

MILESTONES OF THE GREEK 2010 PENSION
REFORM,
TIME AND MACROECONOMIC SHIFTS.
THE EXAMPLE OF THE IKA - ETAM FUND

Marianna Papamichail,
Vice chairperson,
National Actuarial Authority of Greece

PREFACE: THE SCOPE OF THE PAPER

- EU DG ECFIN, ECONOMIC POLICY COMMITTEE, AWG METHODOLOGY ON HOW PENSION REFORMS AFFECT THE LABOUR MARKET PROJECTIONS.
- BASIC MACROECONOMICS: OKUN'S LAW AND THE PHILLIPS CURVE. THE CASE OF MACROECONOMIC PROJECTIONS 2008 AND 2010
- MILESTONES OF THE GREEK 2010 PENSION REFORM AND OTHER CHANGES BETWEEN 2008 AND 2010 STUDIES DUE TO TIME.
- DESCRIPTION OF THE IKA-ETAM FUND, CHARACTERISTICS- COVERAGE
- IMPACT OF THE REFORM ON IKA-ETAM:
COMPARISON REFORM (2010) AND STATUS QUO (2008) RESULTS
- IKA -ETAM EFFECTIVE OUTCOME 2011- 2012

CONCLUSION

PREFACE: THE SCOPE OF THE PAPER

THE AIM OF THIS STUDY IS TO

- EXAMINE THE IMPACT ON MACROS OF THE VAST GREEK PUBLIC PENSION REFORM OF 2010 ACCORDING TO THE DG ECFIN AWG METHODOLOGY;
- COMPARE THE 2008 STUDY WITH THAT OF 2010 AND ITS IMPACT ON IKA-ETAM MAIN PENSION FUND;
- CONCLUDE ABOUT THE CONSISTENCY OF APPROACHES AND LIAISE TO SOME BASIC MACROECONOMIC THEORY;
- GIVE SOME HINTS ABOUT EFFECTIVE CHANGES AS FOR 2011 AND 2012 AND
- SUGGEST SOME POINTS OF IMPROVEMENT OVER THE SHORT OR MEDIUM TERM.

1. HOW PENSION REFORMS AFFECT THE LABOUR MARKET PROJECTIONS ACCORDING TO EU DG ECFIN, EPC AWG METHODOLOGY CALLED COHORT SIMULATION MODEL (CSM)

- A. Demographic projection by age and gender
- B. Labour market participation rates' projections (PRs),
base year = 2010:

Step1.

$$\text{Ren}_{a,g}^{2011} = \text{Average} (\text{Ren}_{a,g})^{2001-2010} \quad \text{and}$$

$$\text{Rex}_{a,g}^{2011} = \text{Average} (\text{Rex}_{a,g})^{2001-2010} ,$$

$$\text{where } \text{PR}_{a,g} = \frac{\text{Labour Supply}_{a,g}}{\text{Population}_{a,g}} = \frac{\text{Employed}_{a,g} + \text{Unemployed}_{a,g}}{\text{Population}_{a,g}}$$

by age **a** and gender **g** are calculated for ages 15 to 71.

Then rates are kept constant throughout the entire projection period 2011-2060, unless a reform has been performed.

1. COHORT SIMULATION MODEL (CSM)

- B. Step 2.** PRs for the year t+1 (2011 for the case) are calculated by using the corresponding **Ren** and **Rex** and PRs of the base year “t” (2010 for the case) and average, as follows:

For previously inactive people:

$$PR_{x+1,g}^{t+1} = Ren_{x+1,g} * (PRmax - PR_{x,g}^t) + PR_{x,g}^t, \quad PRmax \approx 1$$

For older workers when PRs are starting to decline:

$$PR_{x+1,g}^{t+1} = (1 - Rex_{x+1,g}) * PR_{x,g}^t$$

This process continues for any adjacent two years until the end of the projection period. The methodology the way it works has the advantage of cohort development of PRs.

1. COHORT SIMULATION MODEL (CSM)

B. *Step3.* General rules for the projection are set:

1. Base Year =2010, Starting Year = 2011
2. Correction of the drop of the participation rate of young people 15-24 due to advanced enrolment is “transported” to the drop of Participation Rate of workers of prime age 25-50 not to allow any drop in the overall Participation Rate of the cohort 15-24.
3. In case of no reforms, calculations of last decade’s average exit probabilities are considered as they are derived from the past decade (Step1)
4. Pension Reforms adjust average exit probabilities from the Labour market for older workers aged 50- 74 as to reflect future retirement decision changes

1. COHORT SIMULATION MODEL (CSM)

B. Additional steps in case of a pension reform:

Step 4. Projection of new Exit probabilities from the labour market:

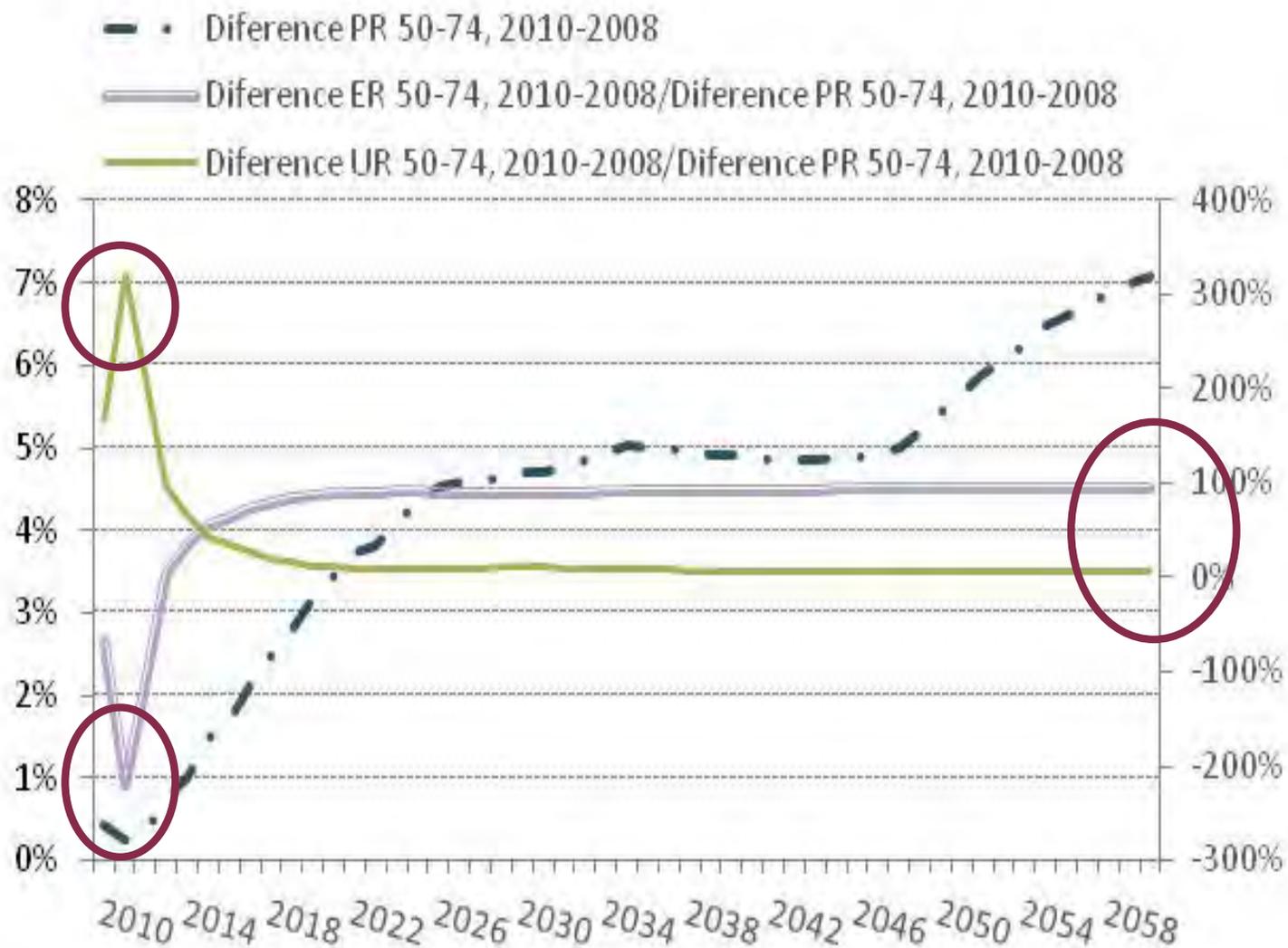
- ❑ Average Exit probabilities for ages 50 - 74 are altered for the projection in relation to changes in observed PRs before and after the reforms
- ❑ The new distribution of labour market male and female exit rates is 'shifted' according to estimated effects on pension reforms by the Commission
- ❑ E.g. for a given country the retirement probability historically is concentrated at age 58 which may be the earliest retirement age. When a reform ends early retirement, the peak of the retirement age is shifted away closer to the statutory retirement age (usually 65 for men and 60 for women).
- ❑ This implies that the insured person on average prolongs his/her career accordingly. The result for the IKA-ETAM fund is also prolonged careers analysed below on page 29.
- ❑ Finally retirement/exit rates reflecting the historical rates (the average over the period 2001-2010) are replaced in the CSM with the new estimated exit rates, in relation to the phasing-in of the reforms.

