Rebuilding the Greek Economy:
Progress, Puzzles and the Need for a New Policy

Keynote Lecture: Nicos Christodoulakis
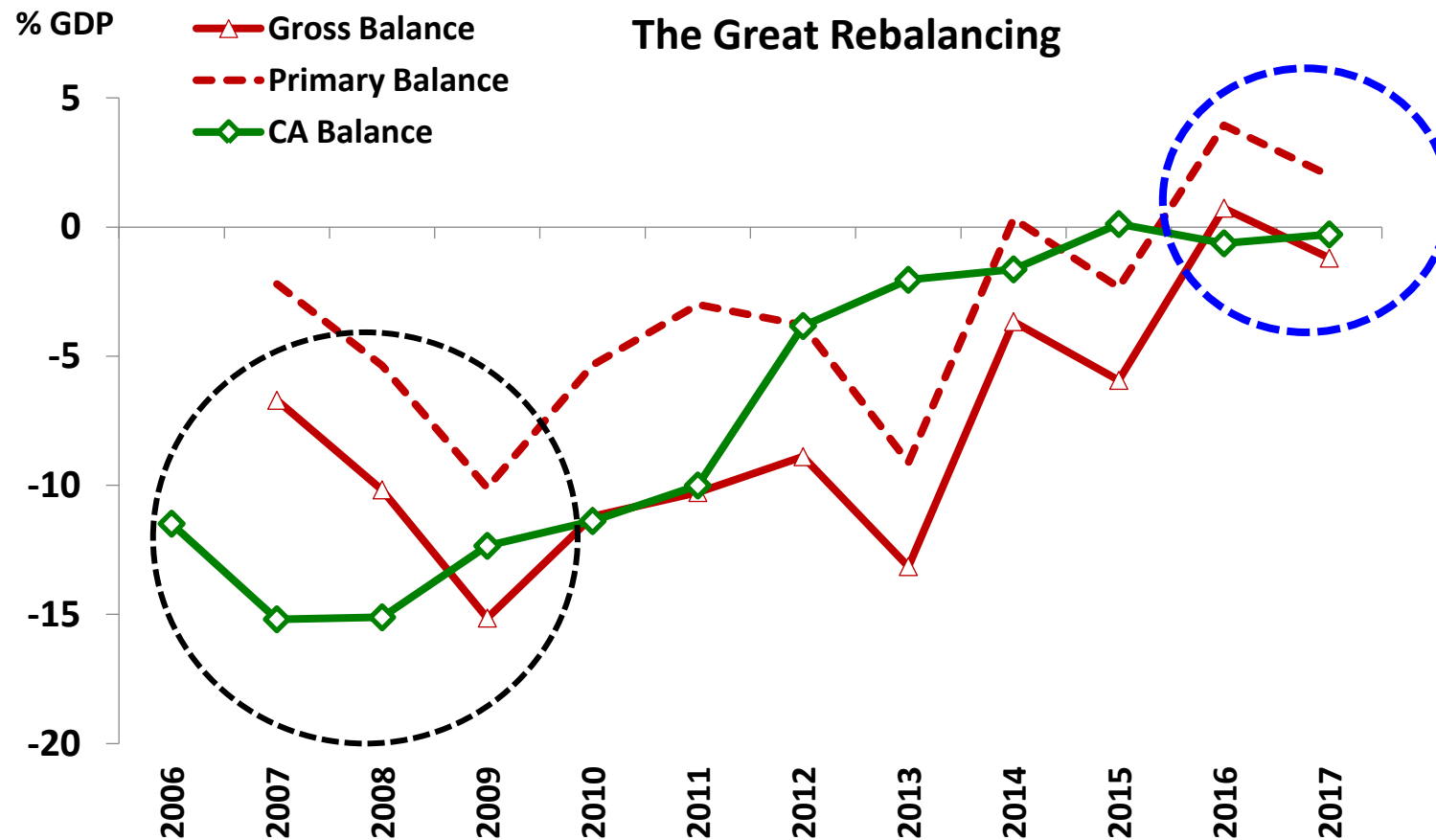
Athens University of Economics and Business

Based on joint work with Milton Nektarios and Harry Theocharis

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Back from the abyss …
Greece tamed-down the twin deficits and seems now to be back on track. But …

The Great Rebalancing

% GDP

Legend:
- Gross Balance
- Primary Balance
- CA Balance
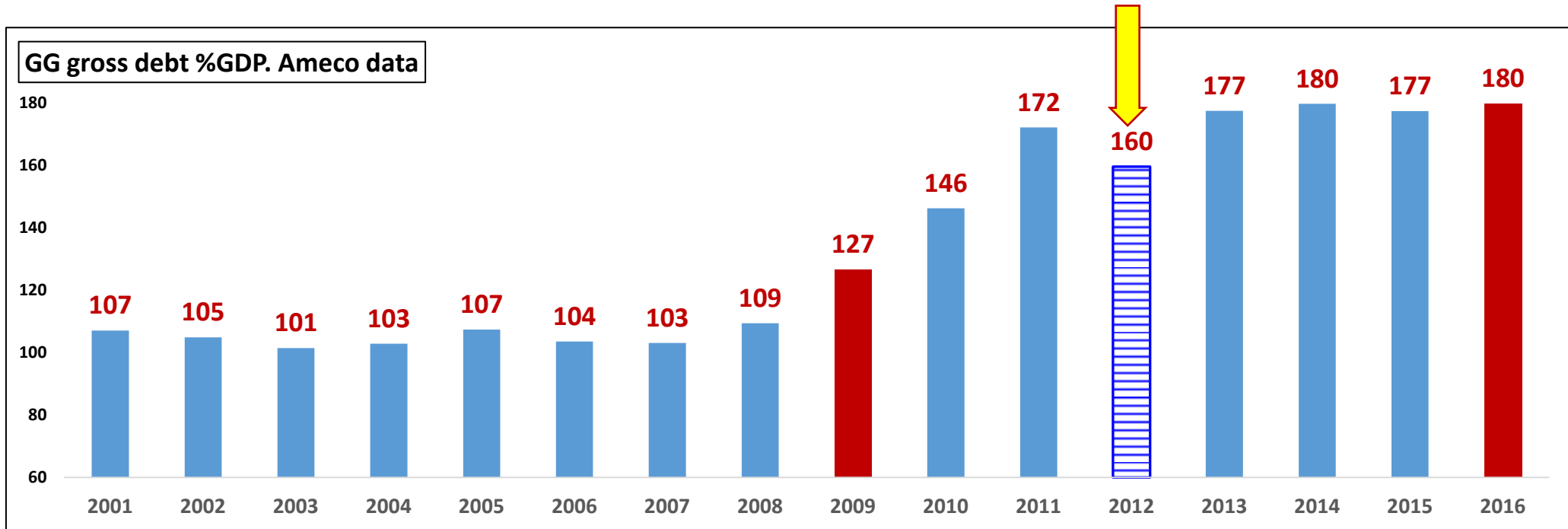
Source: Ameco, IMF WEO Databse

