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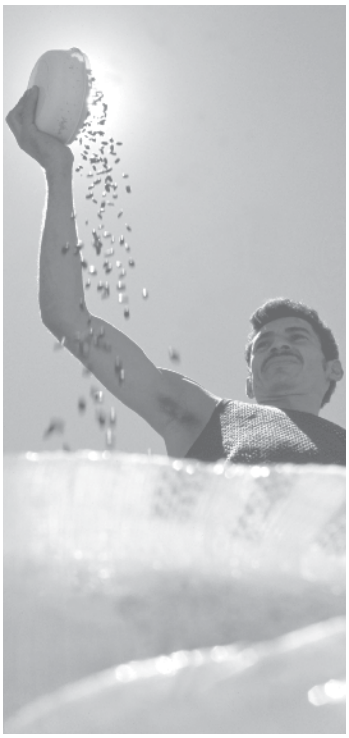
The Greek Pension Reform Strategy

2010–2016

Georgios Symeonidis





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Abstract:

In 2010, Greece, under the pressure of an increasing public debt, was forced to resort to the Troika, which is the designation of the triumvirate comprising the European Commission (EC), the European Central Bank (ECB), and the International Monetary Fund (IMF).

The Troika agreed to provide Greece with financial help, on special terms recorded in a Memorandum of Understanding (MoU) between the Greek Government and the Troika.

One of the most important reforms recorded in the MoU is the Pension Reform since the Greek Social Security System had long showed signs of unsustainability and insolvency.

The reforms implemented had a great positive impact on pension expenditure, which was drastically reduced when projected until 2060. The projected reduction, taking into account all reforms from 2009 to 2015, exceeds 14 percent of GDP.

These fiscal changes are expected to take place under extreme demographic pressure, with both the total population and the working population projected to decline by a good 20 percent and 36 percent respectively, while at the same time pensioners are projected to increase by as much as 30 percent.

Replacement rates were drastically reduced by 40 percent for high earners according to the OECD, while the average contribution period is projected to increase by at least seven years until 2060, reaching almost 38 years in total.

Along with fiscal and demographic effects, one has to also take into account the vicious circle of recession created in the Greek economy. Such was the latter, that one third of contributions were lost in the respective era bringing the amount of contributions to 12 billion euros yearly as opposed to 18 billion euros before the crisis, while at the same time pension expenditure exceeds 24 billion euros yearly.

The recession also caused further impoverishment of old-age people followed by the rest of the population. And this became one of the main reasons that the reforms could not be fully implemented for fear of further impoverishment of pensioners and social exclusion in general, as well as political cost that is always a key factor.

This paper aims to further analyze and present the impact of the reforms on the Greek pension system and the people who rely on it through an actuarial – statistical analysis and point out the changes in the main factors mentioned above and how they correlate.

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I. INTRODUCTION

In 2008, the Hellenic Actuarial Authority (HAA) provided the Economic Policy Committee subgroup, the Ageing Working Group (AWG), with projections for the public pension expenditure for years 2007 through 2060.

Under these projections, a staggering 24 percent of GDP would have to be set aside for public pension expenditure in 2060.

In 2010, Greece, under the pressure of an increasing public debt, was forced to resort to the Troika, which is the designation of the triumvirate comprising the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF).

The Troika agreed to provide Greece with financial help, on special terms recorded in a Memorandum of Understanding (MoU) between the Greek Government and the Troika.

One of the most important reforms recorded in the MoU is of course the Pension Reform since the Greek Social Security System had long showed signs of unsustainability and insolvency.

Then, in 2012, the Greek Government and the Troika, after assessing the fiscal impact of the reforms already implemented, and those which weren't, reached the conclusion that a new interim plan had to be devised.

That plan was the Medium-Term Fiscal Strategy (MTFS), which brought new reforms, new reductions, and an updated fiscal target calendar up to 2015.

Following the plan, on March 9 and April 11, 2012 (based on the legislation they are governed by, Greek of other), the debt restructuring deal via the Private Sector Involvement (PSI) forced great losses on the assets of the social security funds because of a legal connection between them and the Bank of Greece.

The former are obliged to keep a minimum of 77 percent of their assets in Greek Treasury bonds in the Bank of Greece and have therefore lost a huge part of their nominal value because of the PSI.

Stunningly, this was forced by an emergency law passed in 1950 by the King of Greece, Paul I, and still valid at the beginning of this crisis.

It goes without saying, however, that because the credit standing of Greece had been reduced greatly, without the PSI there might have been a total collapse of the economy and therefore the funds' assets might have totally evaporated.

In October 2012, the MTFS was extended in order to cover the period up to year 2016 and the MOU between the Greek Government and the Troika was updated. Finally, the program was extended to 2018 in May 2014.

II. THE SYSTEM LAYOUT

In Greece, there are three pillars to the pension system. The second pillar accounts for Occupational Schemes (IORPS) and the third for Private Insurance. Neither of the two is very popular though, thus the first pillar on Social Security accounts for more than 99 percent of the whole system.

The latter operated as a Defined Benefit Pay-as-You-Go System until recently (DB PAYG) and provided three types of benefits: a main pension, a secondary (auxiliary) pension, and lump sum amounts and provident grants (EKAS). The secondary (auxiliary) pension has now been turned into a Balanced Notional Defined Contribution System (see below under *More Reforms*).

The system used to work on 14-time-a-year deposits. People would be paid 14 times a year, contributions would be made accordingly, and pensions were also paid 14 times a year.

More specifically, the Greek pension system comprises a main pension provision that includes seven social insurance schemes. The latter cover, on a mandatory basis, salaried employees and self-employed persons grouped into certain professions/occupations. Then, there is an auxiliary pension provision that includes a number of social insurance schemes, each of which corresponds to a main social security scheme and runs in parallel with it. Finally, there is a social solidarity grant provision (EKAS), a means-tested scheme that covers residents of Greece, who get no or low income.

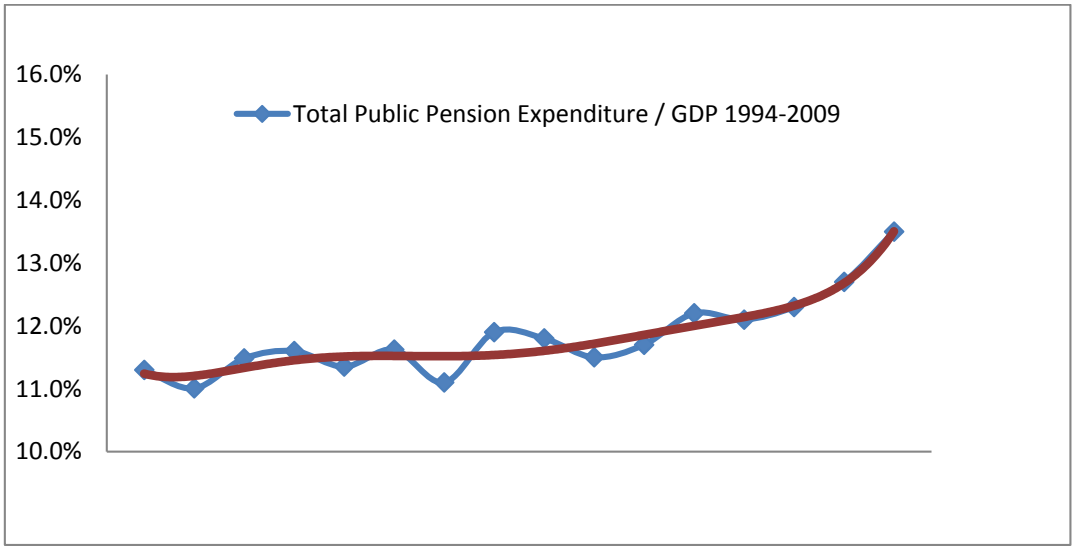
The funds as merged in early 2015 are shown in the table below:

Table 1. List of Main and Auxiliary Pension Funds

	Main Fund	Profession covered	Auxiliary Fund
1	IKA-ETAM	Private sector employees	ETEA (Private & Public sector employees)
1a	TAP-DEH	Public electricity company employees	
2	Public Sector (PS)	Civil servants	MTPY
		Firefighters-Policemen-Air Force-Army-Navy	TEAPASA-MTA-MTN-MTS
3	OAEE	Self-employed	OAEE (on voluntary basis)
4	OGA	Farmers	-
5	ETAA	Lawyers-Engineers-Notaries	ETAA
		Doctors	-
6	ETAP-MME	Media Employees	ETAP-MME
7	NAT	Shipmen	NAT

As regards expenditure, since 1994, the public pension expenditure as a percentage of GDP followed a steadily increasing trend, as can be seen below. This, along with the ageing factor and political inertia as regards reforming the system, were the main reasons, which brought Greece in the fiscal situation of today.

Graph 1. Public Pension Expenditure/GDP for the Years 1994-2009



i. Main Pension Provision

The most important laws, which were applied to the social security system before the latest reform, were 1902/1990, 2084/1992, 3029/2002, and 3655/2008. Each one of them gradually reduced the number of main and auxiliary schemes by merging them. They also unified pension formula and retirement ages (equalized for male and female) for all insured who were employed after 1992.

The new social security system, introduced by laws 3863/2010 and 3865/2010, constitutes the most significant reform in recent years. This reform introduces a new, transparent system to strengthen the link between contributions and benefits and aims at reducing the projected increase in public pension expenditure between 2009 and 2060 to below 2.5 percent of GDP through the gradual increase in retirement age and the application of a uniform pension calculation method among all pension schemes (with minor exceptions in terms of population). At the same time, this reform leads to a significant and substantial correction in the financial course of the social security system over the next 50 years. The new measures apply to the public sector and all primary insurance schemes except OGA (farmers).

Following this reform, other reactive reforms were introduced as the fiscal gap would not tighten in the years after 2010. These were introduced by Laws 4024/2011, 4051/2012, 4052/2012, 4336/2015 and are analyzed in the respective sections.

The main pension schemes are funded mainly by contributions, social resources, and other income sources.

ii. Auxiliary Pension Provision

The auxiliary pension provision began forming in the 1930s, based on the legislation of the main pension provision, which had already come into effect. The employees of many different professions and companies founded several auxiliary schemes in order to amend the income they would be entitled to in the future as well as their pension status. There spawned, therefore, a long list of auxiliary schemes, in which discrete groups of employees would contribute, like electricians, bakers, people working in banks.

As mentioned above, the auxiliary pension provision works in parallel to the main pension provision and is mandatory for most people. The former is financed separately from the main pension from both the employer and employee, while in some cases there is also social funding coming from a source adjacent to the respective employment of the insured in each scheme.