1. COHORT SIMULATION MODEL (CSM)

B. Additional steps in case of a pension reform:

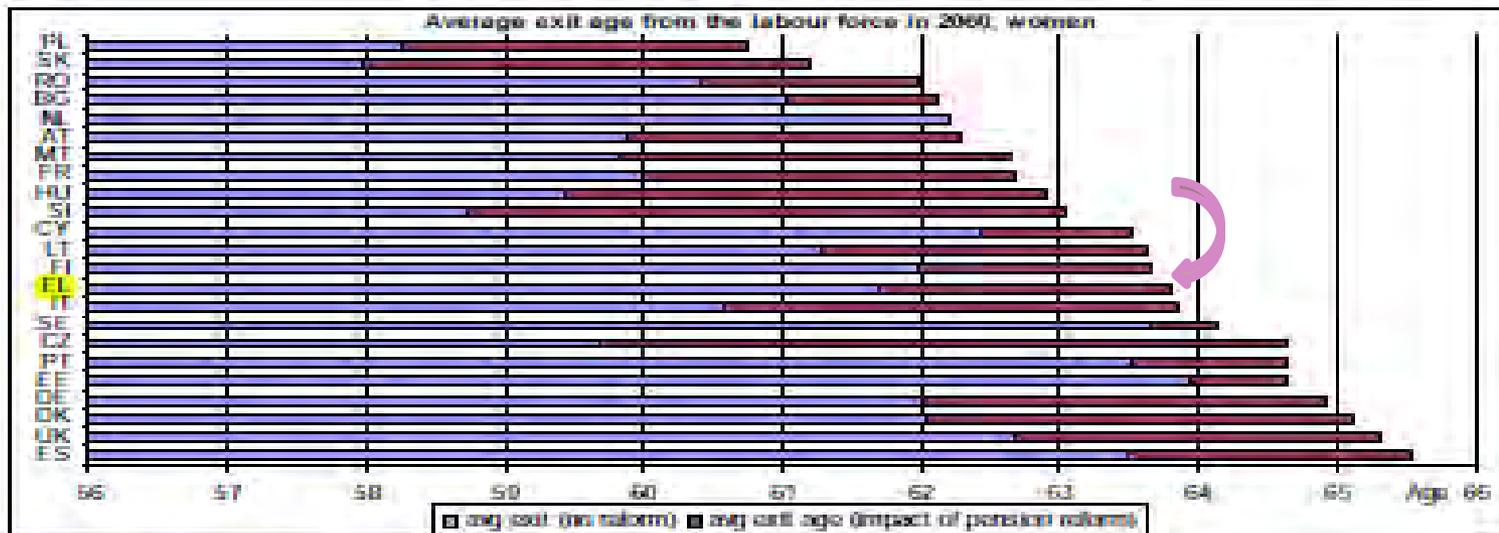
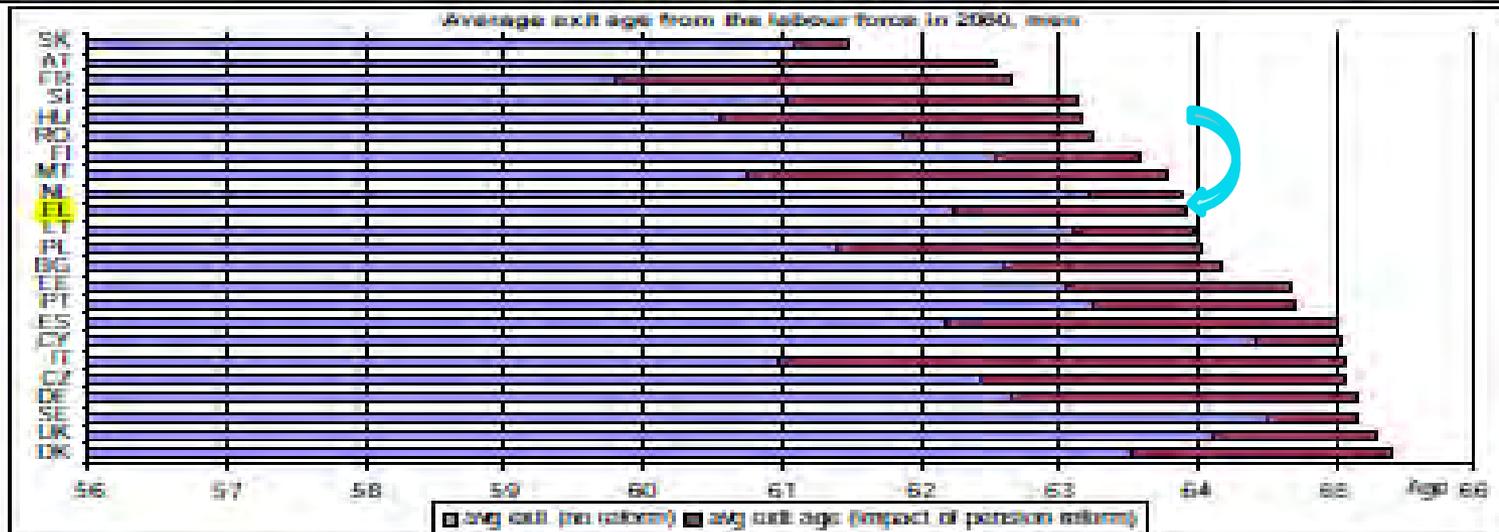
Step 5. Calculation of Projected Participation Rate by age and gender for all projection years according to Entry and Exit probabilities and calculation of the (new) effective retirement age by the CSM as described in Step2 above.

IMPACT OF THE PENSION REFORM ON PRs FOR GREECE



IMPACT OF PENSIONS' REFORMS ON THE AVERAGE EFFECTIVE RETIREMENT AGE FROM THE LABOUR FORCE

Graph 2.1 - Impact of pension reforms on the average effective retirement age¹² from the labour force



Source: Commission services, EPC.

1. COHORT SIMULATION MODEL (CSM)

C. Labour supply projections:

Age and gender Labour Supply (or Labour Force)”:

$$LF_{a,g}^t = LS_{a,g}^t = PR_{a,g}^t * Pop_{a,g}^t$$

D. Unemployment projections:

$$u_{a,g}^t = \frac{u_{total}^t}{\sum_{a,g} \{ u_{a,g}^{2010} * l_{a,g}^t \}} u_{a,g}^{2010}$$

where $l_{a,g}^t = \frac{LF_{a,g}^t}{LF_{total}^t}$ is the share of the age and gender specific $LF_{a,g}$ over the total LF

$u_{a,g}^t$ is the unemployment rate in age a, gender g, in period t;

u_{total}^t is the total unemployment rate (target) in period t, assumed for the projection period, t=2011 to 2060, according to targets of the EU (Lisbon Scenario, Convergence etc.)

1. COHORT SIMULATION MODEL (CSM)

E. Employment projections: The employment rate (ER) refers to the population of the labour supply (LS)

$$\begin{aligned} \text{Employed Population} + \text{Unemployed Population} &= \text{LS} \\ &= \text{ER} * \text{POP} + \text{UR} * \text{LS} \quad \Rightarrow \quad \text{ER} * \text{POP} = \text{LS} * (1 - \text{UR}) \quad \text{ER} \quad \Rightarrow \end{aligned}$$

$$\Rightarrow \text{ER} = \frac{\text{LS} * (1 - \text{UR})}{\text{POP}}$$

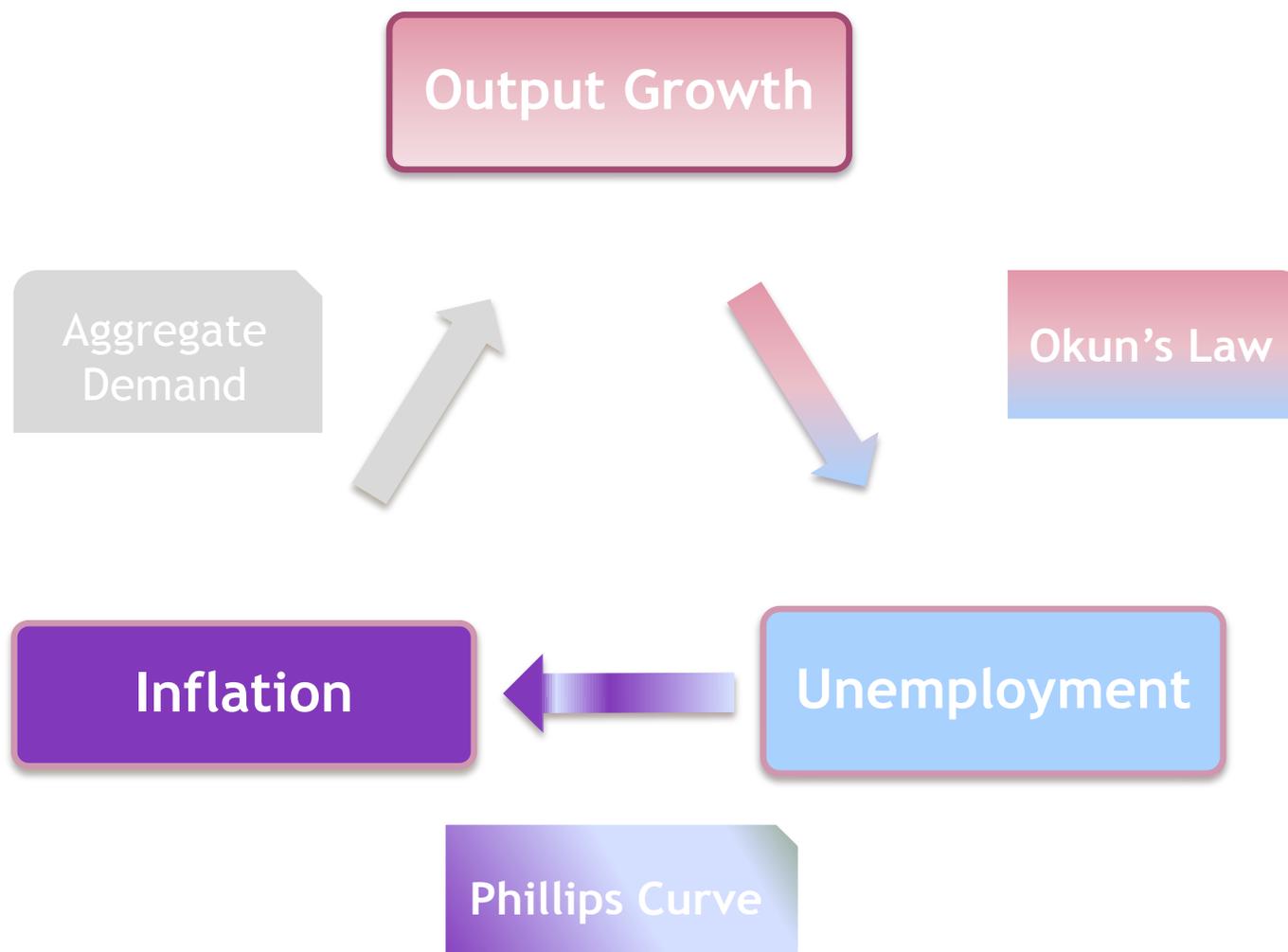
F. Output projections:

A standard specification of the Cobb-Douglas production function

$$Y = \text{TFP} * L^{\beta} * K^{1-\beta} = (\text{TFP}^{1/\beta} * L)^{\beta} * K^{1-\beta} = (E * L)^{\beta} * K^{1-\beta}$$

where **Y** is the total output (GDP); **L** is the supply of labour (for the last projection expressed as total hours worked); **TFP** is the Total Factor Productivity which is the part of productivity derived from technological progress counter linked with **L**; **K** is the capital formation and **β** is a number between 0 and 1

2. BASIC MACROECONOMICS: OKUN'S LAW AND THE PHILLIPS CURVE. THE CASE OF MACROECONOMIC PROJECTIONS 2008 AND 2010



2. BASIC MACROECONOMICS: OKUN'S LAW AND THE PHILLIPS CURVE. THE CASE OF MACROECONOMIC PROJECTIONS 2008 AND 2010

Phillips Curve: Changes in inflation rate is negatively related to the difference between unemployment rate and the natural rate of unemployment

$$\pi_t - \pi_{t-1} = -\theta^* (u_t - u_n) \Rightarrow \text{when } \pi_t - \pi_{t-1} = 0 \\ \text{then } u_t = u_n$$

where u_n is the natural rate of unemployment which is the rate of unemployment required to keep the inflation rate constant

2. BASIC MACROECONOMICS: OKUN'S LAW AND THE PHILLIPS CURVE. THE CASE OF MACROECONOMIC PROJECTIONS 2008 AND 2010

Okun's Law: Changes in unemployment rate are negatively related to the difference of real output and a (fixed) percentage which is over the long term the average labour supply (LS or L or LF) growth plus the average labour productivity growth

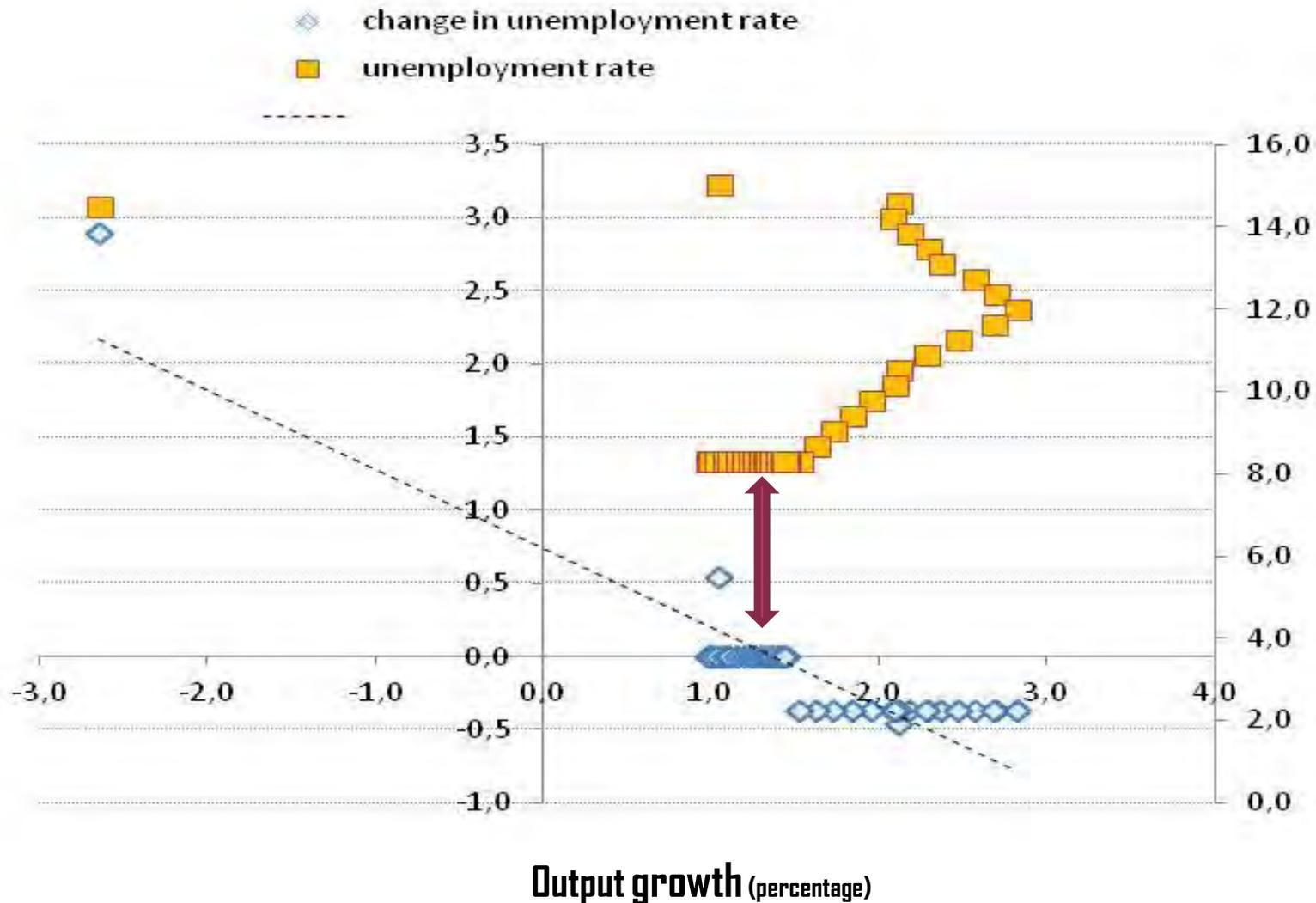
$$u_t - u_{t-1} = -\alpha (g_{yt} - \bar{g}_y) \text{ where,}$$

\bar{g}_y is the normal growth rate of the economy
 $\bar{g}_y = \text{LS growth} + \text{LProductivity growth};$

g_{yt} denotes the real growth rate of the output (GDP) from year t-1 to t and α is a coefficient reflecting the impact of GDP changes on unemployment, mainly country specific.

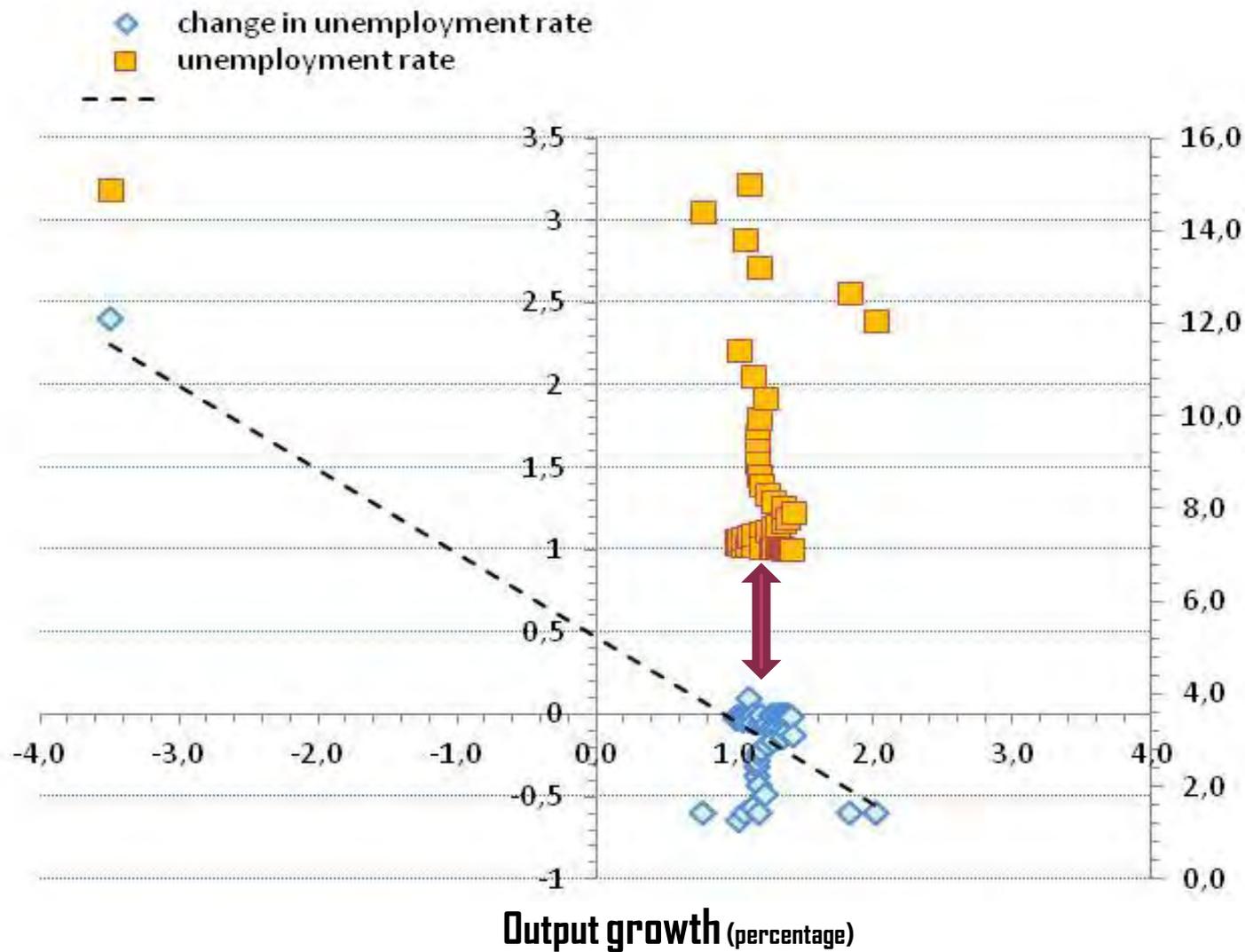
So output is negatively related with unemployment.