Three persisting puzzles

1. PUBLIC DEBT: Considered as the main cause of the 2010 crisis – *"the Greek Debt-Crisis"*.

However, in Jan 2010 was at **127% of GDP**
After seven years of fiscal adjustment, debt stands at the even more alarming **180% of GDP**
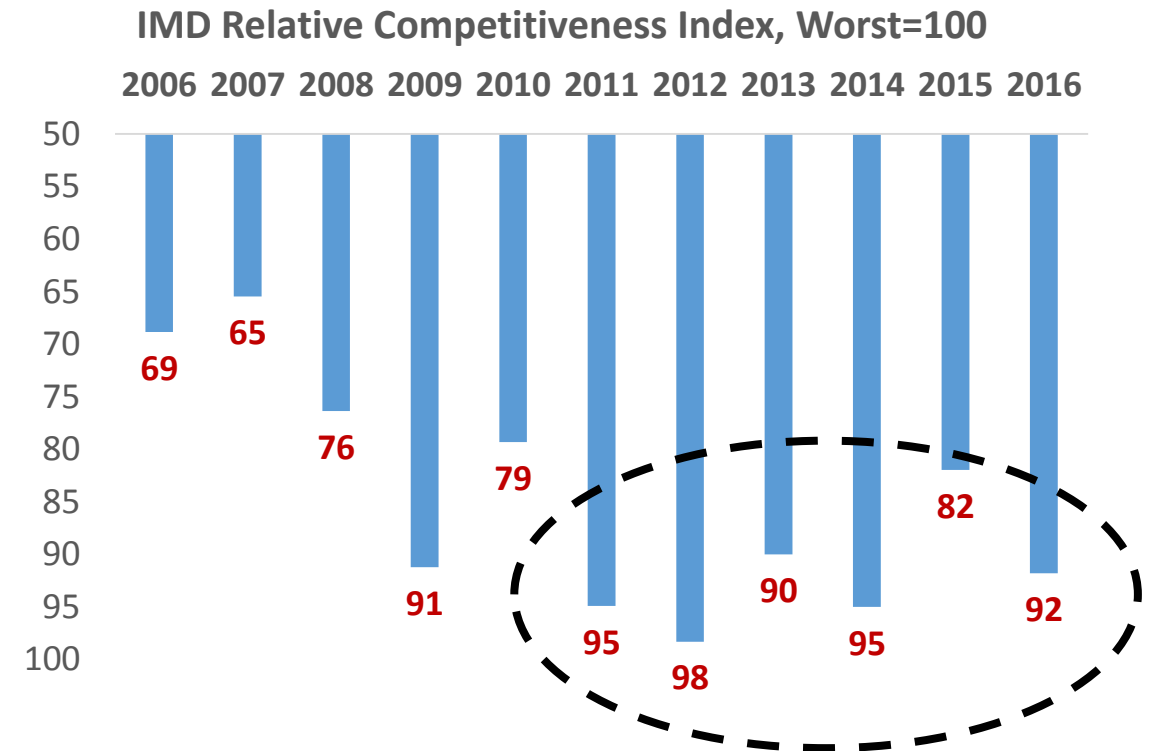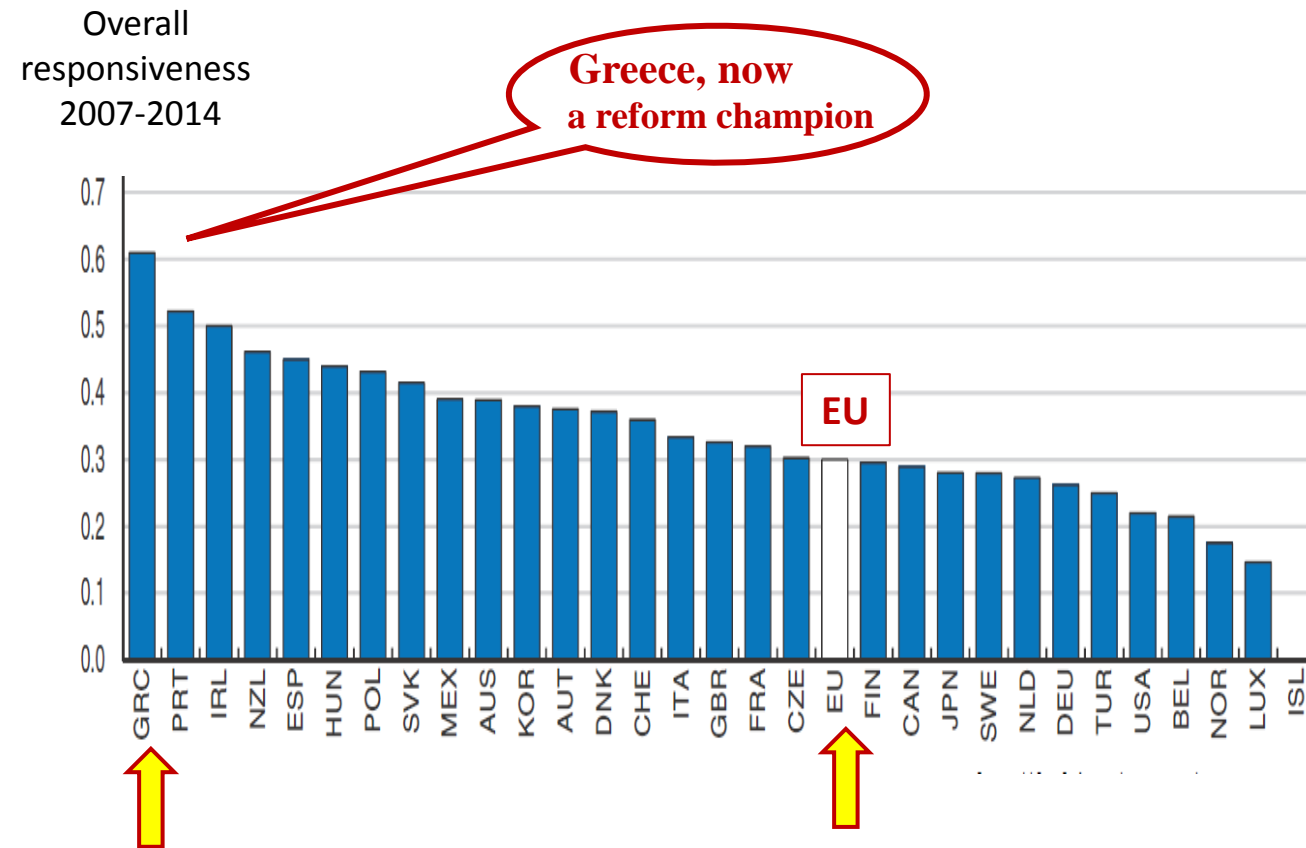Despite a huge nominal 'haircut' of **€ 110 billion** by means of the **PSI** in 2012

GG gross debt %GDP. Ameco data

Year	Value
2001	107
2002	105
2003	101
2004	103
2005	107
2006	104
2007	103
2008	109
2009	127
2010	146
2011	172
2012	160
2013	177
2014	180
2015	177
2016	180

Paradox #1: A new debt reduction is required today, most probably subject to a new round of fiscal measures and long-term conditionality.

Source: Ameco

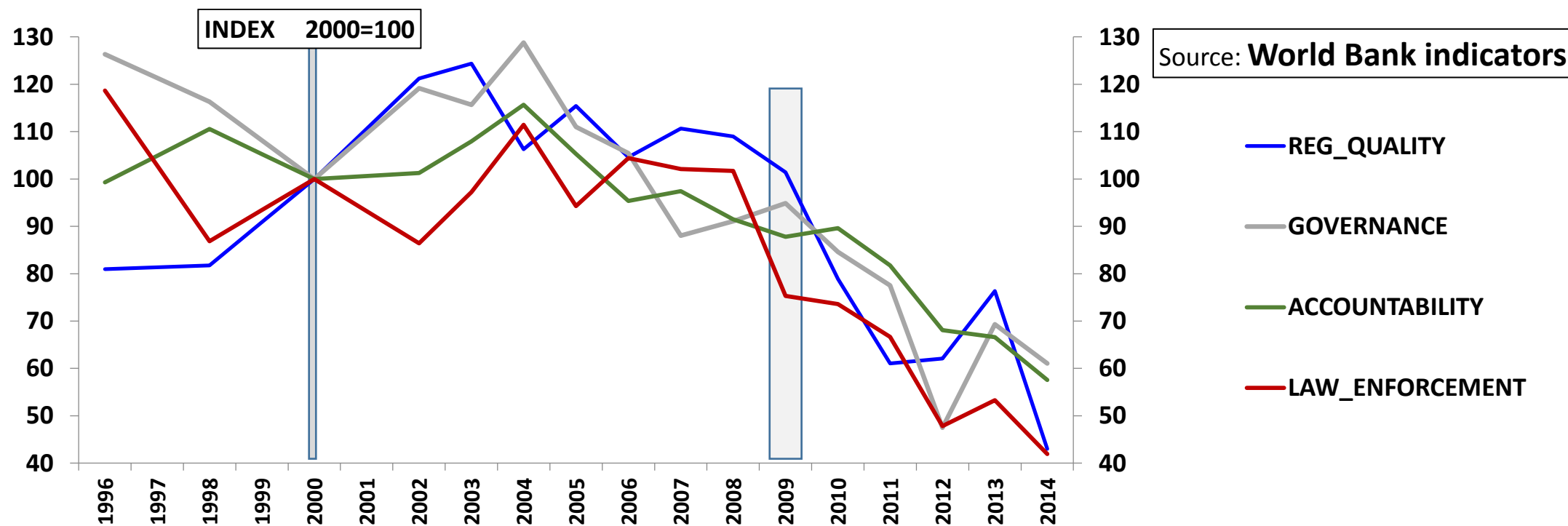## 2. MARKET REFORMS: Their shortage was seen as the main reason that Greece is still trapped in recession

In 2016, OECD established that Greece had the highest record of policy reforms among all EU economies.
[OECD, 2015. Economic Policy Reforms: Going for Growth. Fig. 4.2B, page 109]

Overall responsiveness 2007-2014

Greece, now a reform champion

IMD Relative Competitiveness Index, Worst=100

Source: OECD, 2015. Economic Policy Reforms: Going for Growth. Fig. 4.2B, page 109.