Therefore, the auxiliary and main pension provisions are distinct in the sense of different funding. At the same time, though, they are closely bound together since receiving a primary pension in the respective scheme serves as a prerequisite of receiving the auxiliary pension as well.

The auxiliary pension provision in Greece serves as an extra income of great importance, especially for those receiving main pensions in the minimum rates, and has helped support many pensioners by amending their financial status and subsistence levels.

Nevertheless, the defragmentation of the auxiliary pension provision bore the need of drastically reducing the number of auxiliary pension schemes so that they could be better organized, managed, and financially monitored. Initially, in 1992, Law 2084 unified the pension formula for all people first insured after January 1, 1993 since each scheme had its own provisions until then. Then, the ever-anticipated reduction came in action through Law 3655/2008, which merged and incorporated many of these schemes into newfound ones according to the type of professions of their insured population (Table 1).

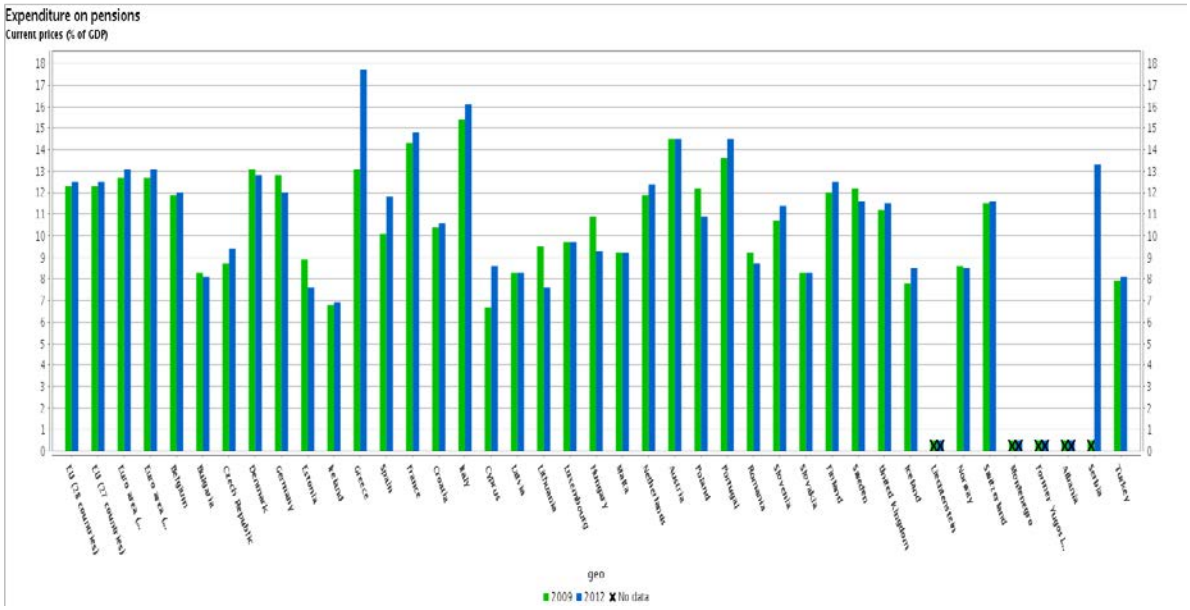
Merging and incorporating helped the organization of the auxiliary pension provision but have not yet resulted in homogeneous IT systems because of the volume of data that was scattered and the different ways these were recorded through different software.

The final and most important intervention came with Law 4052/2012, which initiated a merging process of the main bulk of the auxiliary funds into one large Balanced Notional Defined Contribution System (to be analyzed below).

III. THE GREEK REALITY AMONGST ITS EUROPEAN COUNTERPARTS

As mentioned above, Greece has had its pension expenditure increased and in turn, a fiscal gap was created. Comparing to other countries within the EU, it becomes evident that the pension system in Greece is by far the one that creates a heavy burden on public finances.

Graph 2. Expenditure on Pensions for the EU Countries for Years 2009 and 2012



Source: EC 2015a

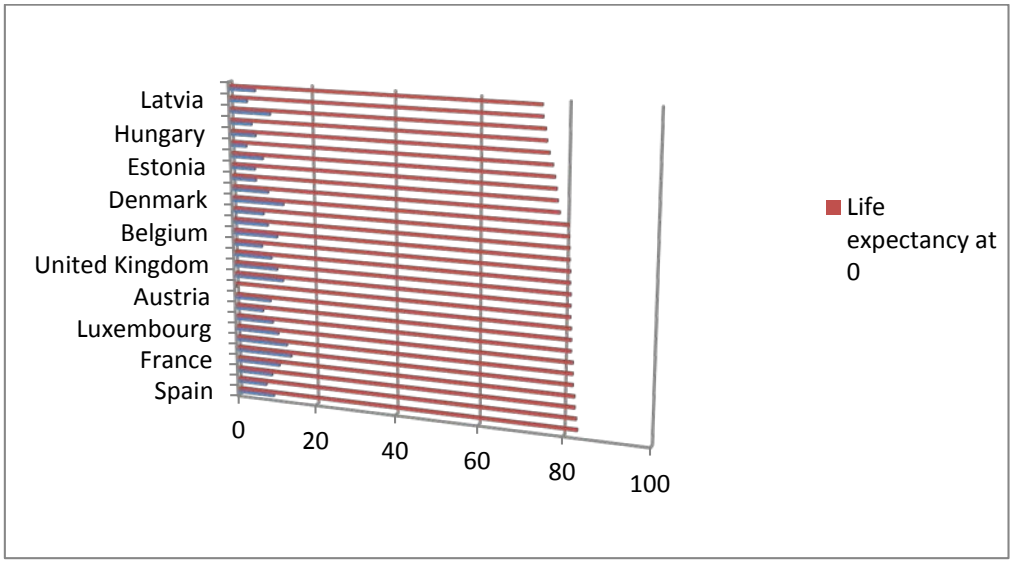
Looking into contribution rates into the public pension system, Greece has a relatively high percentage compared to its European counterparts, reaching 26 percent for both employer and employee and for both the main and auxiliary pensions (EC 2015a).

Table 2. Contribution Rates to the Public Pension System among EU Countries

Country	Employer	Employee
BE	24,77%	13,07%
CZ	21,50%	6,50%
DE	9,45%	9,45%
EE	20% (I Pillar only) / 16% (if participant to Pillar II)	-
IE	Varies	Varies
EL	Main: 13,33% , Aux: 3%	Main: 6,67% (majority) , Aux: 3%
ES	Private sector 23,6%	Private sector 4,7%
LV	20% (if not participant of 2nd tier) or 16% (if participant of 2nd tier)	
AT	between 12,55% and 20% (according to working conditions)	10,25% and 11,75% (according to status)
PL	9,76%	9,76%
SK	Varies according to status and participation to the 2nd pillar	Varies according to status and participation to the 2nd pillar
FI	National pensions: abolished in 2010. Earnings related pensions: from 17,75% to 23,7% (according to sector)	Earnings-related pensions: 5,55% (18-52 years old) / 7,05% (53-68 years old)
SE	9,04%	6,00%
UK	13,80%	Varies according to status and earnings
NO	PAYG system without earmarked tax going to pensions	PAYG system without earmarked tax going to pensions

Greece is also one of the European champions in life expectancy, and this in turn creates a very intense fiscal challenge on public finances, which are driven mainly by the demographic dependency (Eurostat).

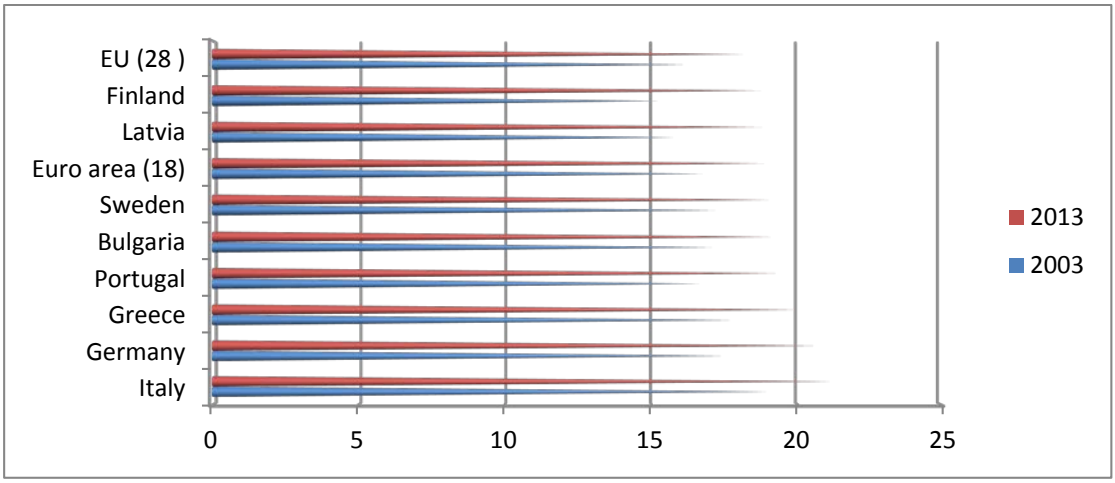
Graph 3. Life Expectancy among Selected EU Countries at Ages 0, 65



This goes hand in hand with an increasing population proportion for people aged 65 or above. Greece appears in the third place among the 28 member states. Towards 2050, Greece will have a lot of centennials in its population and its demographic

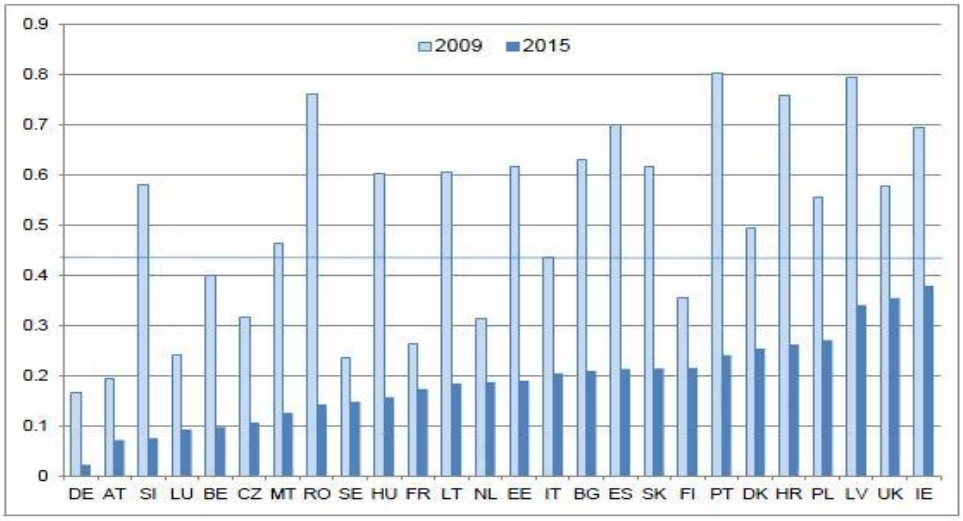
dependency ratio will max and then level off near 2060, reaching however very high percentages (Eurostat).