PERCENTAGE CHANGE IN UNEMPLOYMENT RATE, Y AXIS, COMPARED TO REAL GDP PERCENTAGE CHANGES, X AXIS, IN 2008 PROJECTION



Ocun's Law for 2008 projection: $u_t - u_{t-1} = -0.37 * (g_{yt} - 1.41\%)$

PERCENTAGE CHANGE IN UNEMPLOYMENT RATE, Y AXIS, COMPARED TO REAL GDP PERCENTAGE CHANGES, X AXIS, IN 2010 PROJECTION



Ocun's Law for 2010 projection: $u_t - u_{t-1} = -0.42 * (g_{yt} - 1.2\%)$

3. MILESTONES OF THE GREEK 2010 PENSION REFORM AND OTHER CHANGES BETWEEN 2008 AND 2010 STUDIES DUE TO TIME.

A. Measures bearing macroeconomic impact

i. Increase of the minimum career length:

The gradual reduction of unemployment rates particularly for the elderly stemming from the assumed increase of the full contributory period for a pension entitlement from 35 years to 40 years of average service.

ii. Enacted stricter disability pension awarding criteria:

A stricter revision of the rules for disability pension awards also shifted the working horizon of a majority of disability pensioners to that of the old age pensioners and enhanced employment rates in pre-retirement ages.

iii. Increase of the statutory retirement age:

The reform increases the statutory retirement age generally from 60 to 65. The minimum age for retirement was set at 60. As from 2021 and onwards, the minimum and statutory retirement ages will be adjusted in line with changes in life expectancy every three years.

TABLE 1a: IKA Statutory retirement age, earliest retirement age and penalties for early retirement

	2010	2020	2030	2040	2050	2060
Men - with 15 contribution years						
statutory retirement age	65	65	65+	65+	65+	65+
earliest retirement age	60	60	60+	60+	60+	60+
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Men - with 40 contribution years						
statutory retirement age	58-60*	60	60+	60+	60+	60+
earliest retirement age	-	-	-	-	-	-
penalty in case of earliest retirement age	-	-	-	-	-	-
Women - with 15 contribution years						
statutory retirement age	60*	65	65+	65+	65+	65+
earliest retirement age	55*	60	60+	60+	60+	60+
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Women - with 40 contribution years						
statutory retirement age	58-60*	60	60+	60+	60+	60+
earliest retirement age	-	-	-	-	-	-
penalty in case of earliest retirement age	-	-	-	-	-	-

iv. Postponement of the retirement age according to life expectancy extensions:

If the estimations regarding the change in life expectancy of the elderly population, according to the population projection “Europop 2012” were to be materialized and there had been no additional reform in 2012, then the table 1 would become table 1b.

TABLE 1b: IKA Statutory retirement age, earliest retirement age and penalties for early retirement Estimation

	2010	2020	2030	2040	2050	2060
Men - with 15 contribution years						
statutory retirement age	65	65	66.8	67.6	68.4	69.4
earliest retirement age	60	60	61.8	62.6	63.4	64.4
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Men - with 40 contribution years						
statutory retirement age	58-60*	60	61.8	62.6	63.4	64.4
earliest retirement age	-	-	-	-	-	-
penalty in case of earliest retirement age	-	-	-	-	-	-
Women - with 15 contribution years						
statutory retirement age	60*	65	66.8	67.6	68.4	69.4
earliest retirement age	55*	60	61.8	62.6	63.4	64.4
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Women - with 40 contribution years						
statutory retirement age	58-60*	60	61.8	62.6	63.4	64.4
earliest retirement age	-	-	-	-	-	-
penalty in case of earliest retirement age	-	-	-	-	-	-

TABLE 1c: Statutory retirement age, earliest retirement age and penalties for early retirement after 2012 reform

	2010	2020	2030	2040	2050	2060
Men - with 15 contribution years						
statutory retirement age	67	67	67	67+	67+	67+
earliest retirement age	62	62	62	62+	62+	62+
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Men - with 40 contribution years						
statutory retirement age	58-62*	62	62	62+	62+	62+
earliest retirement age	-	-	-	-	-	-
monthly penalty in case of retirement before statutory age	-	-	-	-	-	-
Women - with 15 contribution years						
statutory retirement age	62*	67	67	67+	67+	67+
earliest retirement age	55*	62	62	62+	62+	62+
monthly penalty in case of retirement before statutory age	1/200	1/200	1/200	1/200	1/200	1/200
Women - with 40 contribution years						
statutory retirement age	58-62*	62	62	62+	62+	62+
earliest retirement age	-	-	-	-	-	-
monthly penalty in case of retirement before statutory age	-	-	-	-	-	-

3. MILESTONES OF THE GREEK 2010 PENSION REFORM AND OTHER CHANGES BETWEEN 2008 AND 2010 STUDIES DUE TO TIME.

B. Measures of Financial Impact (not calculated at this study)

- v. **Implementation of the full career average pensionable salary:**
The career length, for the calculation of pensionable salary is gradually increased, reaching its full length, from 2015 and onwards.

- vi. **Rule for pension indexation:**
Pension increases over time are fully linked to a uniform adjustment index which cannot exceed CPI. Before the reform pension indexation was decided independently according to every year's socioeconomic policy.

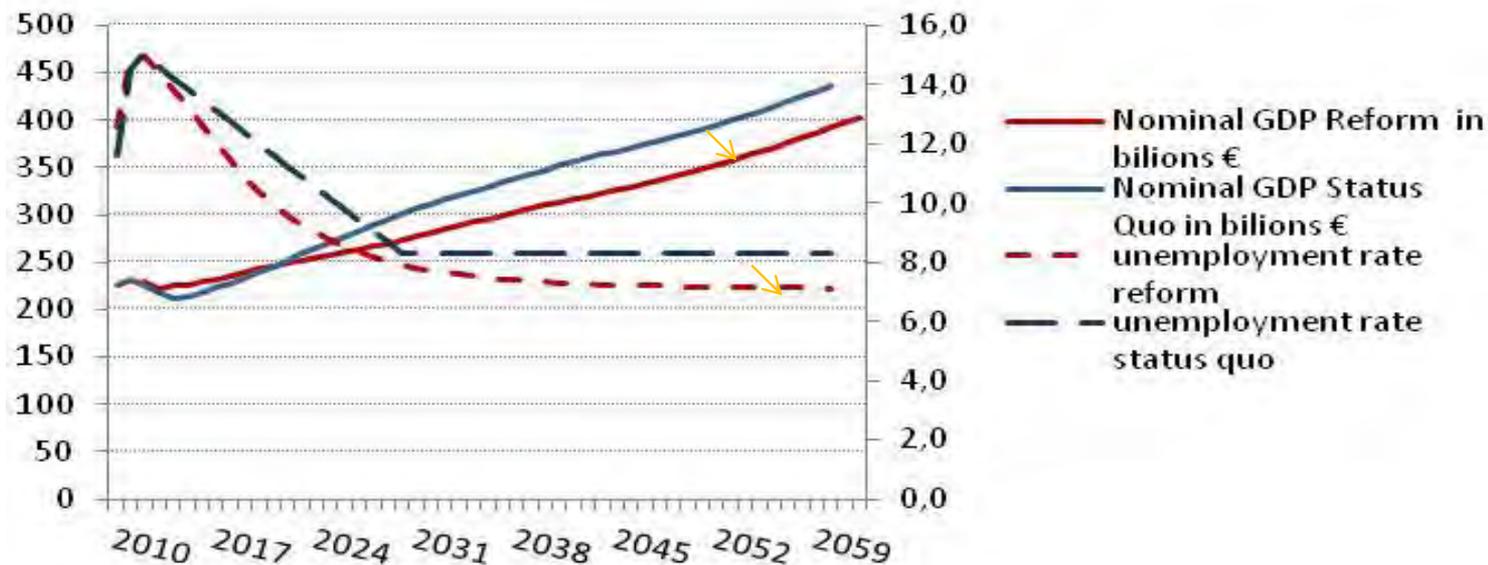
- vii. **Gradual implementation of a unified pension formula:**
The increase in retirement age and in years of service for the system's current insureds is effective 1/1/2011. Starting on 1.1.2011, the current insureds will be getting a pension which will comprise of two parts: The first part will be based on arrangements before the reform for as many years as he/she worked before 1.1.2011. The second group will be based on reformed arrangements for as many years as he/she worked after 1.1.2011.

3. MILESTONES OF THE GREEK 2010 PENSION REFORM AND OTHER CHANGES BETWEEN 2008 AND 2010 STUDIES DUE TO TIME.

C. Other components:

Apart from the legislative reforms also the two years' time elapsing between the basis years 2008 and 2010 of the projections played an important role. As unemployment increased, according to macroeconomic laws, it shifted the GDP downwards. Unemployment finally is proving to be the key component of the economy.