… Moreover, according to the Good Governance Indicators the quality of market functioning has been vastly deteriorated since 2009

INDEX   2000=100

Source: **World Bank indicators**

- REG_QUALITY
- GOVERNANCE
- ACCOUNTABILITY
- LAW_ENFORCEMENT

Paradox #2: Today, all EU institutions and IMF require a new round of market reforms, amid an exasperated social and economic climate.

The common ground of such developments was the deep (and largely unforeseen) recession, caused by the front-loaded fiscal program of spending cuts and tax & social insurance rises
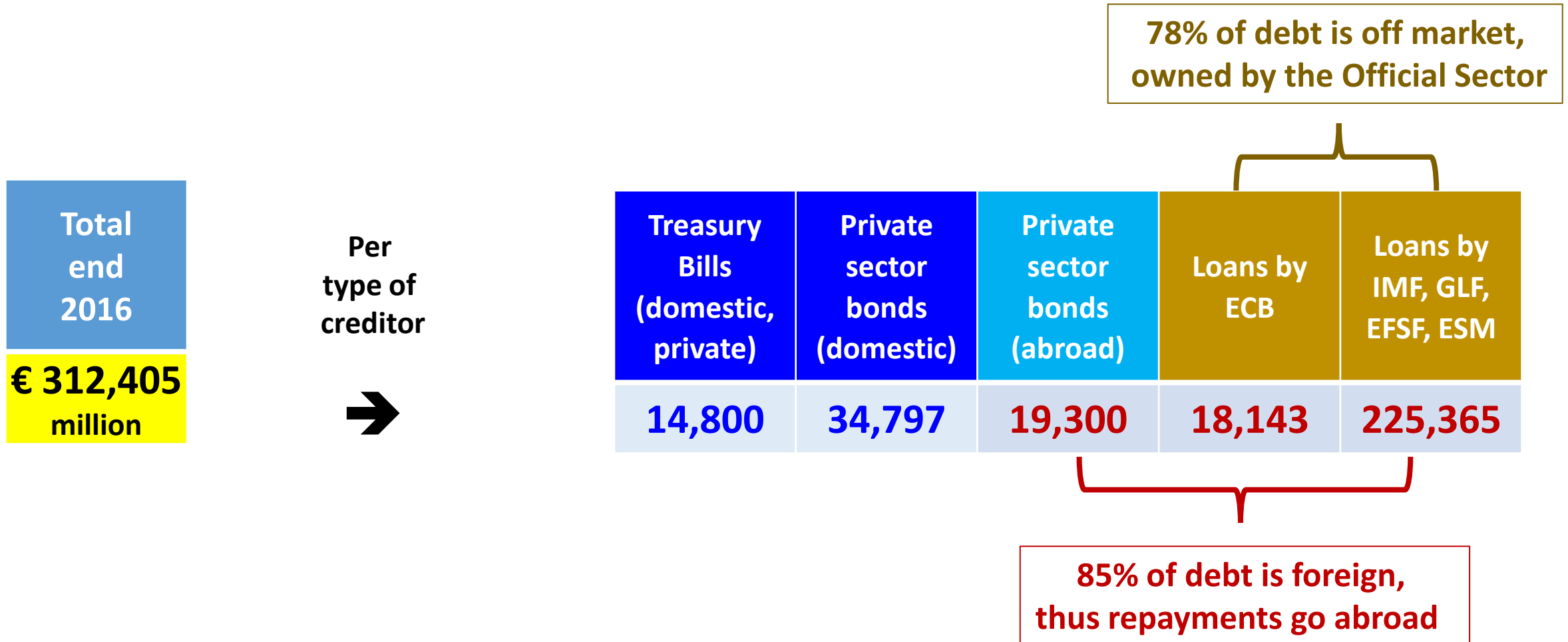
Long term perspectives, not encouraging: **Working-age population declines fast.**
Long-term growth around 1.2%-1.5% pa.

Just yesterday, the IMF warned that growth after 2020 would be as low as 1%

The chain reaction in the economy:

- Recession continues: ➔ Impossible to stabilize the Debt/GDP ratio
- Tax evasion increases ➔ Revenue losses caused new rounds of tax rises
- Higher charges on companies ➔ Business relocation in Cyprus, Bulgaria, et al.
- Wage cuts and higher SIC ➔ Skilled employees migrating to other countries
- Social insurance evasion ➔ Unregistered labour increases

Part I. The Greek debt conundrum

Total end 2016

€ 312,405 million

Per type of creditor →

78% of debt is off market, owned by the Official Sector

Treasury Bills (domestic, private)	Private sector bonds (domestic)	Private sector bonds (abroad)	Loans by ECB	Loans by IMF, GLF, EFSF, ESM
14,800	34,797	19,300	18,143	225,365

85% of debt is foreign, thus repayments go abroad

<u>Debt Sustainability Analysis under current policy assumptions</u>

➢ **Primary surpluses at 3.50% of GDP 2018-2023**, gradually adjusted to 2% afterwards

➢ **Inflation rate 2.0%**
➢ **Low growth rates in the medium and long term**: **1.5% in 2017   and   2.7% in 2018**
   1.75% in 2019-2021,   1.50% in 2022-2030 1.25% in 2031-2060

➢ **New issues of 5-year bonds: Interest rate at   R = 3.30% + (debt/GDP – 60%)*3.25%**

➢ **Total privatization revenues for debt reduction € 18 billion evenly spread 2017-2030**

