results in the case of unchanged legislation will prove that this scheme will lead to a complete failure. For out of this situation, it is essential to reform the general NPSIF scheme.

Reform proposal

In what follows, we will simulate various reform proposals to reduce the maximum possible deficit of the general NPSI scheme which visualizes in the context of legislation unchanged along the projection period. During this part, the assumptions are not changed. On the other hand, the reforms that we have proposed start either in 2011 or 2012.

The first reform scenario serves to increase the contribution rate of 1 point, respectively for the year 2012 and 2013 to stabilize the threshold of 19.2% from that date and until the end of our projection period. This type of reform allows increasing contributions without

affecting benefits and therefore helps to reduce the divergence between these two variables. We noticed during the reform period that contributions and benefits will be approximately similar with a slight delay that will begin in the year 2020 (see figure 4). The impact of such measure on the net result of the general NPSI scheme simulations stipulate a clear improvement in the reduction of budget deficit as compared to the net result in the case of unchanged legislation (as indicated in the figure below).

Figure no.4. Evolution of the contributions and benefits after the first reform scenario (million dinars)
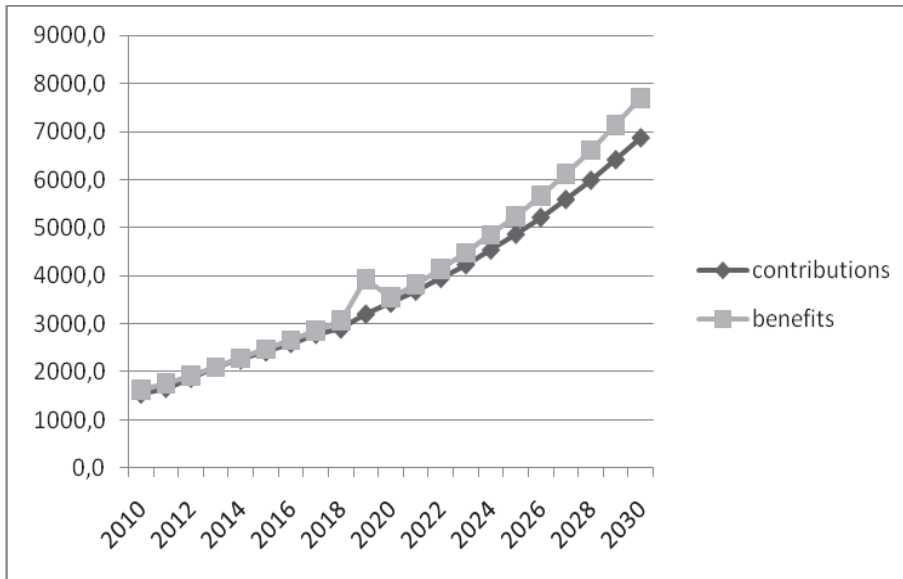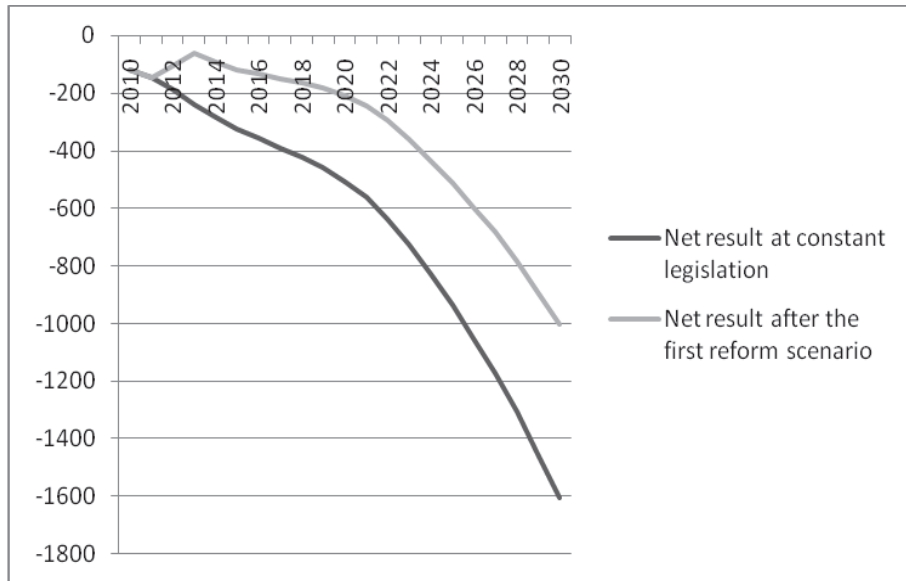
Figure no. 5.   Projection of the net result of the general NPSIF scheme
after the first reform scenario

The second way of the reform is based on the reduction of the maximum pension rate. From 2011, the rate of evolution of the pension is 3%, instead of 4% during the first 10 years and remains 2% for 20 years. In other words, the maximum rate of pension after 30 years work will become 70%, when it was 80%. The benefit of this measure is to curb the increasing level of increase in benefits without being accompanied by a change in the amount of contributions. The simulation will stipulate that this measure will have a greater effect on reducing the amount of deficits compared to the first reform scenario. Indeed, a 70% decrease in the maximum pension will cause a continuously increase in the deficit reduction in the year of reform 2011, until the end of the projection period.