UNEMPLOYMENT AND GDP PROJECTIONS 2008 AND 2010

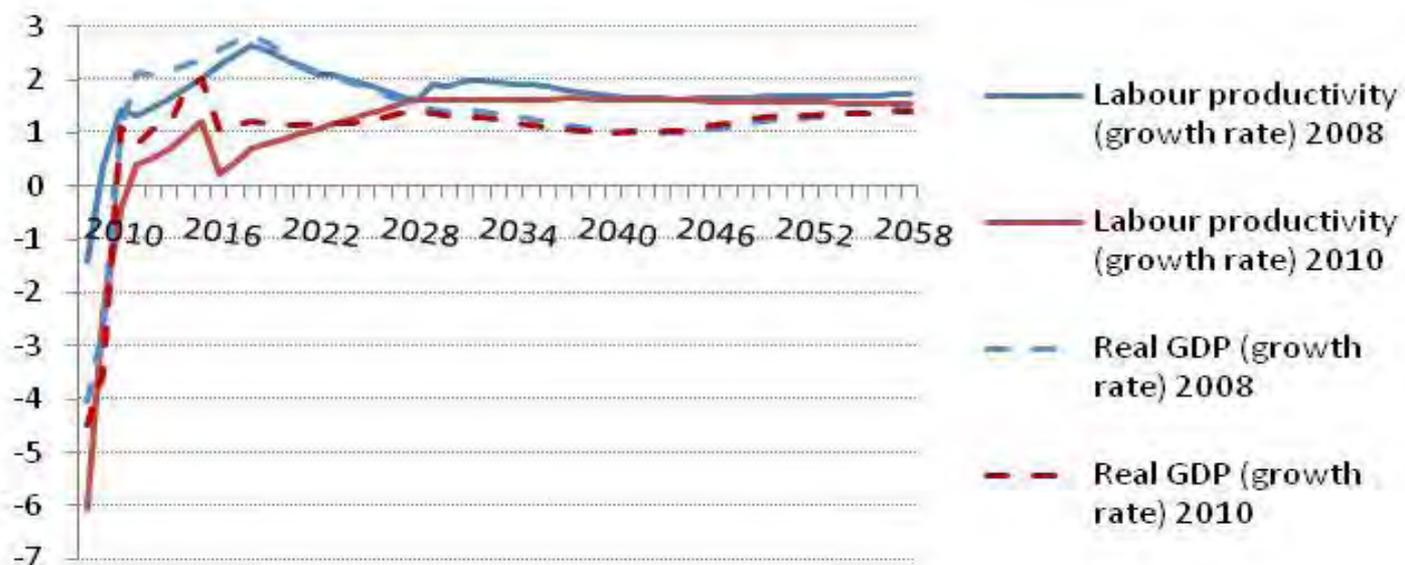


3. MILESTONES OF THE GREEK 2010 PENSION REFORM AND OTHER CHANGES BETWEEN 2008 AND 2010 STUDIES DUE TO TIME.

GDP growth rate = LS growth rate + LProductivity growth rate +
+ TFP growth rate.

Crisis on its turn with decreasing the GDP growth rate it directly affects the salary indexation, as a major component of the real GDP change is the labour productivity (GDP/number of employed) which is directly linked to salary increases as depicted in Graph 6 below as well as Graph 11 representing financial impact on IKA ETAM.

LABOUR PRODUCTIVITY AND GDP PROJECTIONS 2008 AND 2010

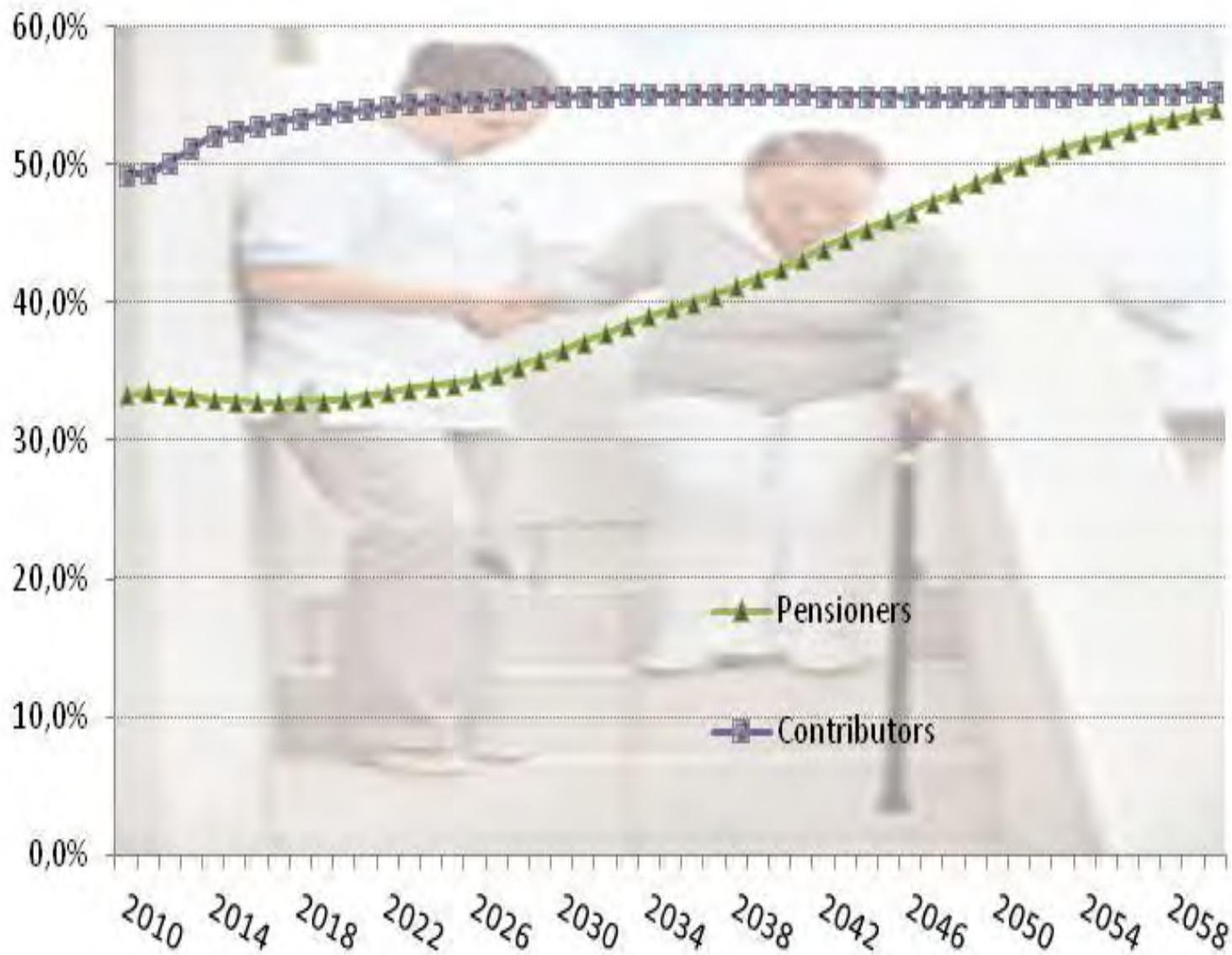


4. DESCRIPTION OF THE IKA-ETAM FUND -COVERAGE

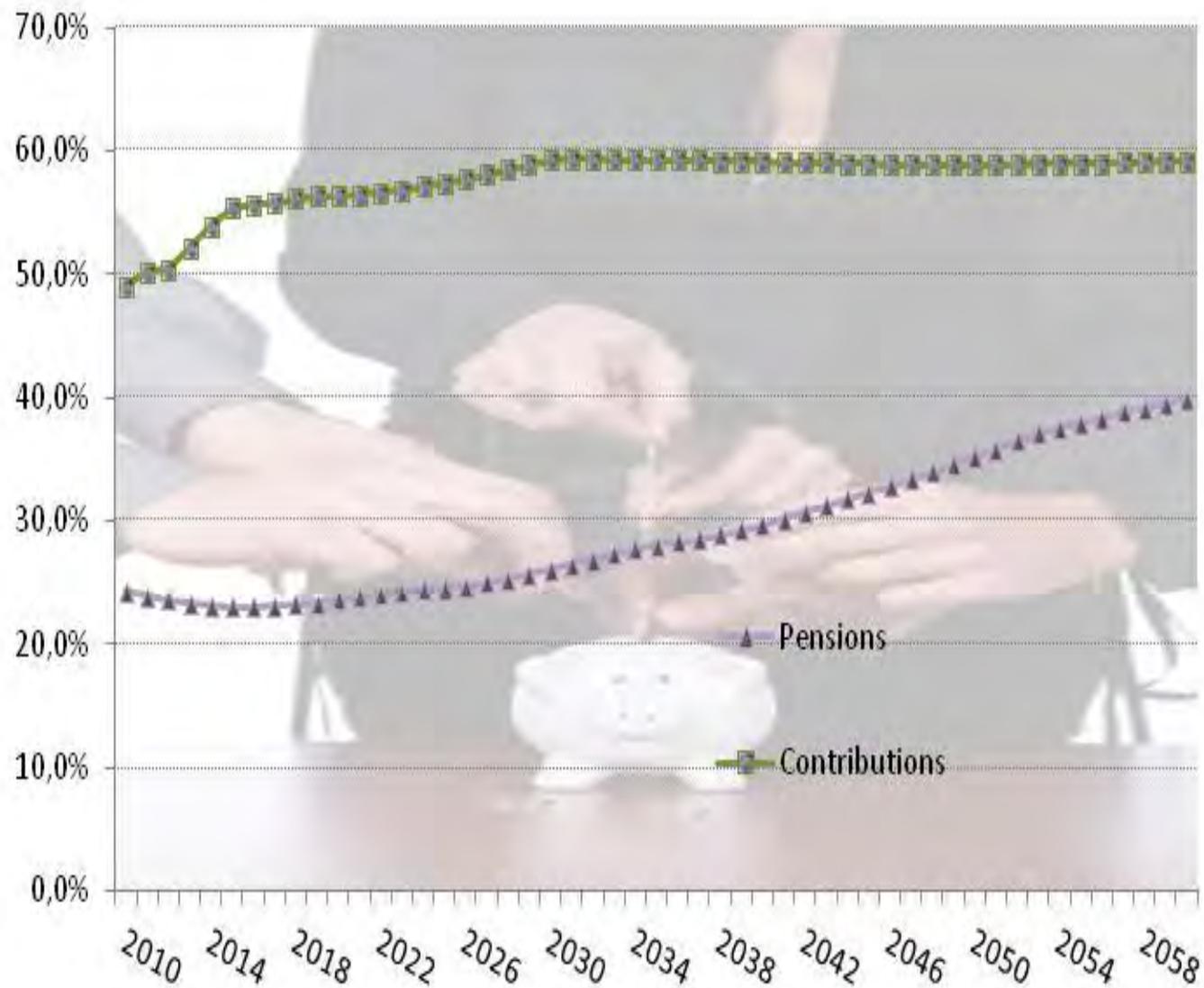
The Greek pension system comprises:

- ◉ Main pension provision - includes 10 social insurance schemes, which cover, on a mandatory basis, salaried employees and self-employed persons grouped in certain professions/occupations;
- ◉ Auxiliary pension provision - included a number of social insurance schemes, each of which corresponded to a main social security scheme and runs in parallel with it; and
- ◉ Social solidarity grant provision (EKAS), a means-tested scheme, which covers residents of Greece who get no or low income.
- ◉ In Greece, almost 99% of the total pension expenditure falls on the above three public provision arrangements.

IKA ETAM coverage on total pensioners and contributors of Greece:



IKA ETAM relative financial magnitude from the 2010 study:



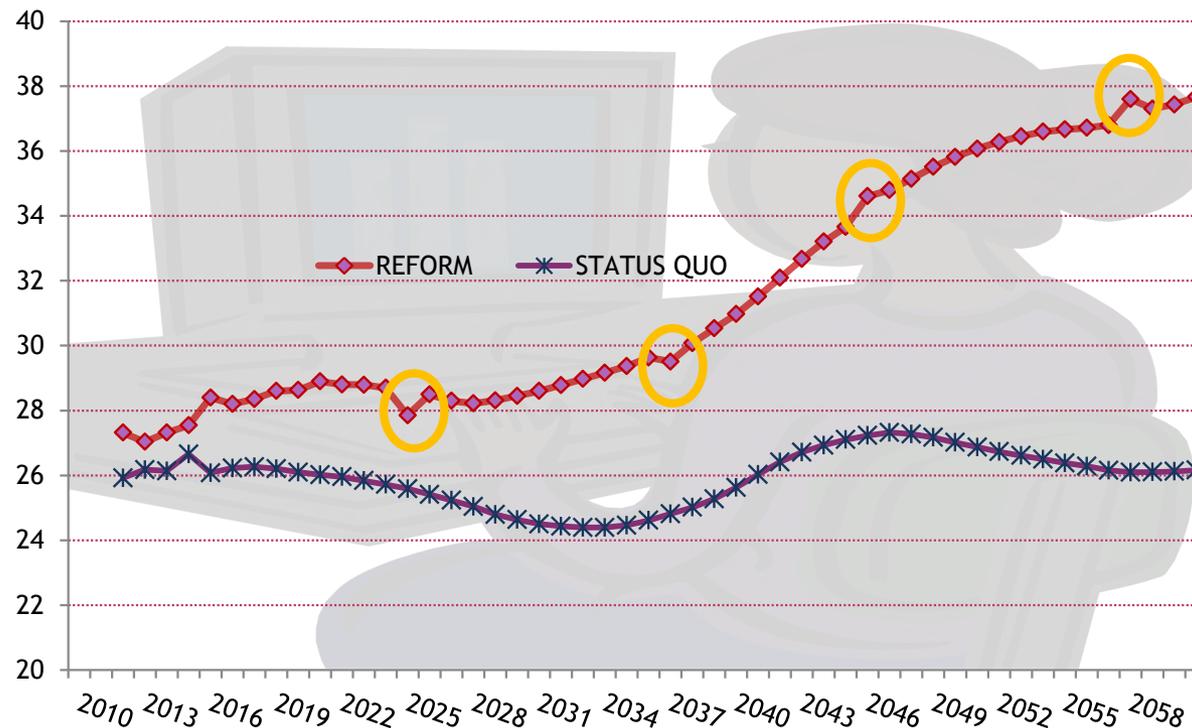
Financing:

Scheme	Group	Financing party	Contribution rate
IKA	General	Employees	6.7% (in 2010) - 7.6% (in 2015)
		Employers	13.3% (in 2010) - 15.4% (in 2015)
	Arduous/Construction	Employees	8.9% (in 2010) - 9.9% (in 2015)
		Employers	14.7% (in 2010) - 16.7% (in 2015)
OTE		Employees	6.67%
		Employers	13.3%
DEH	General	Employees	6.67%
		Employers	13.3%
	Arduous	Employees	8.87%
		Employers	14.7%
	Hazardous	Employees	9.17%
		Employers	18.33%
BANKS		Employees	6.67%
		Employers	13.3%
		State	14%

5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Impact of measures i) and ii) on leveraging the average career length for IKA insureds For IKA-ETAM the increase of the average contributory period due to the new eligibility requirements and the improvement of macroeconomic assumptions led to a significant average career shift upwards.

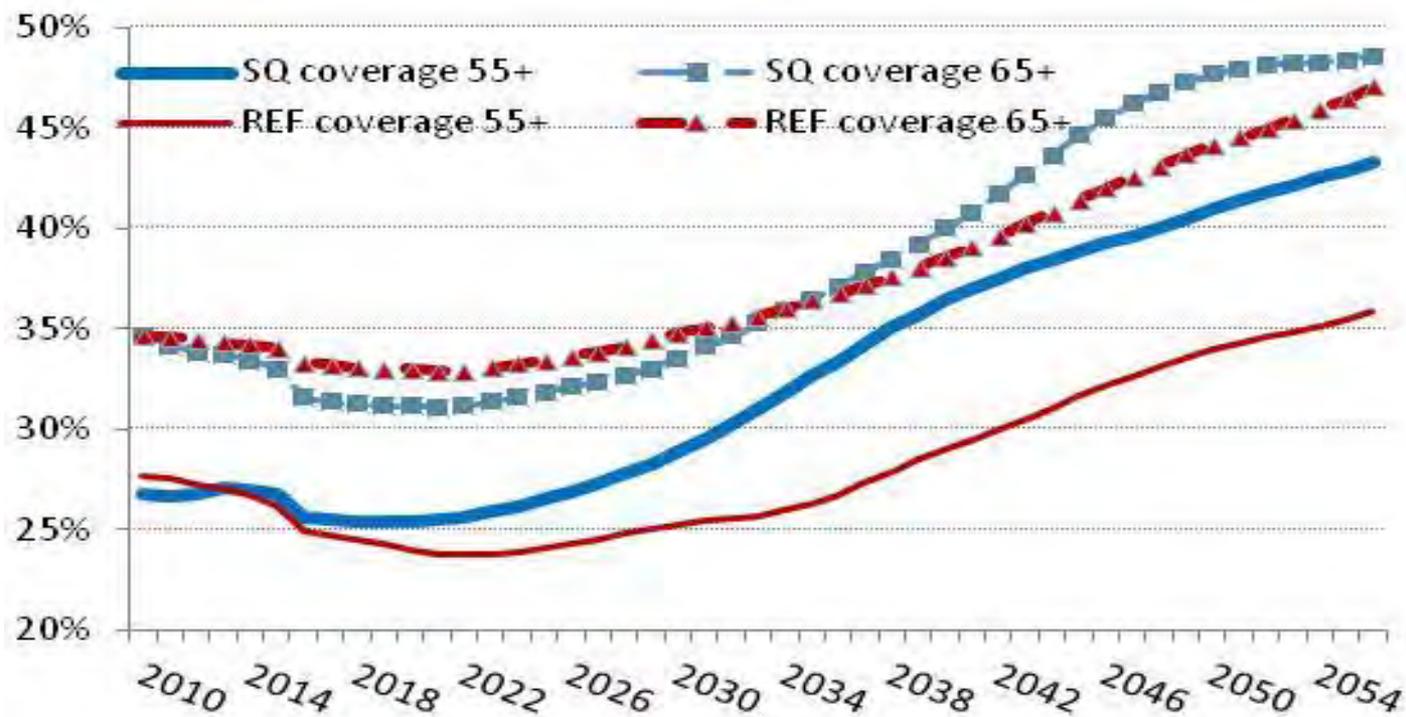
IKA ETAM AVERAGE CAREER LENGTH OF NEW PENSIONERS



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Firstly the coverage (population of IKA-ETAM pensioners/ total population) of people over 55 is significantly dropping between the two valuations, shifting people instead of acquiring an early or disability pension to be employed. Secondly even the coverage of people over 65 is also dropping after the establishment of the reform during the years beyond 2035. See Graph 7 below.