The dynamics of debt accumulation

$$b(t) = [1 + r(t) - g(t)] \cdot b(t-1) - s(t) - k(t)$$

$b(t)$ is the debt-to-GDP ratio (%) at the end of period t

$r(t)$ the real rate of interest

$g(t)$ the rate of real GDP growth per annum

$s(t)$ the primary fiscal surplus as percent of gdp

$k(t)$ privatization proceeds as percent of gdp

Enter uncertainty …

Allow for fluctuations in growth, inflation and fiscal outcomes

Monte Carlo simulations: 95% confidence intervals are obtained for key variables

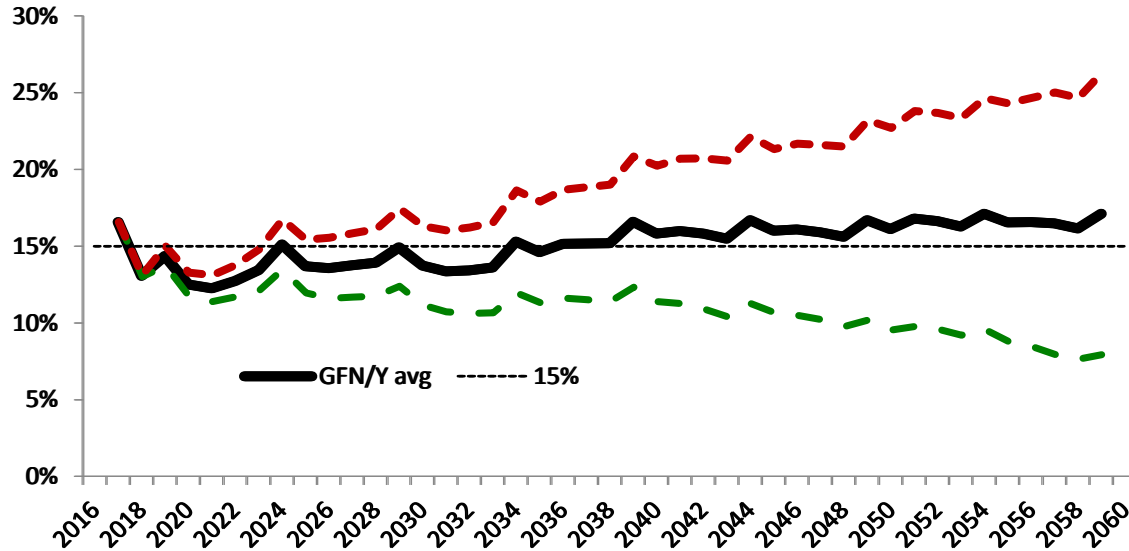Random draws from Normal Distributions (assumed independent)
   Growth rate   std = 2.01% (est. over 1999-2008)
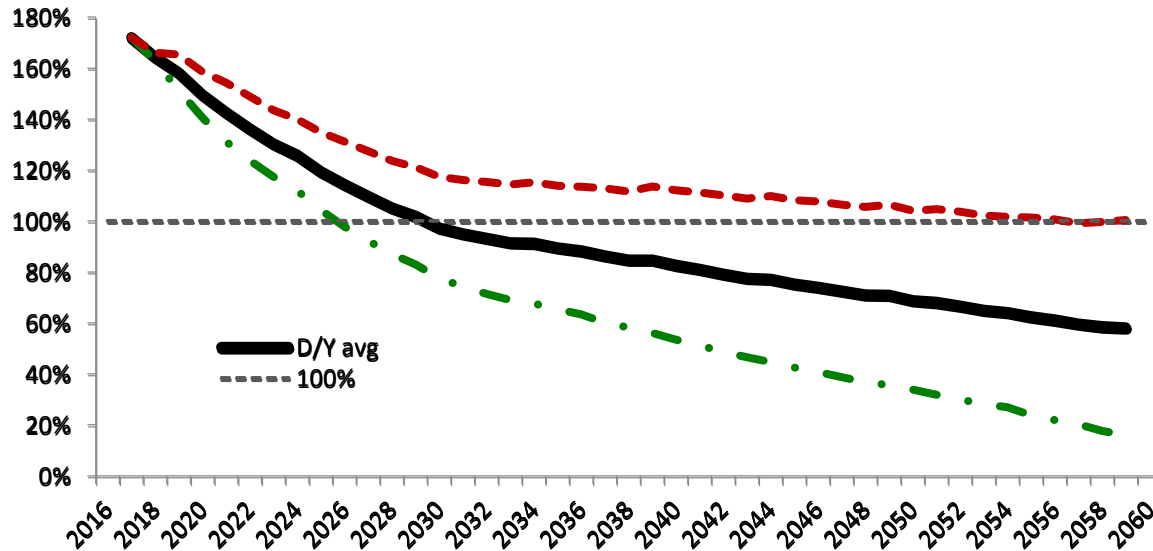   Inflation rate   std = 0.77% (est. over 1999-2008)
   Primary surplus std = 0.10% of GDP (by assumption)

SCENARIO I : As in EC DSA (2016). Higher surpluses, lower growth

Gross Financial Needs, % GDP

— GFN/Y avg   ------- 15%

Public Debt, % GDP

— D/Y avg
------- 100%

Enter uncertainty: Draw 95% confidence intervals

GFN likely to remain above 15% of GDP

Debt likely to remain above 100% for much longer after 2030.

Too much uncertainty

Debt sustainability Unlikely to be credited by the markets

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This would drive risk premia up and make public borrowing very expensive !

Why the uncertainty effect on debt is so explosive ?

Calculating the variance of debt

For simplicity assume that **r(t), g(t), s(t), k(t)** are independent of **b(t).**

The variance of debt is a dynamic variable given as:

$$var(b, t) = [1 + \Gamma + M] \cdot var(b, t - 1) + \Gamma \cdot \mu_b^2 (t - 1) + \sigma_s^2 + \sigma_k^2$$

Where μ_x the expected mean of variable (x)

$\Gamma = \sigma_r^2 + \sigma_g^2 - 2cov(r, g).$ *Since* $cov(r, g) < 0$ ➔ $\Gamma > 0$
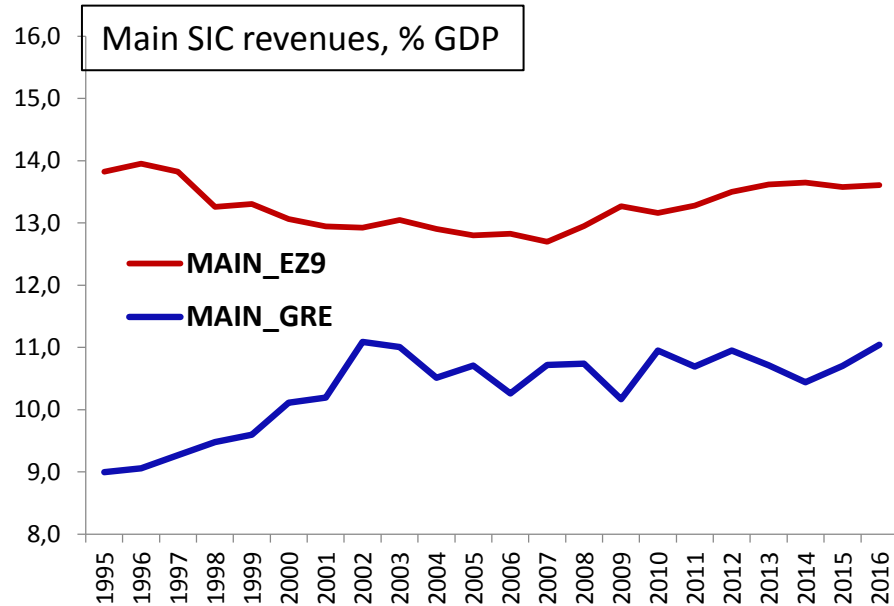
$M = (\mu_r - \mu_g)^2 + 2(\mu_r - \mu_g)$ → If $\mu_g < \mu_r$ ➔ $M > 0$ ➔ $1 + M + \Gamma \gg 1$

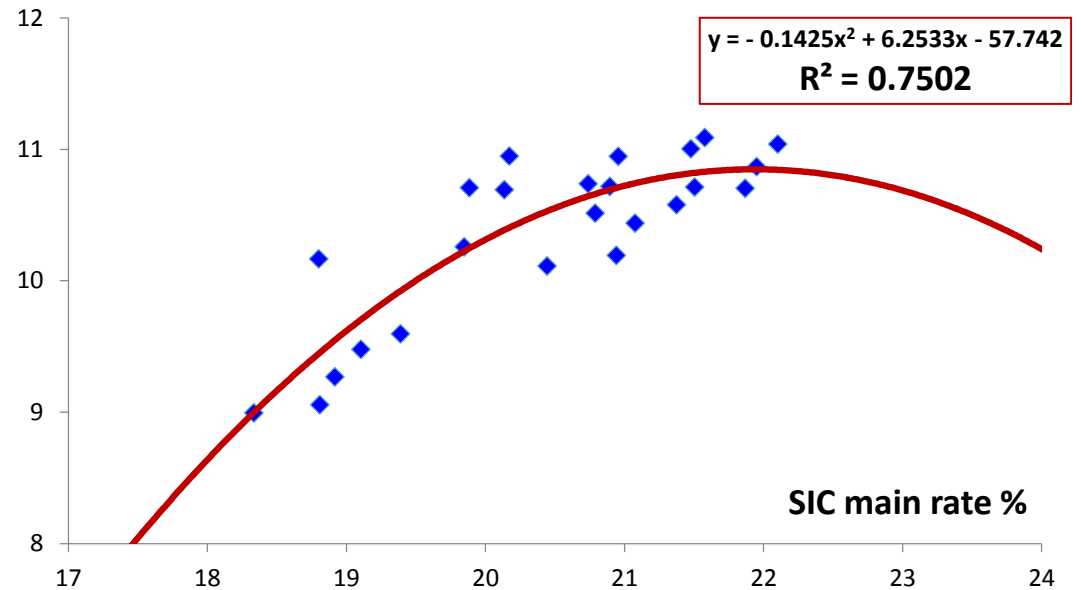Only if $\mu_g > \mu_r$ ➔ M *is small* ➔ $1 + M + \Gamma$ *close to* 1

Therefore, variance may not be explosive overtime only if growth is substantial

II. SOCIAL INSURANCE

Social Insurance revenues as %GDP lag behind other EA countries, even though rates in Greece are getting higher