Graph 4. Proportion of Population Aged 65 and over among Selected EU Countries



In the recent edition of the sustainability report 2015 prepared by the European Commission, one can look at the values for the S0 indicator for the European member states. The S0 is a composite indicator aimed at identifying fiscal risks in the short-term. Greece, like Cyprus, is excluded from the graph, since they are already monitored, with higher frequency, in the context of specific program reviews (Cyprus has left the program in the first term of 2016). Results are reported for all EU countries that are currently not under macroeconomic adjustment programs. It is more than evident from the absence of Greece in this graph and the respective report that its pension system sustainability has not been achieved and is hard to be in the near future.

Graph 5. S0 Indicator among EU Countries



Source: EC 2015b

Further analysis of important indicators is provided in the next chapters of this paper, aiming to analyze the position Greece has established in the European Union after its extensive pension reforms. They can be found in the respective chapters and aim to analyze not only the changes the reforms have brought about for Greece as a member state, but also the relative position it holds in the EU before and after the reforms.

IV. THE 2010 REFORM

In 2010, under the MoU, the social security map changed drastically in Greece.

A new logic was introduced for the main pension. It was divided into two parts—a basic part, which is means-tested and serves as a safety net and is paid 12 times per year, and a proportional part, which is calculated as the product of the accrual rate by the past credits by the pensionable salary.

Accrual rates, formerly varying between 2 and 3 percent, now vary from 0.8 to 1.5 percent, thus reducing the over-generosity of the system.

The statutory retirement age, formerly maxed by 65 but effectively not more than 62, is now legislated to 65 for both men and women. It is also linked to the increase in life expectancy at age 65 from the year 2021, using the decade exactly before that as a reference period.

The indexation of benefits, formerly decided yearly by the Minister of Economy, is now legislated and cannot exceed the Consumer Price Index (CPI).

The full contributory period became 40 years in contrast to 35 years before the reform.

Pensionable earnings used to be calculated on the five or 10 last years of a person's career—most of the times being the ones with the highest wages, thus increasing the amount of pension. The new law requires that pensionable earnings are calculated on the whole career average. Thus, there is a motive for everyone to declare that they are working, which makes the black market reduced, and to declare the real wages they are paid so that their final pension amount is sufficient to cater for their retirement needs.

The public sector also changes and civil servants hired after 2010 will be insured in the same fund as the private sector employees.

All disability pensions are re-examined case by case by a special committee since a lot of false cases had been discovered.

The most important clause in the law, however, is the one that stipulates that between 2009 (provisional public pension expenditure over GDP is 13.5 percent) and 2060 the increase in Greek public pension expenditure must remain under 2.5 percent of GDP. If long-term projections (to be run by the HAA every two years) show otherwise, relevant parameters of the pension system will be changed to bring the increase of expenditure below the targeted threshold. This clause makes the system a self-correcting one and makes it easier for future policymakers to avoid long legal procedures in order to legislate towards the sustainability of the system.

V. MORE REFORMS

In December 2011 a long-awaited revision of the list of heavy and hazardous occupations was made. Aiming at reducing substantially the coverage to no more than 10 percent of the employees, the new list includes almost 30 percent less workers. This was a long-awaited reform for as technology moved on, some jobs like confectioners, janitors, and hairdressers did not belong to this category any more. Its effect has mainly to do with the legislation and thresholds, on which the respective workers retire (more working days needed for pension, higher statutory retirement age).

Then, in March 2012, a vast reform of the auxiliary pensions was legislated. Many of the larger auxiliary pension funds of employees are merged into one (ETEA) and the old Defined Benefit system is turned into a balanced Notional Defined Contribution system, precluding any kind of fund transfer from the national budget. Also, more pension funds can be added in the future upon their contributors' request. The remaining auxiliary funds became *ipso jure* private law bodies (the Greek acronym is NPID) of mandatory insurance, hence a type of occupational funds with mandatory contributions as regards the Greek legislation. There are only four funds that did not merge into the new mega-fund as of the first trimester of 2013.

Under the updated MTFS in November 2012, an extension of two years was legislated on the statutory retirement age, so the latter became 67 years of age in most cases. The statutory retirement age was linked to life expectancy in 2010 and becomes effective in 2021. Life expectancy is expected to increase within the next 10 years in Greece, however, during crises literature states that life expectancy drops so we might not have witnessed an immediate increase in the statutory retirement age, unless reformed in 2012.

The cap of contributions of a large portion of employees was also changed with the above legislation, more specifically for the people first insured before January 1, 1993. These people, having more than 10 years in the market, earn relatively higher amounts than younger people; and thus, this change aims to a significant contribution increase. Needless to say, the market always adapts to such legislation

so it is expected that new agreements will arise so that people avoid the extra cost to any extent that they can.

VI. THE ADMINISTRATIVE REFORM OF 2012-2014

As early on as 2008, efforts had been made to merge the plethora of Greek social security funds (133 at that time) into only 13. The funds were indeed merged but in reality, most of them operated independently, even though they were under a new name. There were many reasons for this. Some of them represented a great difficulty in merging databases and accounting systems, which had been purchased and operated differently by the respective funds. Also, internal clashes between high-ranking officers and further bureaucratic and legal problems made it impossible for the systems to be actually merged. Even in early 2013, some of the merged funds still operated with fiscally independent sub-funds.

As this was realized in mid-2012, and under the intense pressure of the Troika for clarity in the number and amount of paid pensions, the Minister of Labor decided to resolve this problem by using the Social Security Number (SSN – the Greek acronym is AMKA), which has been existing for almost a decade by then but never actually taken advantage of. The Minister of Labor asked that all pensioners be issued a SSN and the computerized systems of all funds have incorporated this number before pensions are being paid. This process took a few months and leveled off in June 2013, when an order was given to temporarily withhold all pension payments for those people who failed to have their SSN issued and reported to the paying pension fund.

The system that spawned from and supported this procedure was named *Ilios*—the Greek word for sun—and intends to shed lights on the Greece's social security system. It led to the first ever full pension statistics report for the Greek public pension system. This report includes gross average income from pensions, an analysis of pension by category, pension amount by 500 euro brackets, an analysis by geographical distribution and by nationality. The report is thereafter prepared on a monthly basis by the Hellenic E-governance in Social Insurance Agency and can be found at its website.

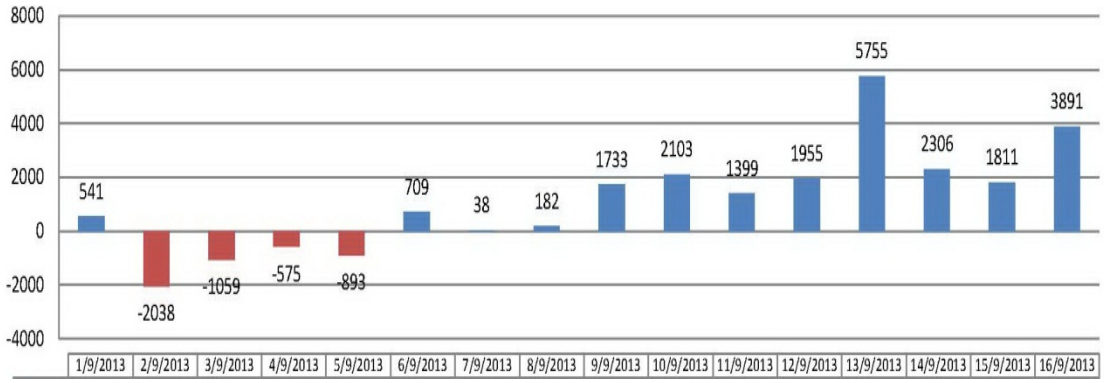
Another important problem to be tackled was the one of the real estate owned by the social security funds. These vary from offices and hotels to hospitals and apartments, from camps to parking spaces, and so on. Having collected all real estate in one dynamic database, where the current values as well as the renting price are systematically updated, it is much easier for these to be managed. In July 2013, the current value of all real estate assets of the social security funds reached almost 1.5 billion euros. It is to be noted that the current value is different in most cases than the market value, with the latter being lower in many cases because of the crisis. The

list of real estate assets will also be used in order to sell or rent a number of the latter. The above information along with many others can be found in the report analyzing the new database named *Estia*, after the Greek word for home.

The Minister of Labor announced in early November 2013 that further cross-checks were imminent, since the estimated contribution evasion for 2013 only amounted to one billion euros. The money earned from contribution evasion would be used—according to the announcement—to avoid further possible reductions demanded by the Troika, so that the fiscal gap of 2013-14 in the pension system could be filled.

In this direction, in September 2013, a plan was devised in order to curtail contribution evasion. A system called *Ergani*, which includes all available data for employees, has been used to cross-check and provide information for employers and employees who avoid paying contributions. The deadline of September 15, 2013 was set for employers to declare all staff before new, very strict fines (10.550 euro fine for every employee found not insured, immediately effective) would be issued to offenders. This action bore fruit and also proved that there are still a lot of uninsured employees in the market. The diagram below proves exactly that.

Graph 6. Balance of New Employments/Layoffs for the First Fortnight of September 2013



Immediately before the implementation of the new measures, new employments minus the number of people laid off have increased acutely. This illustrates that employers show some willingness to abide by the rules in fear of paying a large amount of money for contribution evasion.

The business plan used for the cross-checks and fine imposition has been named *Artemis*, under the Greek Goddess for hunting. From September 15, 2013 until the end of June 2014, 17.281 businesses had been checked and fines worth nearly 25 million euros were imposed. In the next four months, this figure rose to almost 60 million euros.

A center for the collection of all due contributions was introduced in 2014 (KEAO). This includes all contributions due from the past and those owed from then on. The

center will be directly linked to the taxation system, and all due amounts will then be sought and collected via the revenue services. This link will be finalized in 2017. In November 2014, the total amounts due were categorized as in Table 3.