Figure no. 6. Projection of the net result of the general NPSIF scheme
after the second reform scenario
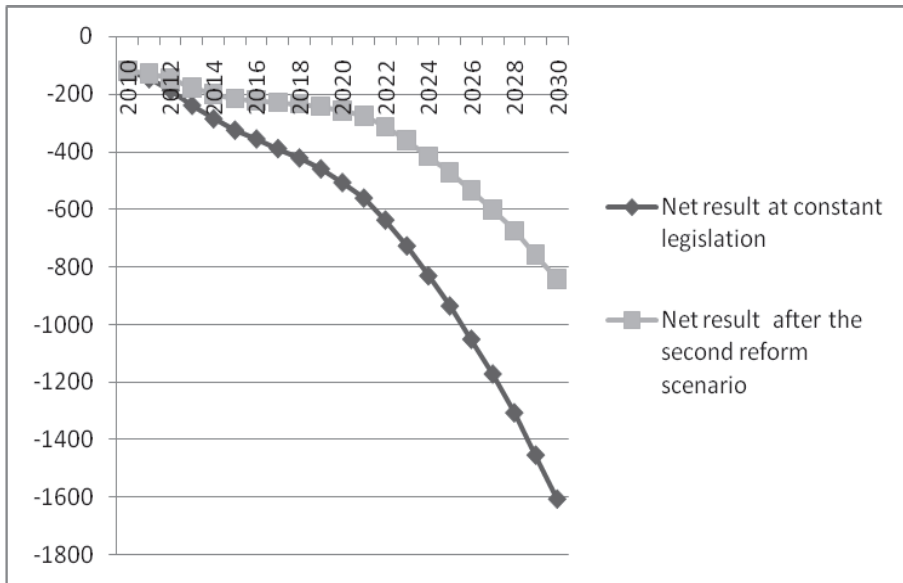
     The third reform proposed to reduce the rate of pension to 2%
per year of anticipation, during maximum 5 years, started with 2011.
This measure is compatible with the current situation which saw our
country following the revolution which emphasizes employment.
Indeed, this measure helps to provide jobs for young people and reduce
the unemployment rate. This reform is totally different from the reform
that encourages the gradual increase in retirement age.

     This reform allows both, to moderate the increase in benefit
levels and to increase the number of contributors, and therefore, the
level of contribution. But, this reform has a less significant impact on
the decrease of the level of deficit in the general NPSIF scheme,
compared to the other two scenarios. The second reform scenario has
the greatest effect on reducing the deficit, as shows the graph below.

Figure 7: The impact of the various proposed reforms on deficit
on the general NPSIF scheme
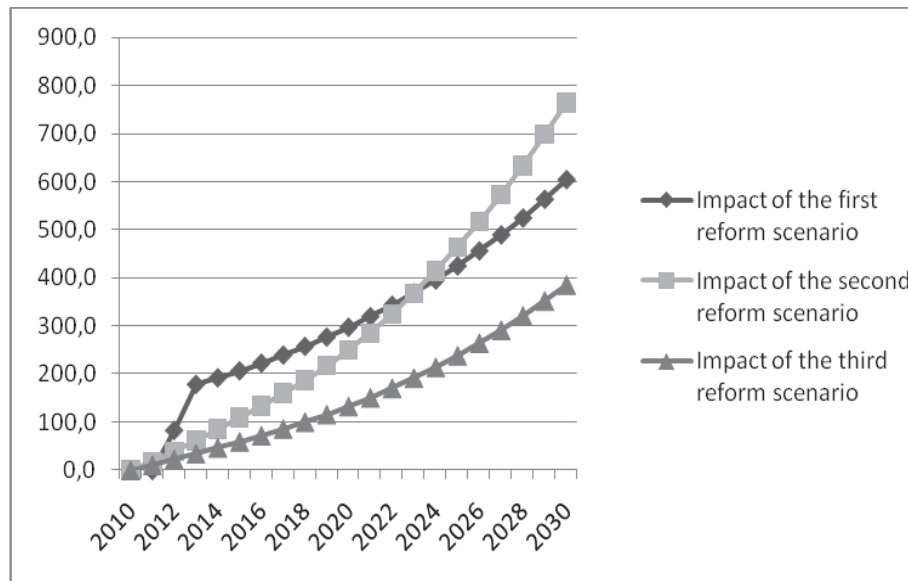
Conclusions

According to the projection of the population results that indicate an inevitable aging for Tunisia over the next years, the general NPSIF scheme which operates in a pay–as-you-go mode risk to enter in a very dangerous situation.

For this reason, we studied the future of the general NPSIF scheme through the PROST model. The projection results showed us that the deficit will accumulate from one year to another until the final projection period, in the case of constant legislation. For this, we considered three parametric type scenarios to alleviate the more possible deficit of the general NPSIF scheme over the projection period.

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