Main SIC revenues, % GDP

- MAIN_EZ9
- MAIN_GRE

Main SIC Revenues %GDP   1995-2016

$y = -0.1425x^2 + 6.2533x - 57.742$
$R^2 = 0.7502$

SIC main rate %

Evidence of Laffer-curve effects in Greece

A Labour Market Paradox: With higher SIC rates, incentives for moon-light employment rise ➔ registered employment decreases ➔ future full-pension claimants are reduced

Source: ΟΟΣΑ, Ameco. EZ9 excludes
Ireland, Lux and other countries with extensive private sector insurance

Estimating a Laffer-curve effect for social insurance contributions in the Euro Area 12, 1995-2016
Let **S** = SIC revenues as % GDP and **h** = Effective total SIC rate % = (SIC Revenues)/(Wage Bill)

Equation: $S_t = c + \alpha S_{t-1} + \beta h - \gamma h^2$ ➔ Revenue maximizing SIC rate at: $h^* = \beta / 2\gamma$

Sample	1995 - 2016		Nobs 22		Countries 12	
Pool obs	264					
Method➔	Pooled LS fixed effects	p-value	Max SIC h*=β/2γ 95% band		Effective rate as in 2016	Comment
Revenues SIC %GDP			Lower bound	Upper bound		
Constant	-19.9781	0.0004				
(α) SIC%Y[-1]	0.335108	0				
(β) Rate SIC	1.987015	0				
	(γ) Rate SIC^2					
AUS	-0.02517	0.0052	25.97	52.99	28.06	
BEL	-0.02828	0.0016	27.60	42.67	26.90	
FIN	-0.0354	0.0005	24.05	32.08	23.51	
FRA	-0.02347	0.0009	36.05	48.62	32.33	
GER	-0.02361	0.0018	34.16	49.98	29.61	
GREECE	-0.03301	0.0004	27.17	33.03	28.70	within
IRE	-0.0831	0.0001	10.81	13.11	12.05	within
ITA	-0.02976	0.0016	27.45	39.31	24.96	
LUX	-0.03347	0.0011	24.32	35.06	23.64	
NDL	-0.03012	0.0017	27.04	38.93	25.70	
POR	-0.04566	0.0001	20.45	23.06	22.90	within
SPA	-0.04565	0	19.31	24.21	22.34	within
R2 adj	0.992527		HQ crit.	0.576869		
S.E.R.	0.285791		DW stat	1.243		

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III: The Tax System

➢ **Tax revenues as % of GDP have converged to the Eurozone average**

➢ **There are still some large asymmetries and substantial problems:**

 1. **Indirect taxes are significantly higher than the Eurozone average**

 1. **Direct taxes are significantly lower than the Eurozone average**

 2. **There are too many rates and even more tax breaks ➔ complication and high costs**

Obviously, tax collection is not efficient ! **For example, VAT gap estimated at € 5 bn**

A new policy mix is proposed along three axes:

1.Reduce required **primary surpluses at 1.50% of GDP.**
Earmark **1.50% - 2% of GDP** of public expenditure to finance new investment
     on productive infrastructure, innovation and export-led investment.

2.Tax rate simplification and reduction :
     Unification of, and reduction in, corporate and income tax rates
     Simplification of the VAT system
     Abolition of tax exemptions (replace with budget-financed programs)
     Balanced tax burden on personal incomes and small-firms, to reduce tax-evasive behavior

3.Reduce main social insurance rate from **20% to 12%**
To improve returns, introduce private financial management on supplementary pensions

Recent evidence on the public investment multiplier

Abiad A., D. Furceri and P. Topalova (2015). IMF WP 15/95 : medium-term fiscal multiplier of **about 1.4**

Ilzetzki E., E. Mendoza and C. Végh (2011). IMF WP/11/52

"…government investment multiplier is 0.36 on impact and **1.42 in the long run**"

Hall (2009): short- term output multiplies **close to 1.70**

Papaioannou S. (2016). KEPE WP No. 70332 Public multiplier in Greece **at the end of first year is 1.13**

Christiano et al (2011) and Eggerston (2011): multipliers ranging **between 2.0 and 2.5**
(especially if the economy is close to the zero bound – because crowding-out effects are weak)
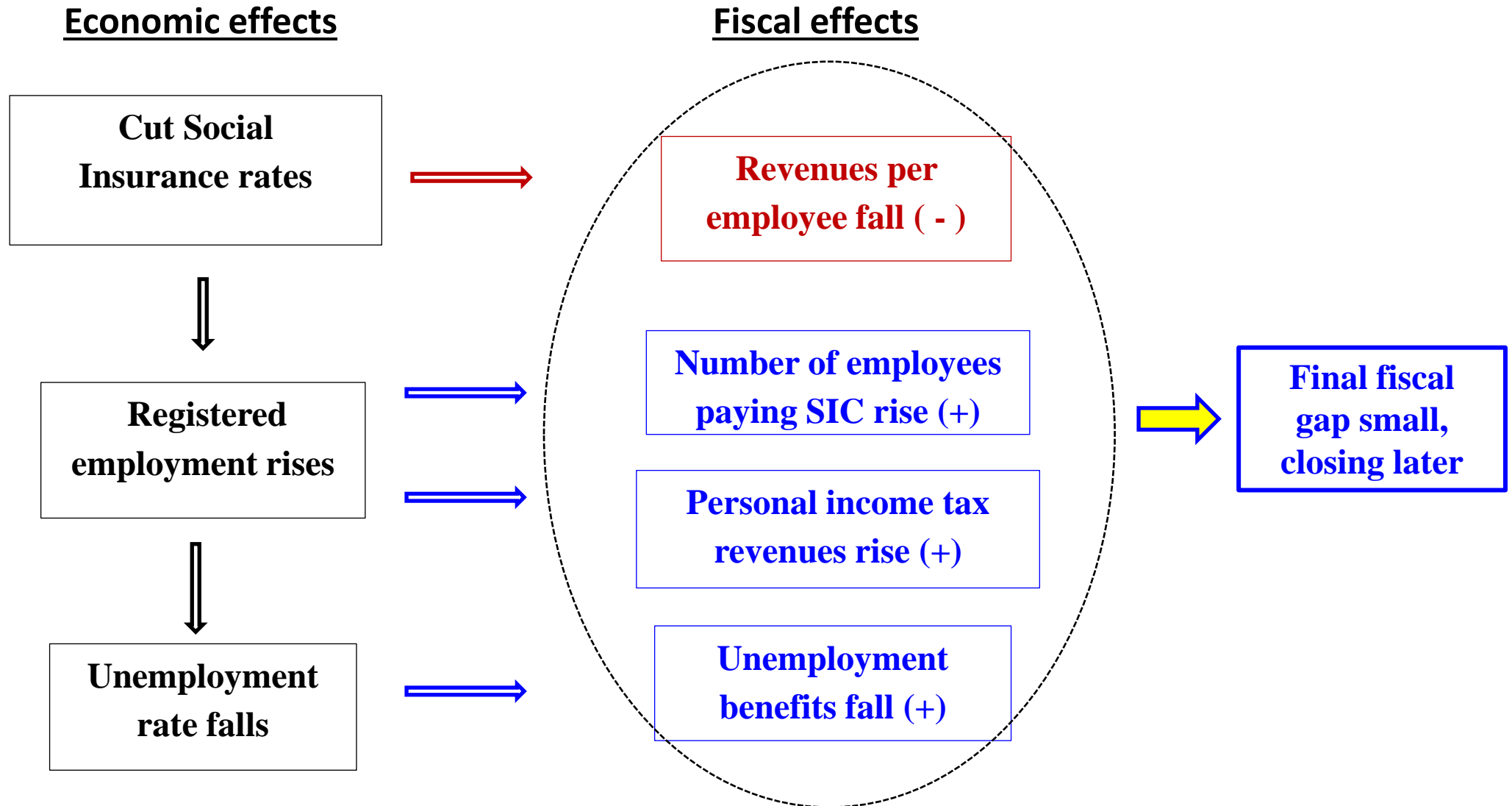
Investment multiplier lifts growth