Table 3. Number of Debtors by Range of Debt as of October 31, 2014

Range of debt (€)	Number of debtors	Total debt (€)	Percentage of total debtors by range of debt	Percentage per range of debt
0 - 15.000	*124.754*	*1.200.257.470*	*57%*	*10%*
15.000 - 30.000	*34.943*	*688.891.301*	*16%*	*6%*
30.000 - 50.000	*15.129*	*589.267.962*	*7%*	*5%*
50.000 - 100.000	*27.280*	*1.991.047.897*	*12%*	*17%*
100.000 - 150.000	*8.434*	*1.017.286.738*	*4%*	*9%*
150.000 - 200.000	*2.855*	*491.164.913*	*1%*	*4%*
200.000 - 500.000	*4.838*	*1.468.581.332*	*2%*	*13%*
500.000 - 1.000.000	*1.511*	*1.032.310.318*	*1%*	*9%*
> 1.000.000	*871*	*3.006.778.970*	*0%*	*26%*
Total	***220.615***	***11.485.586.901***		

As it becomes obvious, the amount of money that could go into the social security system through due contributions is very large, almost worth half the pension amount granted in a year. However, as it is common in many countries, the collection of due contributions is a rather difficult and complex task. This is the reason why at the same period of time, only 270.623.729 euros in debt had been collected.

Maybe the most effective tool brought into action was the IT system named *Atlas*. Via *Atlas*, the social security course of each employee within the country has been computerized and released to the employees in two phases—in June 2014 for a smaller portion and at the end of 2015 for all other employees nationwide. Thus, within 2015, a digital "social security CV" will be available for each and every employee in the country and accessible online within seconds. This will make the issuance and granting of pensions by the Single Centre of Pensions immediate, even for the most complex cases of successive insurance.

Another important step in the managerial direction is the adoption of a very large project funded through European programs, which will lead to the codification of a total 5.436 laws, decrees, ministerial decisions and other legal texts so that time for people to access and understand them is significantly reduced.

In other administrative actions, in July 2014, the reduction of contributions for both employers and employees was decided, so that a combined 3.9 percent of wages

returns to them. This measure was decided so that employees are alleviated of a small amount of money that does not go to either pension or health and employers have larger incentives to hire people because of lower costs. The effect of this measure has been proved to be negative, as collected contributions were not as many, and at the same time employers did not see the green light to hire people with the sheer incentive of a contribution reduction.

Finally, at the very end of 2014, a new system was introduced with the aim to shed light on enterprises that are consistent with their obligations to the social security system. According to the Minister, this will help by putting pressure on the ones that do not provide for their employees and thus separate the prosperous enterprises from the ones that fail to pay their dues.

New administrative changes had been planned for fall 2014 based on a report produced by the Centre of Planning and Economic Research (KEPE). The main idea behind them were to further reduce the number of funds from 13 to only three, thus cutting the administrative costs, along with other changes which were not implemented following the negotiations with the Troika and the election announcement in December 2014. One of the direly needed reforms from the ones proposed according to the writer would be the unification of the SSN and VAT numbers, as this would help break new ground in cross-checks between social security contributions and tax evasion.

VII. REDUCTIONS

The cash-flow shortness in the Greek Economy soon led to a need for pension reductions, which began in 2010 and are permanent, except for the age-related ones.

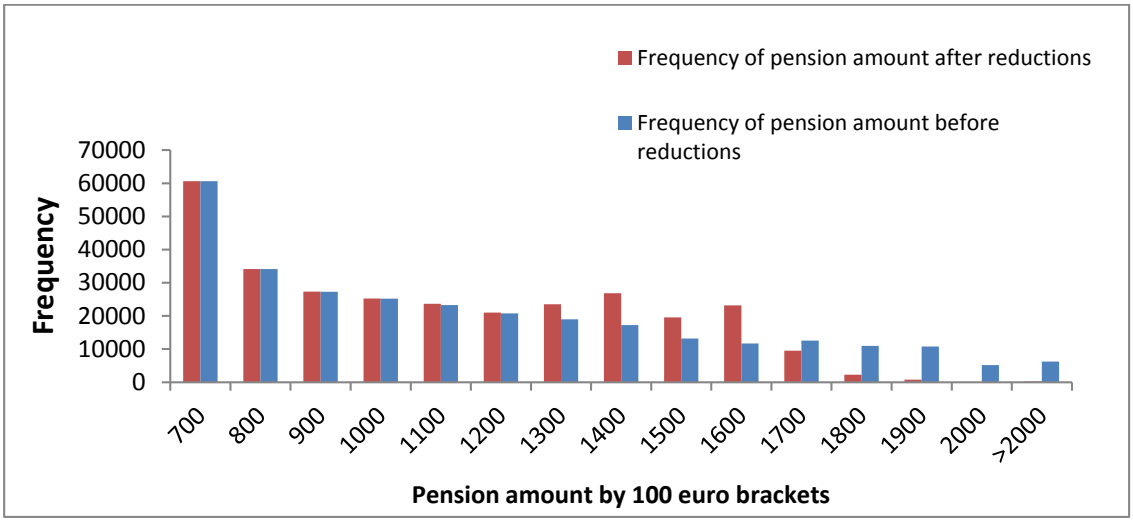
At the same time, people who had retired very early comparing to the statutory retirement age and who had their pensions calculated on the generous accrual rates ranging from 2 percent to 3 percent were called in to return parts of their pension. These amounts of money were redirected to the Intergenerational Solidarity Capital, founded in 2007, or the respective funds' budgets.

Main pensions were reduced as much as 20 percent for the normal retirees and as much as 40 percent for the very early ones in each of the reduction rounds, of which there are now 12—not all applicable to everyone. Auxiliary pensions were reduced accordingly. In order to retain the social character of the pension system, however, reductions were not implemented on very low incomers or ones with disability or disabled family members.

The consequent reductions caused large pension amounts to become scarce and shifted them towards the average. For example, in the most populated fund—that of

private sector employees—looking into December 2012 pension amounts (which do not include all of the rounds of reductions as the last round was implemented later in 2013) as opposed to the ones before the reductions, one can see the pattern mentioned before. In the following graph, pension amounts of less than 500 euros have been omitted so that the point is clearly made.

Graph 7. Frequency of Employees' Pension Amounts by 100 Euro Brackets



Source: Author calculations based on social security data

To go on, under the updated MTFS in November 2012, lump-sum amounts were reduced for the first time with percentages ranging from 2 percent to 83 percent and a further reduction of 35 percent possible with a ministerial decree. The reason for this was that people had been getting their lump sums for decades now based on certain formulas, without the fund always receiving the actuarial equivalent since this was a defined benefit system. Thus, as was the case in both the main and auxiliary pension, the previous generation received very large amounts, which were backed by the demographic and fiscal situation of that time, and left the current retirees and the next generation with nothing but deficits.

Furthermore, the criteria for the Pensioners' Social Solidarity Benefit (EKAS) have been made stricter. As a result, about 5 percent of the beneficiaries lost their right to this benefit in June 2013. This was the result not only of the stricter provisions, however, but also of the newly adopted computerized system that recalculated all the pensions per person in June 2013. The latter made it possible to cross-check the total amounts declared by pensioners throughout all the social security funds and types of pension.

In another aspect of reductions, people of the previous generation are called in to return some of their pension amounts either because they retired earlier than they should have or because their pension is actuarially over-generous. This is done to

promote intergenerational fairness but there is question about whether retrospective reductions to people already retired are legal in a defined benefit system. Looking into this question is beyond the scope of this paper and has been analyzed further in another publication of the author.

Further on, indexation was frozen for five years (2010-2014) and the tax allowance (personal exemption) was reduced by a quarter, from 12.000 euros in 2011 to 9.000 euros in 2012 for normal pensioners. For income acquired from pensions in 2013 and 2014, total abolishment of tax allowance was applied for all employees, freelancers, and pensioners. A small bonus based on proven purchase of goods of a given amount is provided.

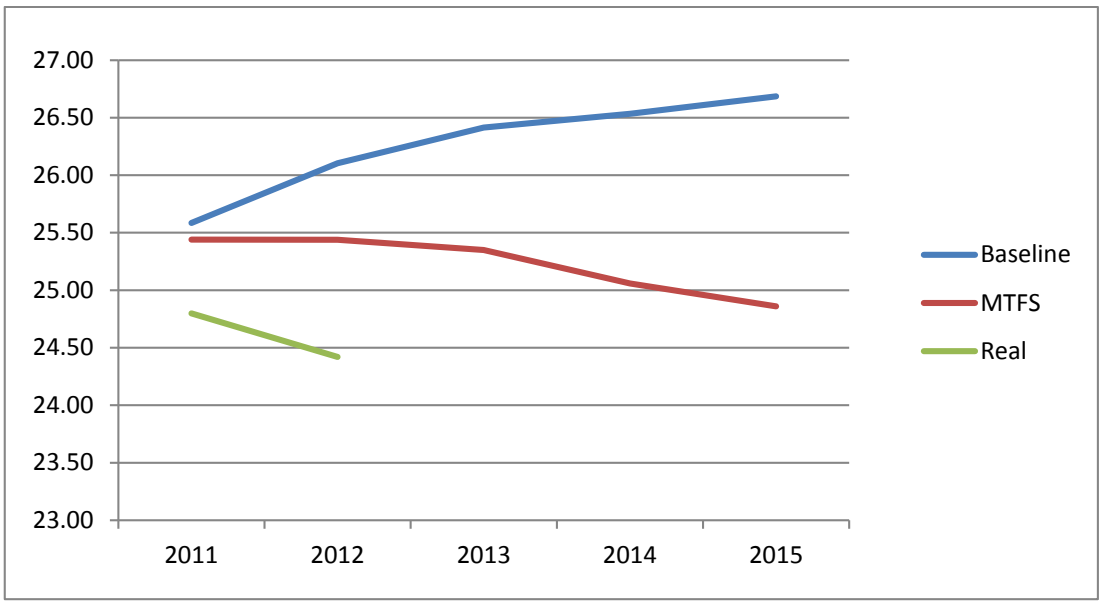
Following the horizontal cuts in social security, came the actual implementation era for most of the laws which included a transitional period. Hence, even though new cuts were not imposed, there were still some nonetheless. In July 2014, the newfound BNDC auxiliary fund ETEA, reduced pensions by 5.2 percent based on the calculation of the sustainability factor.

An interesting fact about the newfound legislation and its appeal to people is that when somebody visits the Daily Gazette website, they will find that the issues of reductions are in fact the ones with the most hits since September 2012. The pension reform of 2010 still remains in the top ten after almost four years.