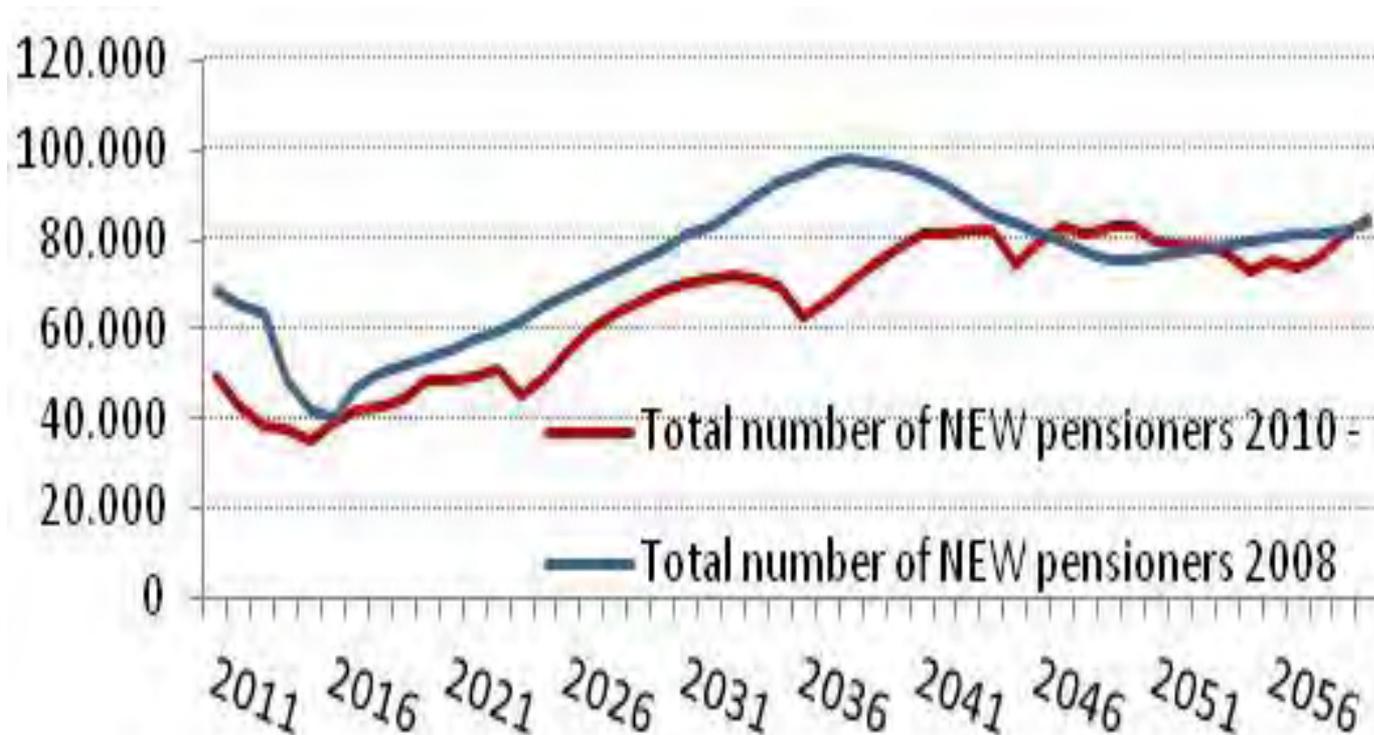
DROPPING OF COVERAGE SQ (2008), REF (2010) AT IKA_ETAM



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Impact of measures iii) and iv) on increasing the average retirement age for IKA insureds

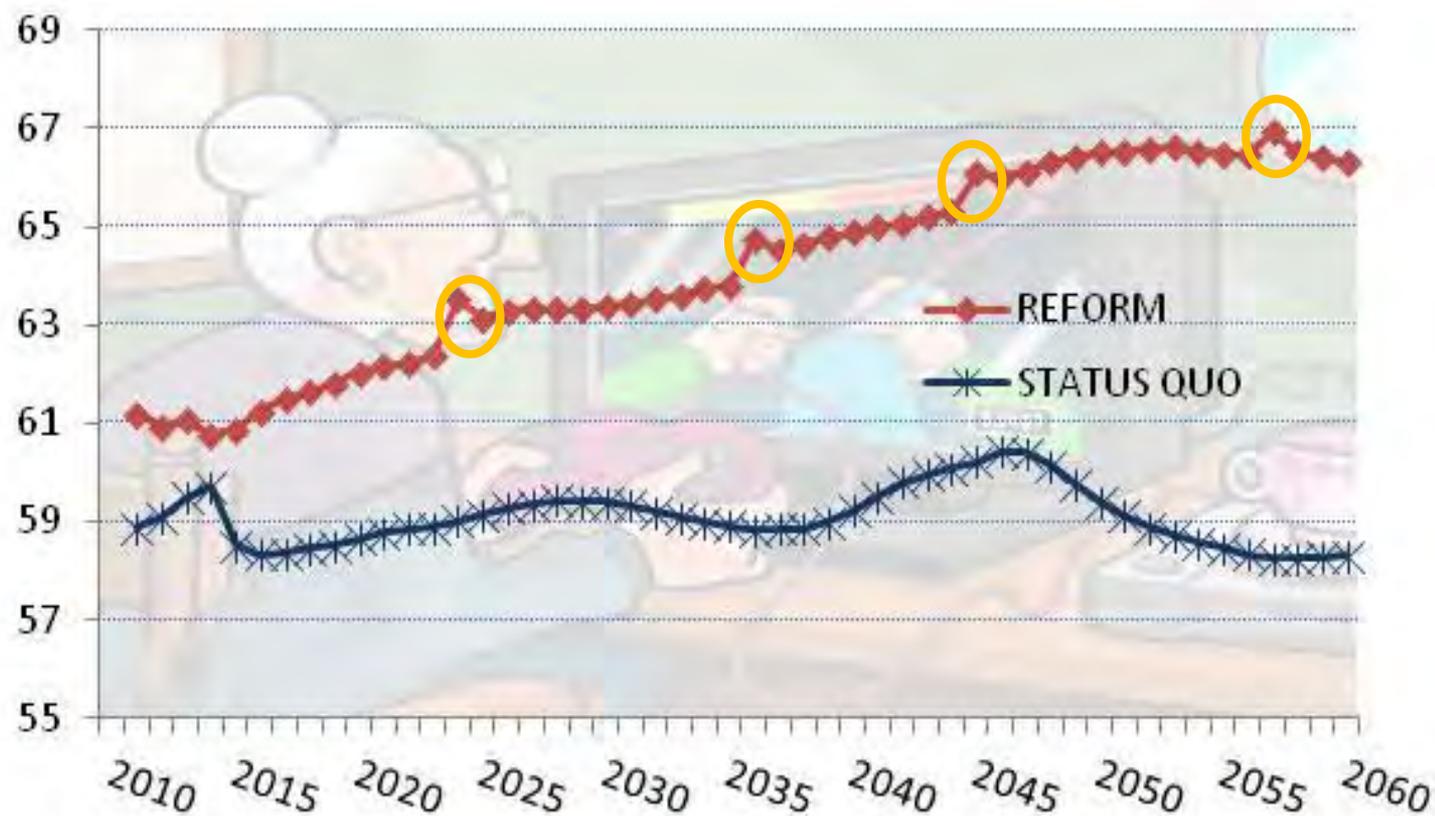
IKA_ETAM IMPACT OF THE POSTPONEMENT OF THE RETIREMENT AGE TO NEW PENSION AWARDS



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Impact of measures iii) and iv) on increasing the average retirement age for IKA insureds

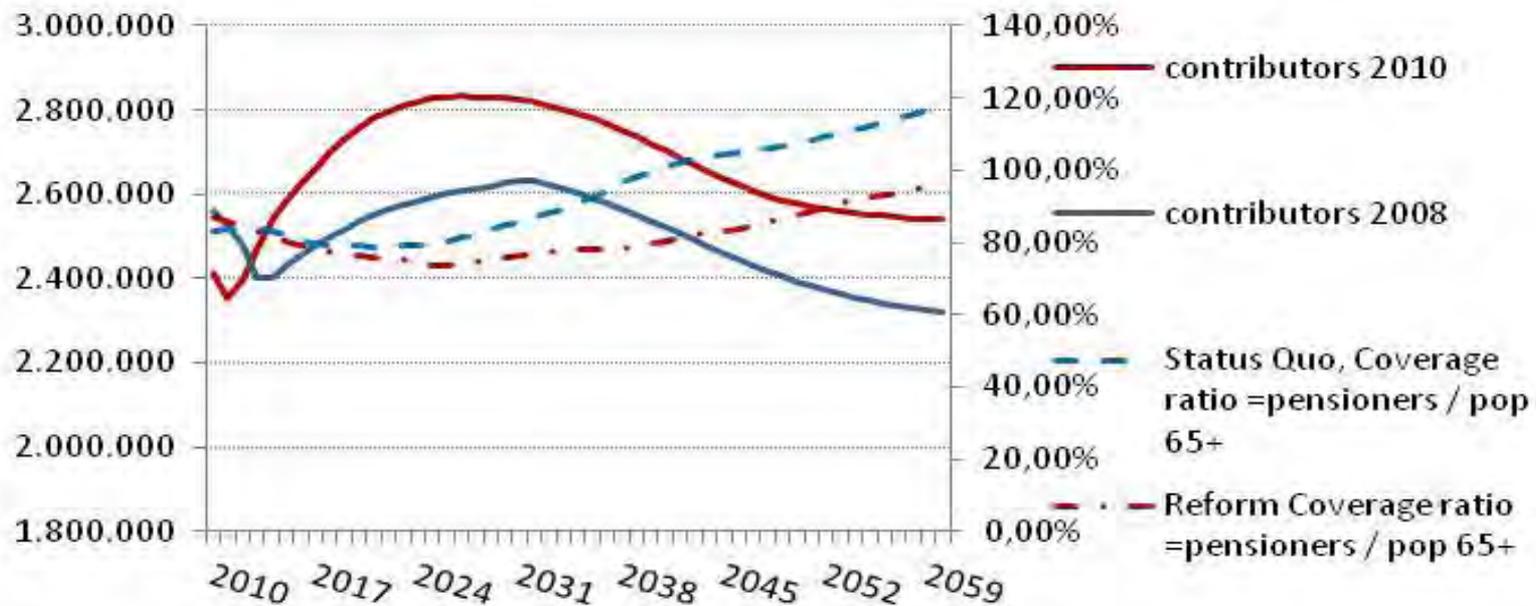
IKA_ETAM AVERAGE RETIREMENT AGE OF NEW PENSIONERS



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Impact of other components as unemployment and the shift of GDP curve. Also from the GDP shift downwards some fiscal effects concerning pensionable salary indexation and as a consequence contributions