Set at 1.50, assumed to operate from the first year and peters out in about 5 years.
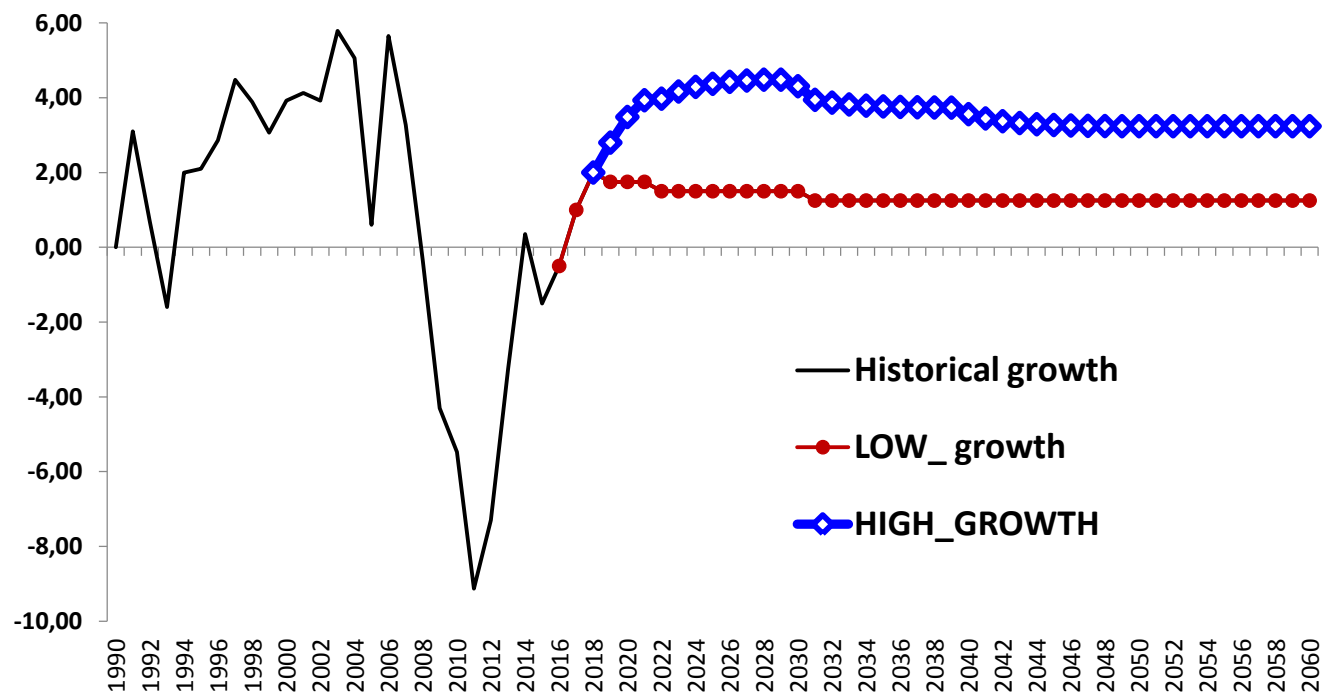
➢ **Tax exemption threshold at € 5,600 as a tax discount, gradually vanishing at € 40,000. (Currently at € 9,600). *Voted***

➢ **Corporate tax rate at 20% of net income with simultaneous review with a view to reduce deductible expenses**

➢ **Personal tax rate at 20% until € 40,000.**
  Gradually rising to 30% for the €50,000 income bracket, by 1% for every extra € 1,000 of income.

➢ **Self-employed income tax rate at 20% until € 40,000.**
  Then, the rate increases by 1% for every extra € 1,000 of income to 30% at € 50,000.

➢ **Other income generated from other sources (interest, dividends, rents, etc) is taxed by 20%**

➢ **Two VAT rates: a Standard Rate of 20% and a Reduced Rate of 10%. Current Mid-Rate of 13% is abolished**

➢ **Property tax amendments and simplification of 'induced taxable income' criteria**

Reducing main social insurance rate

Economic effects

Fiscal effects

Cut Social Insurance rates

⟹ Revenues per employee fall (-)

Registered employment rises

⟹ Number of employees paying SIC rise (+)

⟹ Personal income tax revenues rise (+)

Unemployment rate falls

⟹ Unemployment benefits fall (+)

⟹ Final fiscal gap small, closing later

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Labour force participation rate

Let **PART** = Labour force as % population
and **MAGR** = MA(4 lags) of the growth rate

Cointegration equation in the Euro Area 12, 1995-2016

$$\Delta PART_t = c + \delta \cdot \Delta PART_{t-1} + \theta \cdot \Delta MAGR_{t-1}$$
$$+ \lambda \cdot \{-PART_{t-1} + \beta \cdot MAGR_{t-1}\}$$

Method	Pooled LS Fixed effects	p-val
Nobs	20	
Countries	12	
Pool obs	240	
Dependent variable	**Δ[PART]=**	
Constant	4.774396	0
ΔPART[-1]		
ΔMA Growth [-1]	0.089856	0
PART [-1]	-0.10088	0.085
MA Growth[-1]	0.085693	0
R2 adj	0.305387	
S.E.R.	0.489676	
DW stat	2.041217	

Employment rate

**ER** = Employment as % of Labour force
and **SICR** = Total SIC rate

Cointegration equation

$$\Delta ER_t = c + \delta \cdot \Delta ER_{t-1} + \theta \cdot \Delta MAGR_{t-1}$$
$$+ \rho \cdot \{-ER_{t-1} + \beta \cdot MAGR_{t-1} + \gamma \cdot SICR_{t-1}\}$$

Method	Pooled LS	p-val
Nobs	21	
Countries	12	
Pool obs	252	
Dependent variable	**Δ[ER]=**	
Constant	17.336	0
ΔER[-1]	0.4472	0
Δ MA[Growth]	0.46426	0
ER [-1]	-0.16103	0
MA Growth [-1]	0.1768	0
SICR(-1)	**-0.1252**	0.0171
R2 adj	0.608596	
S.E.R.	0.782405	
DW stat	1.843	