VIII. THE RESULTS OF THE REFORM IN TERMS OF SUSTAINABILITY

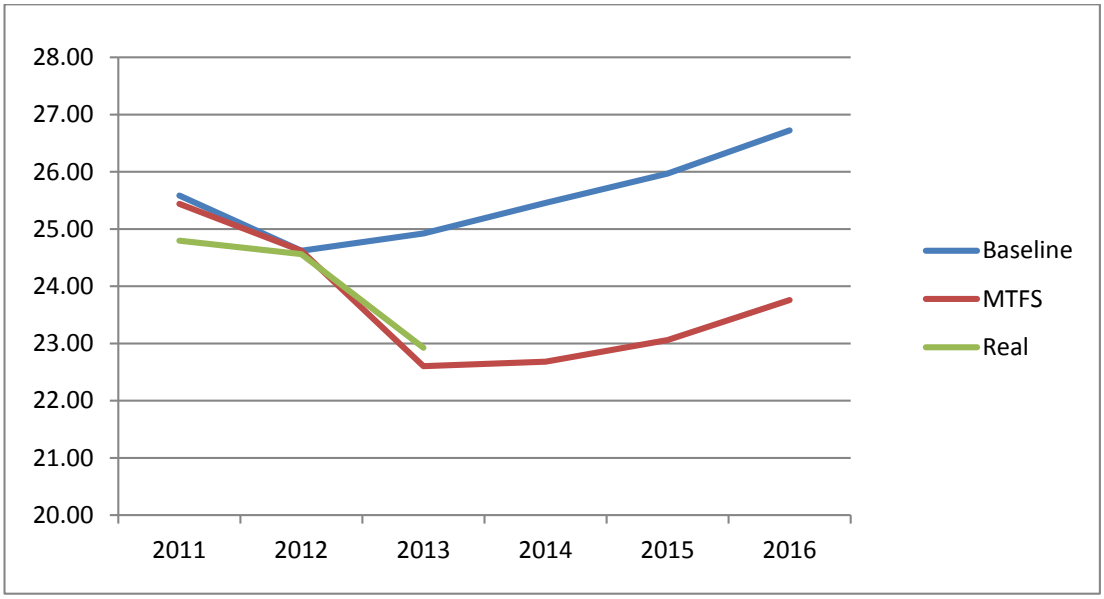
With the implementation of the reforms of 2010 and on, the short-term public pension expenditure was curtailed in absolute numbers and remained under the targeted thresholds set by the MTFS until the end of 2012, while it slightly exceeded the targets set later, under the MTFS 2012-2016. This also happened in the new MTFS. Below, one can see the expenditure predicted before the MTFSs, the target amounts set by all MTFSs and the ones realized.

Graph 8. Public Pension Expenditure in Billion Euros under the Medium-Term Fiscal Strategy (MTFS) 2012-2015 (July 2011)



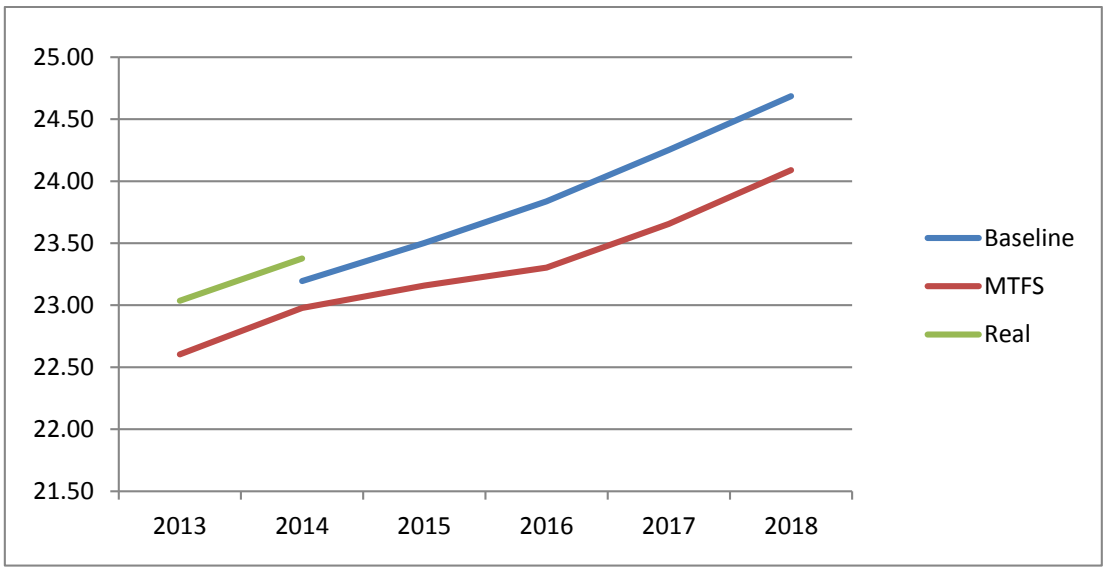
** 2012 projection is based on 8-month real data*

Graph 9. Public Pension Expenditure in Billion Euros under MTFS 2013-2016 (November 2013)



** 2013 projection is based on 8-month real data*
***2011 figures are taken from the MTFS 2012-2015*

Graph 10. Public Pension Expenditure in Billion Euros under MTFS 2015-2018 (May 2014)



Because of the debt restructuring deal there has been an 8.3 billion euro loss in nominal value of the bonds. As regards their market value, this will fluctuate and only at the time of selling will we be able to exactly calculate the loss anticipated. However, in this time of cash flow shortness it is very probable many of these funds have to liquidate part of their assets in order to provide for pensioners, hence causing an actual, sizeable loss. Unfortunately, this has been a drawback in the otherwise positive outcome of the Greek debt restructuring, and will probably pose a threat later on in the system.

Sadly, exactly the same thing happened to individuals who have trusted the Greek treasury bonds for their savings. Many measures have been proposed to balance this loss, like tax reductions. However, none of these have been legislated yet. The only light at the end of the tunnel is the fact that, if and when the Greek economy rebounds, the Greek treasury bonds will gain back a lot of their nominal value.

In the long-term,[1] the fiscal impact of the 2010 reform seems to be alleviating the budget from a great deal of public pension expenditure. The Hellenic Actuarial Authority presented actuarial valuations for the Greek public pension expenditure for the years 2007 to 2060 in 2008 and for the years 2010 to 2060 in 2011. These were included in the 2009 and 2012 Ageing Reports respectively. Results for the upcoming 2015 Ageing Report have also been provided. In the first case, as can be seen below, the increase in public pension expenditure would have been 12.4% percent of GDP, leading as mentioned before to 24 percent of GDP for public pensions in 2060. In the second valuation, however, the projected increase amounts

[1] Long term projections are based on the results provided for the Ageing Reports 2009, 2012 and 2015. For the Greek projections the ILO cohort model has been used (see Appendix 1).

to only 1 percent of GDP. Ultimately, results for the base year 2013 show an inverse trend for the public pension expenditure, which is reduced by 1.9 percent when projecting to 2060.

Table 4. Greek Public Pension Expenditure to GDP, as Reported in Ageing Report 2009, 2012, Greek Country Fiche 2015

Year	Change in public pension expenditure to GDP
2009 (2007-2060)	12.4
2012 (2010-2060)	1.0
2015 (2013-2060)	-1.9

This result also puts Greece in a slightly better position than the average of the EU states and the states of the Euro area, as can be seen for the last projection round. The same result is anticipated for the current projection round.

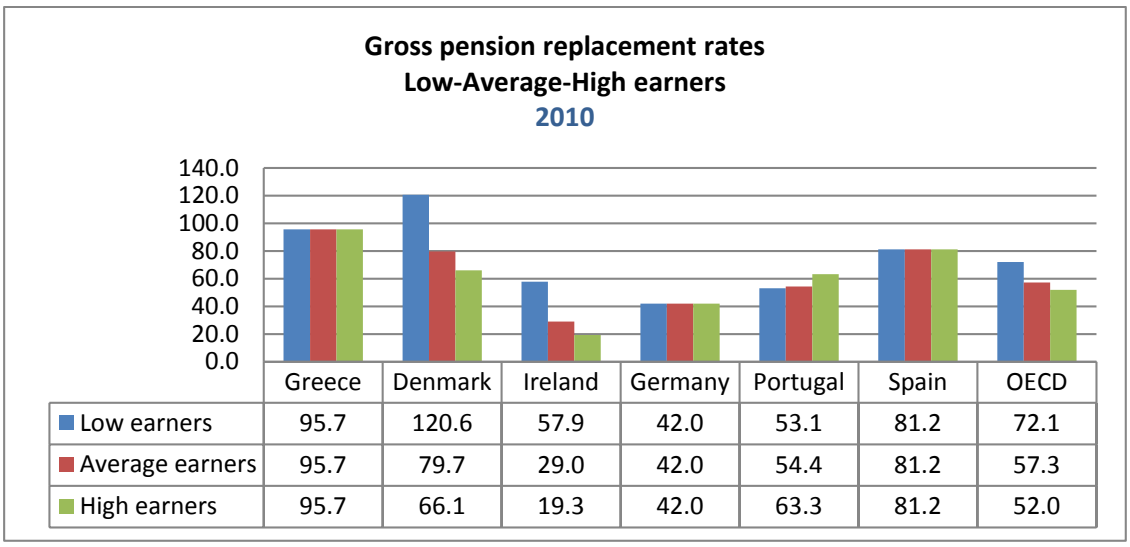
Table 5. Comparison between Greece, EU and the Euro Area as Regards Changes in the Public Pension Expenditure to GDP per Decade

Expenditure	2007/10/13	2020	2040	2060	Change 2007/10/13-2060
Greece 2007	11.7	13.2	21.4	24.1	12.4
Greece 2010	13.6	13.7	14.9	14.6	1.0
Greece 2013	16.2	15.5	14.1	14.3	-1.9
EU (2010)	11.3	11.3	12.6	12.9	1.5
Euro Area(2010)	12.2	12.3	13.9	14.1	2.0

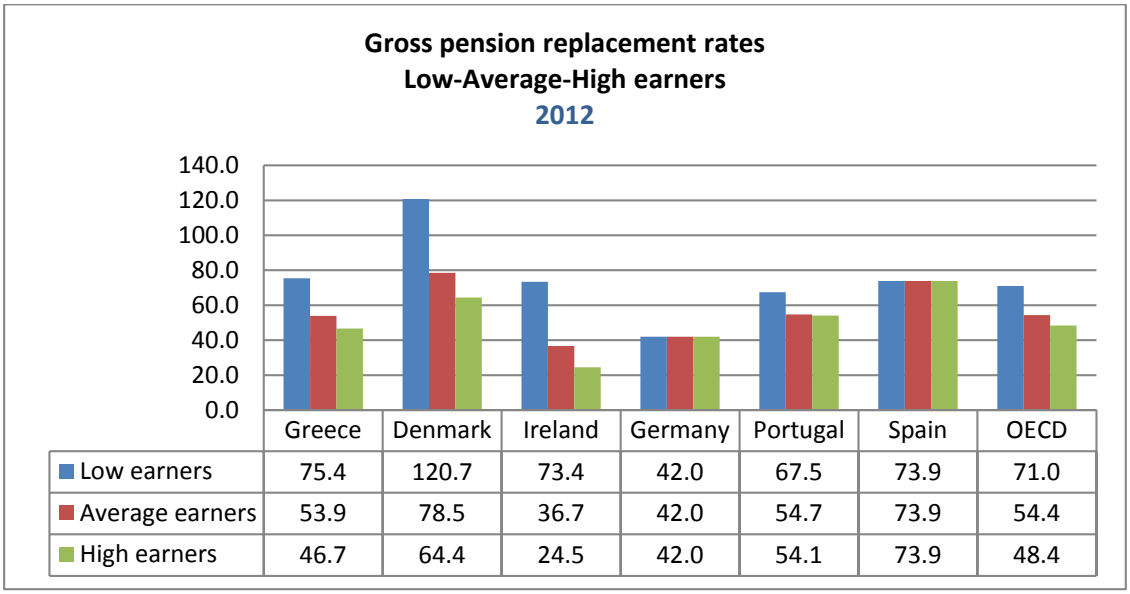
Regarding the gross average replacement rate for Greece, this used to be at a constant level of just under 100 percent across all earnings levels before the reform (Graph 7). A replacement rate of 100 percent implies that the first pension of the retired was almost as much as their last wage. This meant that the importance of the last years of contributing was unequally important to the rest of the years in one's career.