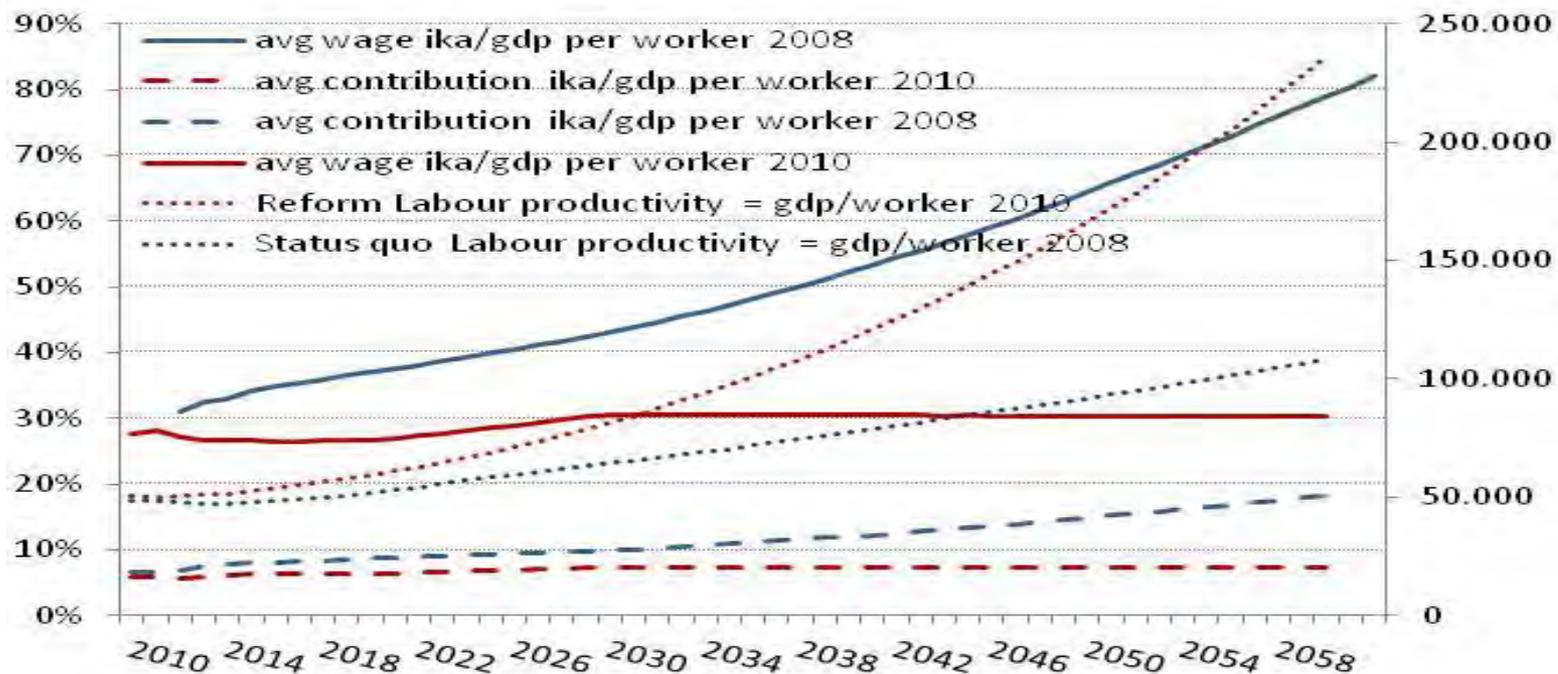
IKA-ETAM INVERSE RELATION OF CONTRIBUTORS AND COVERAGE BETWEEN 2008 AND 2010



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

It is observed that relative wage and contributions drops to the average GDP of the employed (Labour Productivity) is inversely linked to the labor productivity gains because the latter is a denominator of both former indices. As Labour Productivity increases salaries and contributions increase and their relative magnitude on productivity decrease. It seems that the macroeconomic frame of 2010 more consistently access the relation of wages with productivity.

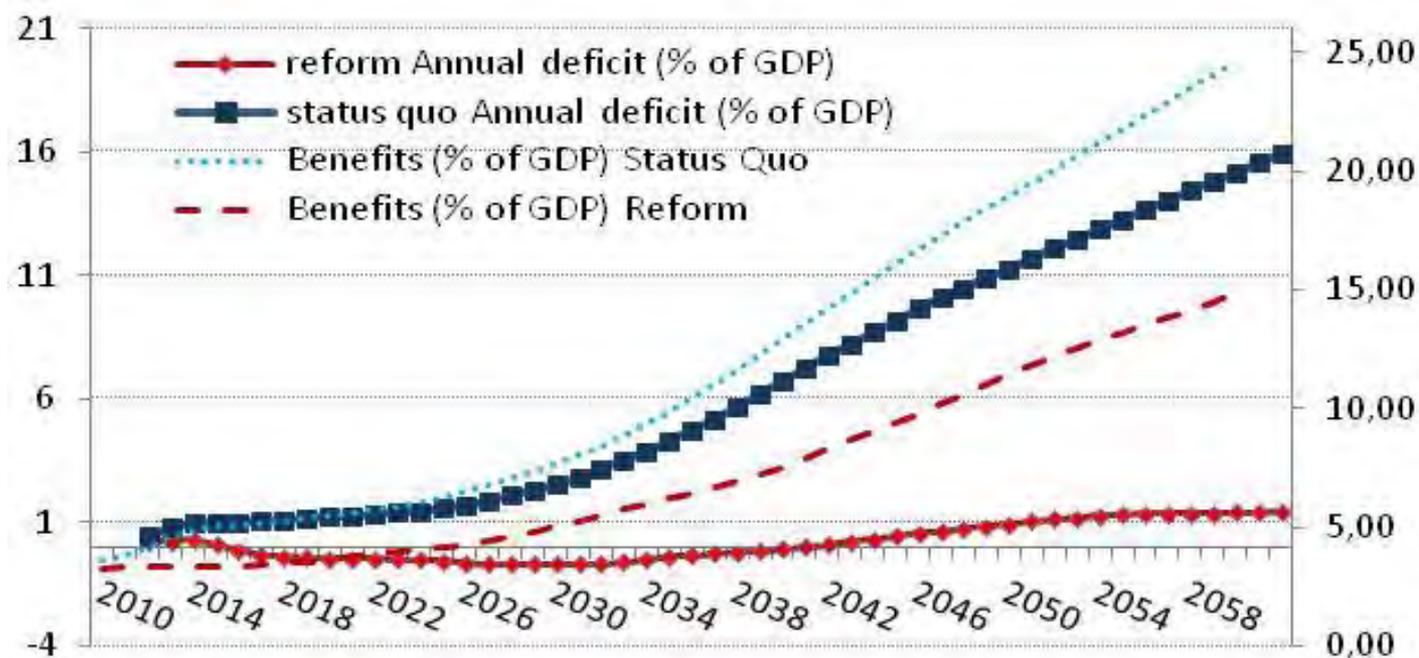
IKA-ETAM SALARY AND CONTRIBUTION EFFECTS FROM THE GDP SHIFT



5. IMPACT OF THE REFORM ON IKA-ETAM: COMPARISON REFORM (2010) AND STATUS QUO (2008)

Although no measures of financial impact are calculated in the reform scenario (new pension formula incorporating the whole career salary average, reduced accumulation rates etc.), benefits and resulting deficit are projected to decline between the two valuations. The difference is the starting point base for salaries and contributions.

IKA-ETAM REFORM VERSUS STATUS QUO RESULTS ON BENEFITS AND DEFICIT AS A GDP PERCENTAGE



6.IKA -ETAM EFFECTIVE OUTCOME 2011-2012

On the pessimistic side of projections, real results indicate further worsening of the dependency ratio of IKA-ETAM. Also active population has declined by 7% due to increased unemployment. On the contrary pensioners have been increased by 0.63% due to the wave of early pension awards which followed the reform.

As far as Greek economy is concerned unemployment has increased since 2013 to 26% and the GDP continues to drop at the paste of 4% - 5% yearly.

YEAR	2011	2012
TOTAL ACTIVES	2.211.064	2.056.000
TOTAL PENSIONERS	1.204.947	1.212.591
TOTAL CONTRIBUTIONS	6.105.205.867	5.694.185.600
TOTAL PENSION EXPENDITURE	10.219.279.586	10.400.029.901
Economic Dependency ratio = Pensioners/Contributors	54,50%	58,98%

7. CONCLUSION

- ❖ On the long run macroeconomic developments appear consistent to what logically could have been expected from a pension reform. Indicators relating to the pension system are improved. The trend shows that those changes may have been in the right direction for streamlining demographic changes with the labour market as well as giving a chance for more adequate pensions.
- ❖ In the short term it is essential that inverse trends are captured and mitigated on time before a crisis is reached. This may not originally be the scope of the EU pension studies. However if short and medium term trends are better assessed and crisis are predicted countries would be able to undergo longer and milder transition periods for fiscal consolidation.
- ❖ A reform moreover in order to achieve its goals, it is essential that the labour market is targeted to support those expectations. EU countries should focus in enlarging the labour market and adopt appropriate working places for the “silver workers”, they should also adopt policies targeting in creating jobs suitable for them. Meanwhile young people should not be negatively affected by those strategies.

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THANK YOU