ALTERNATIVE DEBT SCENARIO: Lower surplus, more investment, higher growth
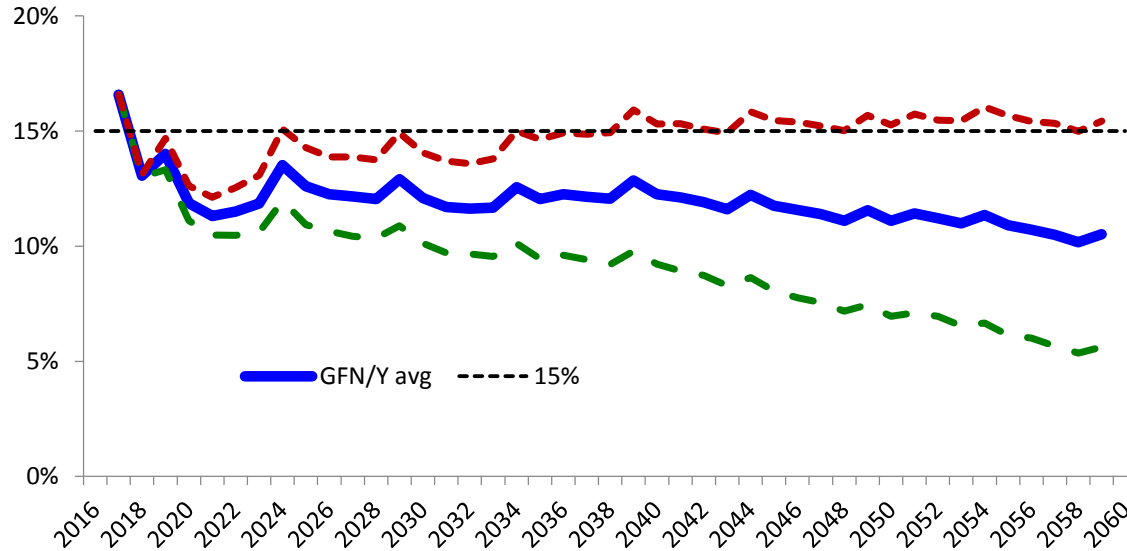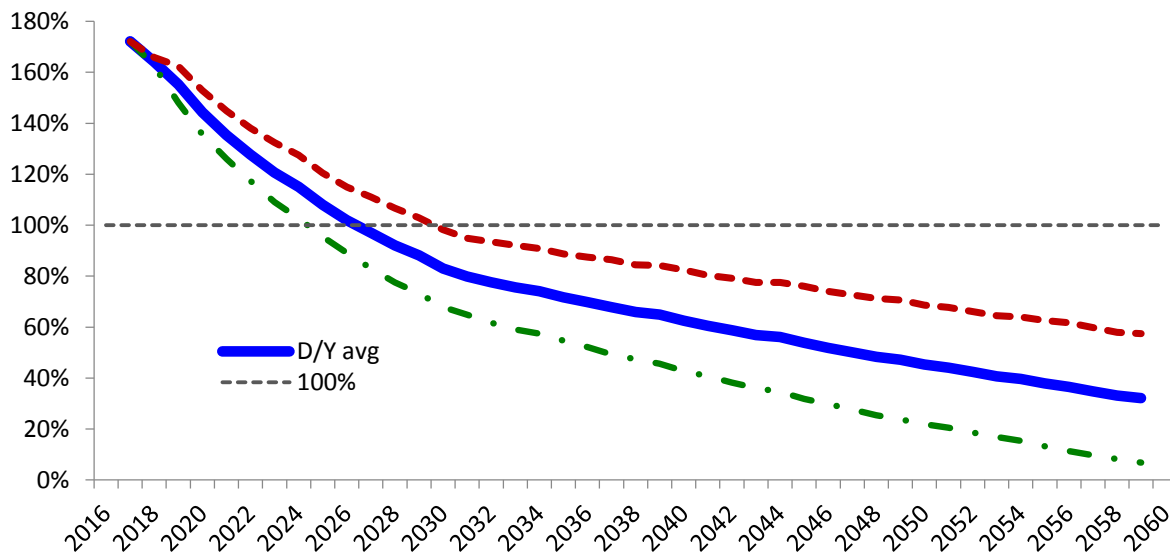
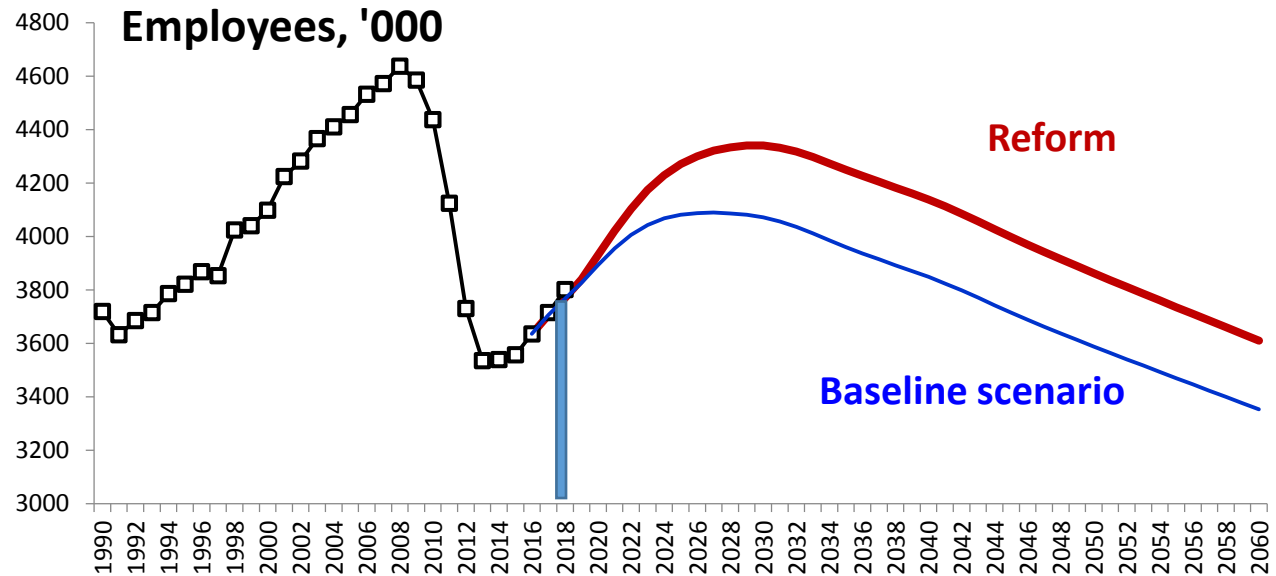GFNs always well below 15% of GDP

Debt falls below 100% at 2026

Lower uncertainty

Sustainability more credible

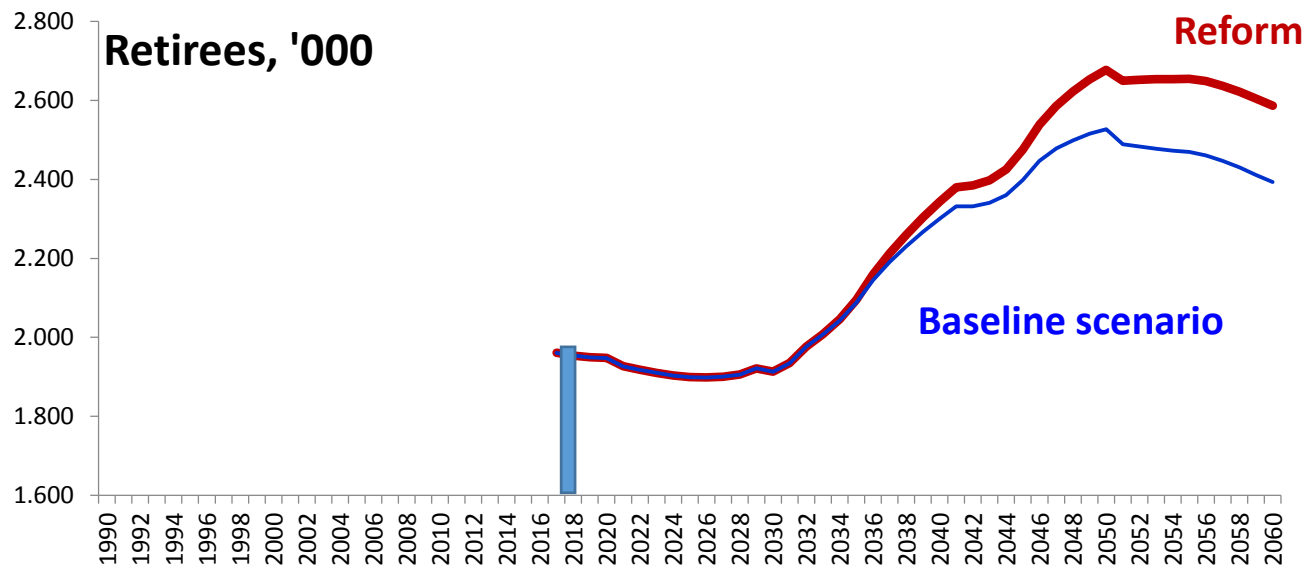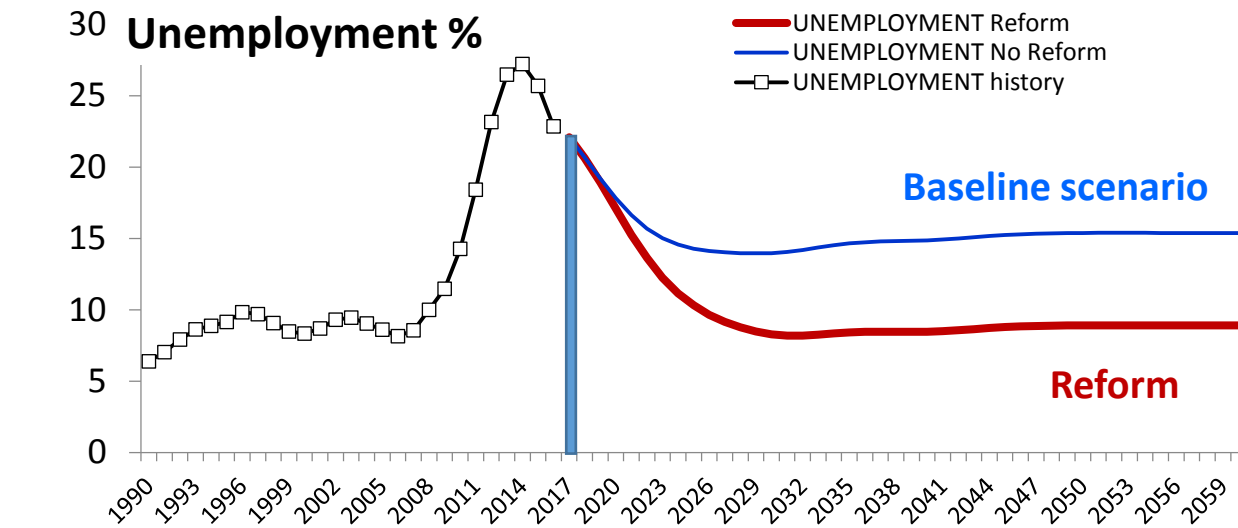# The impact of Social Insurance Reforms (1/2)