After the 2010 reform, lower replacement rates apply for all people, however, special provisions to protect lower earners from old age poverty in years to come have been incorporated (Graph 11).

Graph 11. Gross Average Replacement Rates for Greece and Selected Countries, in 2010 and 2012



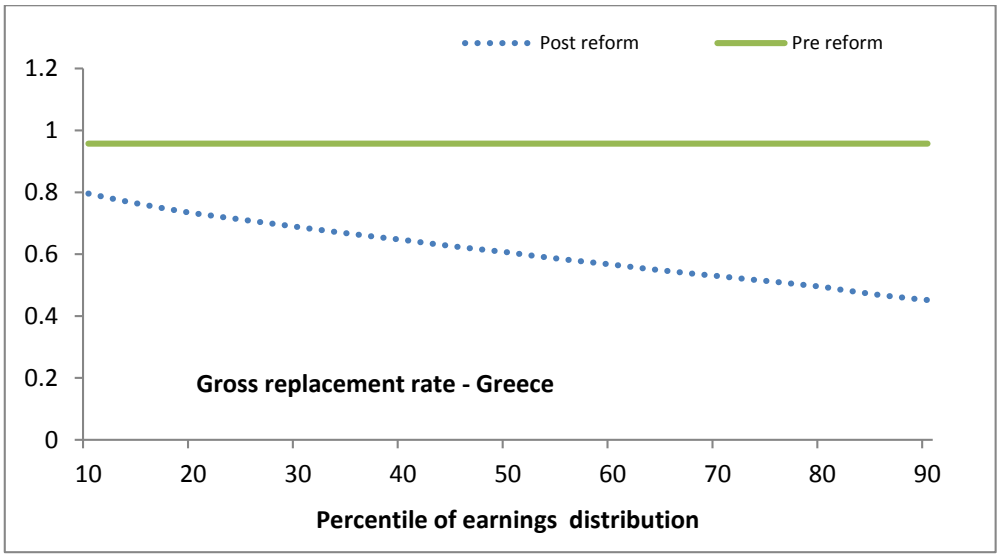
	Greece	Denmark	Ireland	Germany	Portugal	Spain	OECD
Low earners	95.7	120.6	57.9	42.0	53.1	81.2	72.1
Average earners	95.7	79.7	29.0	42.0	54.4	81.2	57.3
High earners	95.7	66.1	19.3	42.0	63.3	81.2	52.0



	Greece	Denmark	Ireland	Germany	Portugal	Spain	OECD
Low earners	75.4	120.7	73.4	42.0	67.5	73.9	71.0
Average earners	53.9	78.5	36.7	42.0	54.7	73.9	54.4
High earners	46.7	64.4	24.5	42.0	54.1	73.9	48.4

Source: OECD 2011, 2013

Graph 12: Gross Replacement Rate for Greece before and after the Reforms



Source: OECD 2013

Looking at the above graph, it becomes evident that the reform offers lower earners relatively better protection in terms of replacement rates and consequently pension benefits. The gross replacement rate is about 75 percent for the lowest earners and 45 percent for the highest earners at the 90th percentile. This is translated to considerably lower returns for those in the top quarter of the earnings distribution, the highest earners.

In general, successive pension reforms led to the acknowledgment that employees entering the work force today will receive lower future pension entitlements than previous generations. In Greece, according to latest legislation, statutory retirement age is linked to the evolution of life expectancy from 2021 and onwards. The additional years that an employee will work will increase one's pension entitlement but will never reach the level it would have been before reforms had taken place.

On a different definition of the gross average replacement rate[2] used by the Ageing Working Group, the reform reduced the former by as much as 20 percent, reducing the over-generosity of the system. Since the whole working career is taken into consideration under the new legislation, the replacement rates become smaller in

[2] The gross average replacement rate at retirement as used in the AWG projections is the ratio of the first pension of those who retire in a given year over the average wage at retirement. The (economy-wide) average wage of old people at their retirement usually differs from the overall economy-wide average wage, unless a flat wage profile over the entire working career is assumed in the projection exercise.

the first decades and then the phenomenon levels off as the whole career average becomes the norm in calculating the pension.

Table 6. Gross Replacement Rate of Social Security Pensions (in %)

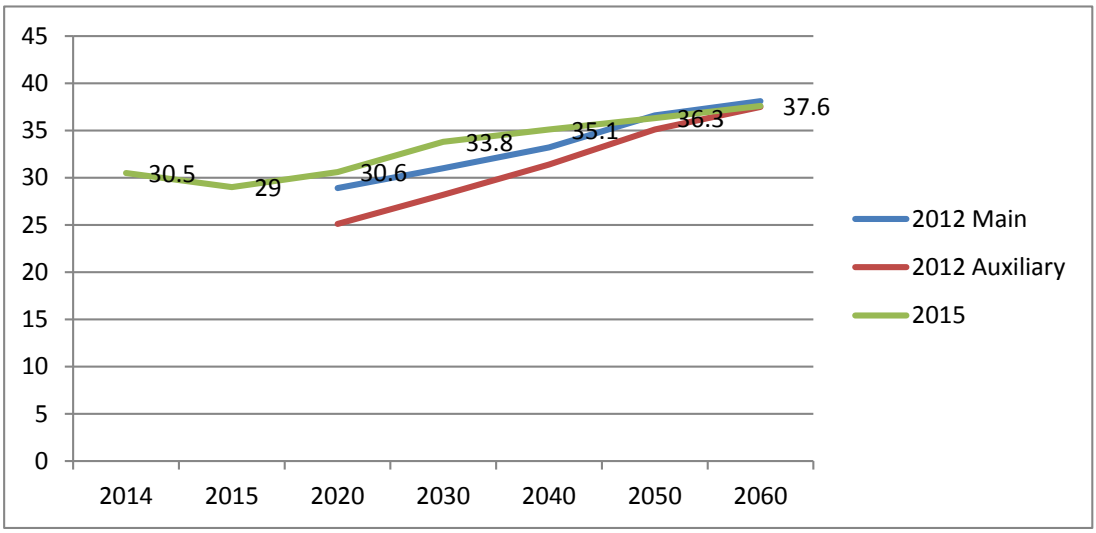
	2020	2030	2040	2050	2060
2013 projections estimates	**55.0**	**66.0**	**55.0**	**50.0**	**50.0**
2010 projections	48.1	46.1	46.2	52.4	49.6
2007 projections	67.9	70.7	67.8	70.0	66.5

Source: Author's calculations and EC 2009, 2012

The reform also pushed the average contributory period upwards for both the main and auxiliary pension schemes.

Starting from almost 30 and 26 years respectively in 2010 as the auxiliary pension system is not yet fully mature; the contributory period is driven to 38 years for both in 2060. This is also the result for the total pension for base year 2013.

Graph 13. Average Contributory Periods for Main and Auxiliary Pensions 2010-2060 and Total 2013-2060



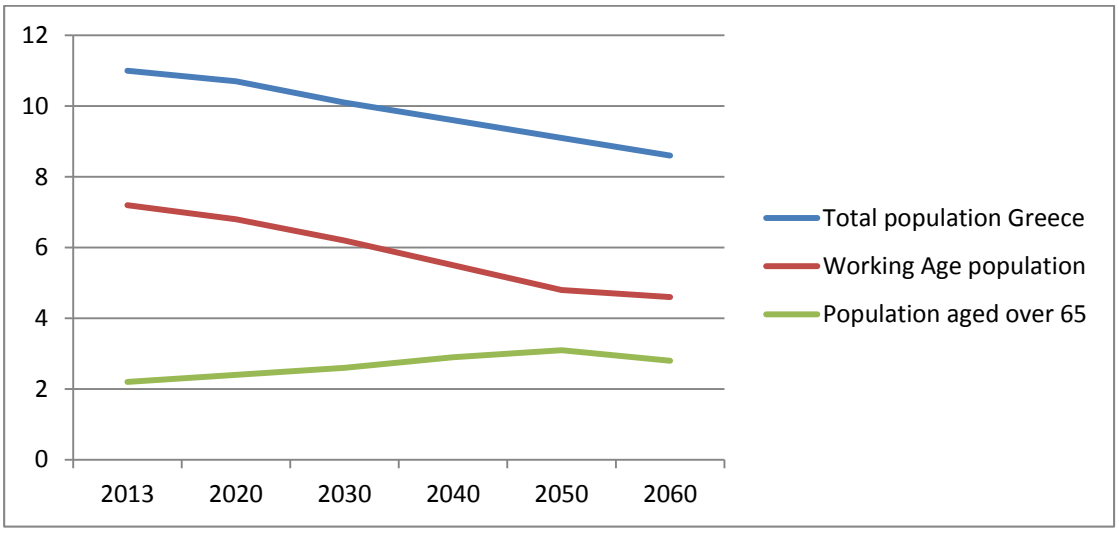
IX. DEMOGRAPHY

The overall size of the population of the European Union as projected in the EUROPOP2013 (demographic projections carried out by Eurostat in 2013) is going to be slightly larger by 2060 but much older than it is now. The EU population is projected to increase from 507 million in 2013 to 523 million in 2060. This increase takes into consideration the projected inward migration flows to the EU. For Greece, among almost half of the EU countries, a decrease in the total population has been projected. For the rest of the countries an increase in the total population has been

projected with the special case of Luxembourg which is projected to more than double its population until 2060.

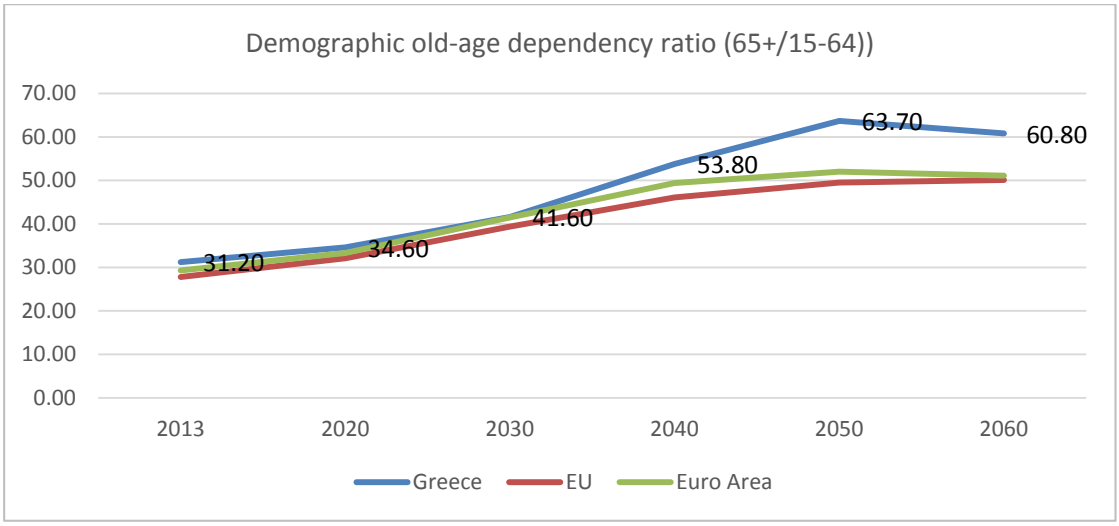
More specifically, the Greek population is projected to decline by an intense 22.5 percent by 2060. This alone puts a serious demographic pressure on the country's pension system. Combined with a very small increase in fertility rates, the increasing life expectancy and increased participation rates for older age groups only, the pressure increases and poses a risk as regards the old-age dependency ratio (people aged over 65/ people aged 15-64).

Graph 14. Greek Total Population, Working Age Population, and Population over 65 Years Old



Below one can see the old-age dependency ratios for Greece, EU, and the Euro area. The figures for Greece increase rapidly towards 2050 and then level off.

Graph 15. Demographic Old-Age Dependency Ratios for Greece, EU, and the Euro Area



By that time (2050), the 2010 reform effect has kicked in and so the dependency ratio effect is alleviated. More information on how the dependency ratio and other factors affect the projections is given in Appendix 2.

X. THE IMPLICATIONS OF THE REFORMS

Even before the 2010 reform, with relatively high pension expenditure, one out of five old people were poor in Greece, according to the OECD.

At the same time Eurostat figures show an upward trend as regards at-risk-of-poverty rates for pensioners for the years 2010-11 and an inverse trend for the years 2013-14.

Table 7. At-Risk-of-Poverty Rates for Pensioners 2007-2013, GR, EU15/19, EU27 (also EU28 for Year 2013, 2014)

	At-risk-of-poverty rate for pensioners (SILC) (% Total)							
	2007	2008	2009	2010	2011	2012	2013	2014
EU (27 /28 countries)	16,6	16,2	15,5	13,9	14	13,2	12,6	12,7
EU (15/ 19 countries)	17,4	16,5	15,5	14,2	14,5	13,4	12,7	11,9
Greece	21,5	20,3	18,4	19	19,9	14,3	12,4	11,5

The increase and preservation of large figures from 2010 through 2011 are attributed to legislation passed for old-age grants. More specifically, the special grant given to pensioners whose yearly income does not exceed 4.320 euros (EKAS – for single people, starting January 2013), has been reduced greatly from the year 2010 and the prerequisites for receiving it have been tightened (see above Reductions). All other age-related means-tested grants have been incorporated into EKAS.

One would intuitively expect the figures for 2012 and 2013 to remain the same since the situation for pensioners in the Greek society has not bettered. We see, however, that the percentages have fallen by a good 5 percent for 2012 and another 2 percent for 2013. Looking closely at the calculation of this index, however, one understands that the pensioners in Greece are not less poor than they used to be in the last two years. They actually live under the same conditions, among poorer people. This becomes evident when looking at the median equivalized income of people aged 60 or over versus less than 60 years old—two numbers used in the calculations.

Table 8. At-Risk-of-Poverty (ARP) for Pensioners Breakdown for the Greek Case

Year	2011	2012	2013
ARP Threshold	6591	5708	5023
ARP rate for pensioners	19.9	14.3	12.4
Median equivalized income people 60 years old or over	9640	9656	8600
Median equivalized income people less than 60 years old	11436	9400	8100

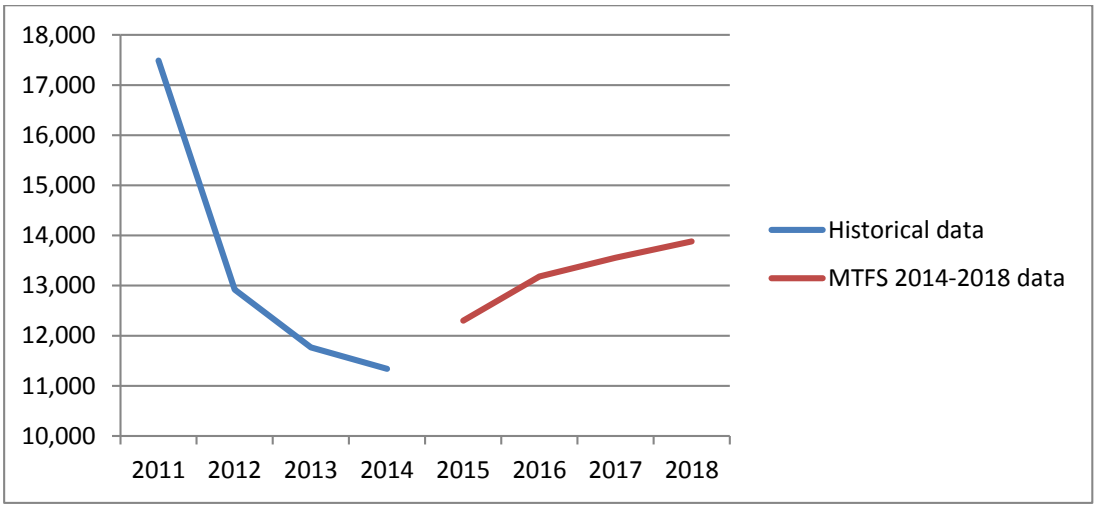
The median equivalized income for people less than 60 years old is reduced by a far greater percentage than that of the one for people 60 years old or more. According to current legislation and the fact that the income deprivation has levelled off in 2014, one would expect the figure for 2014 to rise again.

Now, there is the question of whether the low-income pensioners will be able to get by on their pensions and the EKAS, since in absolute numbers their income keeps becoming less and less. Even though means-tested criteria have been applied before the reductions, their efficiency is questionable when looking at the above figures and statistics.

Another aspect of the pension reductions, which were combined with wage reductions, is that they led to a decrease in contributions, causing cash flow problems in the short term as we are talking about a PAYG system.

More importantly, in 2011, there was a reduction in funds transferred from the general government to the social security funds which amounted to 3.85 billion euros, amounting to 15.4 percent off, in comparison to 2010. There was, however, a loss of 2.57 billion euros in contributions due to the heavy recession and unemployment. This means that what is gained from pension reductions is almost lost in contributions since people lose their jobs by thousands and therefore do not contribute to the system. Therefore, unless a way to overcome unemployment is found and implemented, a vicious circle of pension reductions because of low contribution accrual is created and perpetuated. Further extensive losses were witnessed for the following years in contribution collection, with the trend stabilizing in 2014 as compared to 2013. The reduction in contribution collection unfortunately created a repetitive trend circle and the option to further reduce pensions has been seriously taken into consideration.

Graph 16. Social Security Contributions (Euro, Billions)



XI. Further Developments in 2015

In early 2015, the Greek people elected the first left-wing government in recent history. Unlike its political predecessors, the new government promised to reform the system in an opposite direction, providing more for pensioners and inverting some of the pension reductions. Early on after the election, it became evident that the fiscal situation of the country did not allow for such corrections; however, the passed legislation that would otherwise reduce income for future pensioners had been kept idle for more than a year, allowing for reductions of a smaller extent in the pensioners first retiring in that era, while at the same time creating a new fiscal gap. The Troika, now referred to as Institutions based on a request from the Greek Government, were in constant delegations with the latter, awaiting and pricing new proposals to further reduce pension expenditure as promised in the MOU—the Second Economic Adjustment Program for Greece called for a 0.8 billion reduction in pension expenditure in 2015. None of these proposals had actually born fruit in early 2016 and the delegations were still in effect. Possible measures to be taken included further mergers of pension funds, lower replacement rates in the contributory part of the main pension, and higher penalties for early retirement.

XII. The 2016 Pension Reform

After a long delegation period and with the fear of Greece defaulting once more in just a few years' time, an agreement was reached between the Greek government and the institutions. The new legislation is largely based on the 2010 pension reform with minor alterations as regards the main scope and architecture and some greater ones as regards peripherals.

The main pension remains based on two parts—a basic part, which is means-tested and pays 12 times per year; and a proportional part, which is calculated as the product of the accrual rate by the past credits by the pensionable salary. The basic pension is now named national pension and amounts to 384 versus 360 in the old system. It is provided according to years of service with a lower cap.

The accrual rates changed and so did the calculation of the pension. Formerly varying between 0.8 to 1.5 percent progressively, they are now changed into step-wise rates varying from 0.77 to 2 percent. The legislator claims that this causes an increase in pension amounts for lower incomes.

The statutory retirement age remains 67, as was formed in 2012. It is also linked to the increase in life expectancy at age 65 from the year 2021, using the decade exactly before that as a reference period.

The indexation of benefits remains the same, still keeping the CPI as a ceiling. The same stands for the full contributory period which had changed to 40 years since the 2010 reform and pensionable earnings, which are again calculated on the whole career average.

The most important clause in the law, the one that curtails the increase in public pension expenditure over GDP for the projections up to 2060 can also be found in the 2016 legislation. Hence, starting from 2017, the increase in Greece's public pension expenditure must remain under 2.5 percent of GDP when projected up to 2060. Long-term projections to be run by the HAA every three years will measure the projected increase and based on the result, the pension system will be changed in order to meet the demand.