Employees, '000

(chart: Employees in thousands, 1990–2060, showing historical data with Reform and Baseline scenario projections)

➤ **By reducing contributions, employment increases by 270.000**

Retirees, '000

(chart: Retirees in thousands, 1990–2060, showing Reform and Baseline scenario projections)

➤ **Future full-pension beneficiaries increase**

Unemployment %

- UNEMPLOYMENT Reform
- UNEMPLOYMENT No Reform
- UNEMPLOYMENT history

Baseline scenario

Reform

Fiscal balance %GDP

- SIBAL%Y NOR
- tax plus SIBAL REF

➢ **By reducing contributions, unemployment falls below 9%**
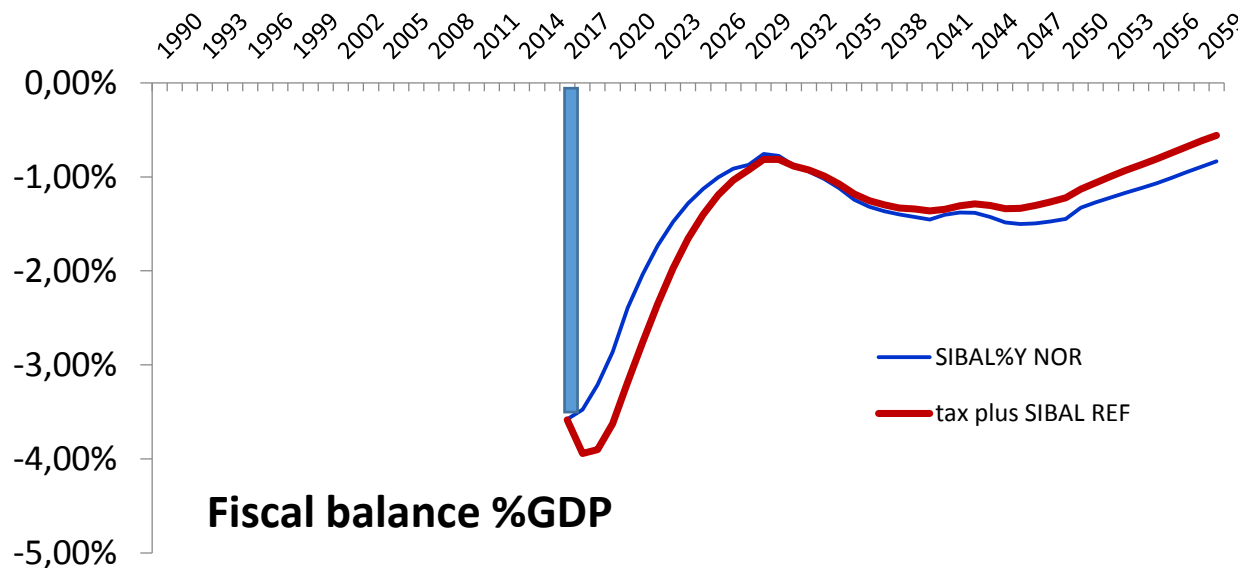
➢ **The fiscal account initially worsens by 0.5-1.0% of GDP,**

➢ **But later on it outperforms the baseline scenario**

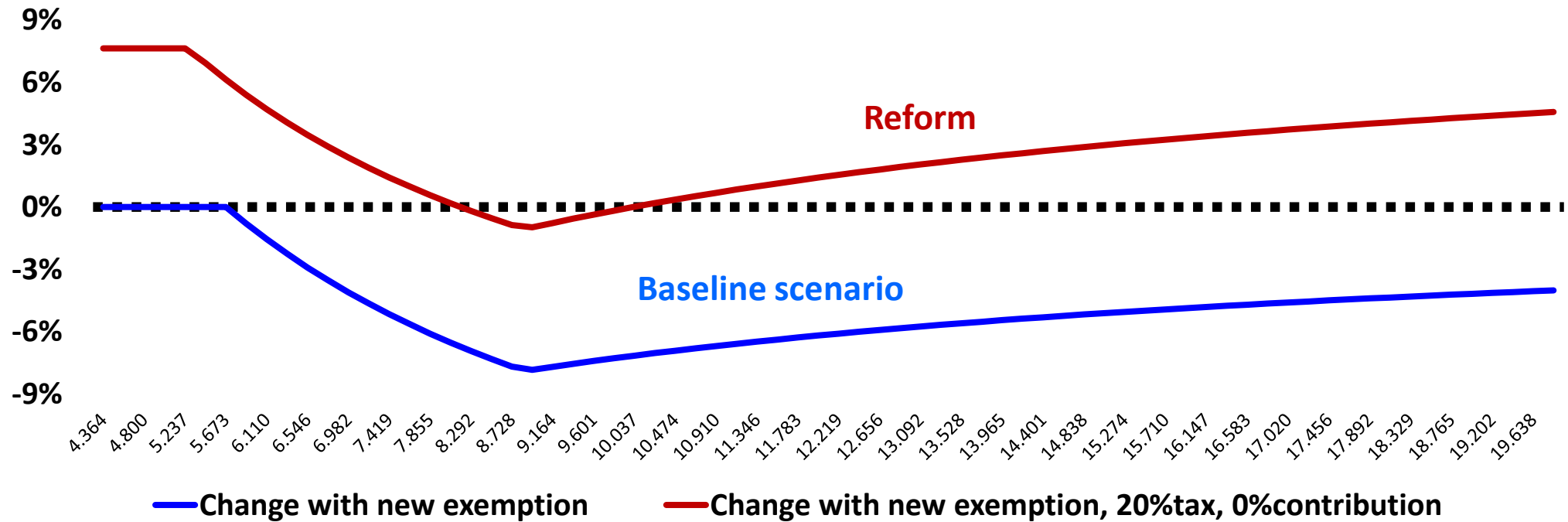# Fiscal compensation of social security and tax reforms

Reforms	Revenues (€ mio)	Compensatory measures	Expenditure (€ mio)
Revenues due to the lower tax-exemption threshold	+2,200	Social support measures	-350
VAT reform	+1,200	Abolition of social service charges in electricity bills	-740
Dividends, rents, interest, etc at 20%	+130	Property tax reduction	-400
RATE REDUCTIONS			
Cut in Corporate tax rate	-700	Vocational tax fee	-340
Cut in employee's SIC rate*	-800	Limiting induced taxable income criteria	-200
Total	2,030	Total	-2,030

- **After the social security deficit is mitigated by the rise in employment, the solidarity-tax contribution is gradually abolished *(approx. € 900 million)***

Tax and contributions rate reductions allow employees and farmers to recover losses caused by the reduction of tax-free threshold at € 5,680. Disposable incomes rise modestly .

Employees' income

Change in annual disposable income as % of current

Reform

Baseline scenario

Change with new exemption   Change with new exemption, 20%tax, 0%contribution

Key conclusions

1. **Debt maturity extension cannot sufficiently secure debt sustainability and keep GFNs below 15% as long as growth projections remain low, even if primary surpluses remain high and during 2018-2029**
   - ➢ *Sooner rather than later, taxes will have to rise again leading to a new round of recession*

1. **With primary surplus at 1.50% of GDP used for debt reimbursements, and 1.50% - 2% of GDP earmarked for investment financing, public debt falls below 100% in 2026 and GFNs remain safely below 15% of GDP**
   - ➢ *Higher growth rates accelerate the snow-ball effect and lead to a faster debt/GDP ratio reduction*

2. **New investment, tax cuts, and reductions in contribution rates lead to more competitive enterprises,** *thus enhancing exports and stabilizing the current account deficit when growth lifts up*

4. **The simplification of the tax & social security system cuts costs, elevates economic growth and   provides the much required boost to the Greek Economy, leading to**

   - ➢ *Substantial rise in employment and investment*
   - ➢ *Unemployment rate declines at pre-crisis levels*
   - ➢ *Public debt sustainability enhanced*