The most influential changes brought about in 2016 are the ones that equalize the self-employed and scientists to white-collar workers as regards contributions. Hence, the former are now obliged to pay contributions at a set percentage of their income (20 percent) instead of paying on presumptive earnings. This clause has raised the most reactions thus far, as it will cause a moderate to great increase in contributions paid by the respective groups.

Under the notion of unifying contribution collection and pension calculation, which was introduced in 2010, the time has now come to create a new hyper-fund that comprises the funds of the private sector employees (including public electricity company employees), media employees, lawyers-engineers-notaries and doctors, the self-employed (small businesses and professional drivers), agricultural workers, shipmen, utility employees, bank sector employees, and civil servants (including Firefighters-Policemen-Air Force-Army-Navy).

The unification method is also adopted on the frontier of auxiliary pension and lump sums. The Balanced Notional Defined Contribution Fund, which was established in 2012, is unified with the lump-sum funds, and now they both work under the Notional Defined Contribution system. This also means, however, that the system stops being balanced. More specifically, the sustainability factor is now removed. To counteract the increasing deficit that the removal of the sustainability factor has created in the auxiliary pension system, an increase in contributions has been introduced, which is phased out during the next six years. This aims to avoid further reduction of pensions, even though partial reductions will not be altogether avoided.

Other practical and legislative details are tackled in the 2016 reform. One of the most groundbreaking clauses in the legislation as regards couple justice is one which equalizes parties of civil partnerships to married couples. This way, the former can enjoy the advantages and privileges of social security and welfare the same way married couples can. This is new to the Greek society and points towards the direction of acceptance for same gender couples as well, which had been greatly opposed so far.

All in all, the 2016 reform is a step in the right direction, regardless of the fact that it took too long to decide upon especially since it is actually an elaborate face-lift of the 2010 reform. The legislation in its essence, however, leaves an open window for further reforms not far too long into the future, since in 2018 the main pension amounts are legislated to be reduced based on system performance. Unfortunately, this is the same method of shifting the real problem and letting the next parliament address it fully.

XIII. CONCLUDING REMARKS

Greece has gone a long way towards laying the foundations for more sustainable pensions—not only limiting the superfluousness, but also sacrificing at the same time a part of the essential.

Making these changes quickly in order to avoid bankruptcy was, without question, an important and necessary action. However, since real people lie behind the numbers, it is vital that adequacy is also guaranteed, so that the people reaching the third age are able to manage with integrity and pride. As it is, of course, each individual's responsibility to cater for an adequate pension by contributing to the system continuously throughout their life and investing on the side on other pension products. The main driver for reform in 2012 and before was the output of the Ageing Working Group in sustainability. Since the last projection round, emphasis has been given on adequacy in order to avoid creating impoverished nations through the intense pension cuts.

The reforms have not finished, nor is it possible to reform a system so quickly, when nothing has actually been changed for decades. The fiscal situation of the Greek government accelerated the reforms, but as things are falling into place, it is time to trace back the steps and deal with the problem universally. The administrative changes have been colossal and the way the social security system is now organized is light years ahead of what it was just a few years ago. A full system record has been materialized, using minimal assets and drawing a complete picture of the former. Based on these analytical data, the actuarial valuations provided by the HAA are now more detailed and involve less uncertainty and a reduced margin of error.

It is now time for the government to distinguish between welfare and pension, to educate people on the demographic developments and the utmost importance these play on their pension income when they retire in a few decades. Moreover, DC systems should be taken into consideration by the Greek people when allocating money for third age income as they are by many other Europeans. This does not mean that the existing safety nets should be abolished. It does mean, however, that incentives should be given in order for people to invest a part of their third-age income into a different kind of system. This also increases risk spreading and allows people to organize their lives in a much better way.

The actions to be undertaken by the government need time and trust—a key element absent in the Greek political scene at this point. Respecting pensioners in actions rather than words, eliminating former inequities, and providing reparation for some of the injustices of the last four years are good starting points, although there is still a lot to be done so that we finally sail clear of the iceberg.

With a view to the next pension reform that is most probably not going to be later than 2018, this is a good opportunity for the interested stakeholders to come together and discuss a realistic, long-term solution that may last and make a real difference in public spending as well as a decent third-age income.

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APPENDIX 1

Description of the Pension Projection Model and Country-Specific Calculations

The actuarial projections for the main and auxiliary pension provision are run using the International Labor Office (ILO) cohort model. The present version of the ILO pension model has been parametrized to support actuarial reviews or studies of statutory social security pension funds. It thus helps to provide the quantitative basis for making policy decisions on social security pension funds. The model estimates future cost on the basis of the cohort decomposition method and various statuses of a person and associated values (average wage, average pensions) are provided year by year. To the extent possible, a distribution is considered for income level. For each generation, the transition of a status of a person (active person, inactive person, pensioners) is mapped onto the next year's status by using actuarially assumed transition probabilities (mortality rate, retirement rate, invalidity rate) and applying the eligibility conditions and pension formula. This cycle is iterated until the end of the projection period. By summarizing age-specific results, global future costs are obtained. For the basics of the calculation, one can be referred to the ILO Pension Model.

On the initial country-specific general population mortality, fertility, labor force participation rates, employment rates and migration assumptions in line with EUROPOP2013 data are applied. Existing and new pensioners are projected according to the mortality rates, retirement rates, invalidity rates, family statistics, and legal provisions of each pension scheme.

The wage growth is obtained by the product of inflation and labor productivity. Negative growth is not applied. Salary valorization is adjusted by the inflation and labor productivity.

On main pensions benefit indexation, this is fully linked to a uniform adjustment index which cannot exceed CPI. In particular, the index is equal to the minimum of CPI and the sum of 50% CPI and 50% GDP growth [min (50% GDP growth +50% CPI, CPI)]. No nominal increase in pensions up to 2015 applied, according to legislation. Prudent indexation percentages are applied thereon.

The formula for auxiliary pensions benefit indexation according to legal provision is

$$\gamma_t = \min\left(\left[1 + g_{t-2} - r\right]SF_t - 1, \text{inflation}_{\text{t-1}}\right),$$

where

g: notional rate of return
r: discount rate=1,3%
SF: sustainability factor = Contributions previous year/Benefits previous year.

This indexation can take negative values.

Age thresholds

According to legislation the age thresholds will be re-determined according to the change in life expectancy of the country's population with the age of 65 years as point of reference. That will come into effect as of January 1, 2021 and upon its first implementation the change within the 2010 - 2020 period shall be taken into account.

In the projections, age thresholds are increased by the integral part of the estimated increase in life expectancy. Age thresholds are increased by one additional year on 2021, 2030, 2042, and 2051.

APPENDIX 2

The main driving forces behind the projection results when using a standard arithmetic decomposition of a ratio of pension expenditures to GDP are the dependency, coverage, benefit ratio, employment rate, and labor intensity.

$$\frac{\text{Pension Exp}}{\text{GDP}} = \overbrace{\frac{\text{Population } 65+}{\text{Population } 20-64}}^{\text{Dependency Ratio}} \times \overbrace{\frac{\text{Number of Pensioners (Pensions)}}{\text{Population } 65+}}^{\text{Coverage Ratio}} \times \overbrace{\frac{\text{Average income from pensions (Average Pension)}}{\frac{\text{GDP}}{\text{Hours Worked } 20-74}}}^{\text{Benefit Ratio}} \times \overbrace{\frac{\text{Population } 20-64}{\text{Hours Worked } 20-74}}^{\text{Labour Market / Labour Intensity}} \quad [1]$$

The coverage ratio is further split with the scope of investigating the take-up ratios for old-age pensions and early pensions as below:

$$\overbrace{\frac{\text{Number of Pensioners}}{\text{Population } 65+}}^{\text{Coverage Ratio}} = \overbrace{\frac{\text{Number of Pensioners } 65+}{\text{Population } 65+}}^{\text{Coverrage Ratio Old-Age}} + \left(\overbrace{\frac{\text{Number of Pensioners} \leq 65}{\text{Population } 50-64}}^{\text{Coverage Ratio Early-Age}} \times \overbrace{\frac{\text{Population } 50-64}{\text{Population } 65+}}^{\text{Cohort effect}} \right) \quad [2]$$

The labor market indicator is further decomposed according to the following:

$$\overbrace{\frac{\text{Population } 20-64}{\text{Hours Worked } 20-74}}^{\text{Labour Market / Labour Intensity}} = \overbrace{\frac{\text{Population } 20-64}{\text{Working People } 20-64}}^{1/\text{ Employment Rate}} \times \overbrace{\frac{\text{Working People } 20-64}{\text{Hours Worked } 20-64}}^{1/\text{ Labour intensity}} \times \overbrace{\frac{\text{Hours Worked } 20-64}{\text{Hours Worked } 20-74}}^{1/\text{ Career shift}} \quad [3]$$

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Abstract

In 2010, Greece, under the pressure of an increasing public debt, was forced to resort to the Troika, which is the designation of the triumvirate comprising the European Commission (EC), the European Central Bank (ECB), and the International Monetary Fund (IMF).

The Troika agreed to provide Greece with financial help, on special terms recorded in a Memorandum of Understanding (MoU) between the Greek Government and the Troika.

One of the most important reforms recorded in the MoU is the Pension Reform since the Greek Social Security System had long showed signs of unsustainability and insolvency.

The reforms implemented had a great positive impact on pension expenditure, which was drastically reduced when projected until 2060. The projected reduction, taking into account all reforms from 2009 to 2015, exceeds 14 percent of GDP.

These fiscal changes are expected to take place under extreme demographic pressure, with both the total population and the working population projected to decline by a good 20 percent and 36 percent respectively, while at the same time pensioners are projected to increase by as much as 30 percent.

Replacement rates were drastically reduced by 40 percent for high earners according to the OECD, while the average contribution period is projected to increase by at least seven years until 2060, reaching almost 38 years in total.

Along with fiscal and demographic effects, one has to also take into account the vicious circle of recession created in the Greek economy. Such was the latter, that one third of contributions were lost in the respective era bringing the amount of contributions to 12 billion euros yearly as opposed to 18 billion euros before the crisis, while at the same time pension expenditure exceeds 24 billion euros yearly.

The recession also caused further impoverishment of old-age people followed by the rest of the population. And this became one of the main reasons that the reforms could not be fully implemented for fear of further impoverishment of pensioners and social exclusion in general, as well as political cost that is always a key factor.

This paper aims to further analyze and present the impact of the reforms on the Greek pension system and the people who rely on it through an actuarial—statistical analysis and point out the changes in the main factors mentioned above and how they correlate.

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