

## **Greece**

Evaluation of the agreed short-term relief measures &  
updated sustainability analysis of Greek public debt

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## Foreword (\*)

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The study presented herein has been motivated by the political agreement reached at Eurogroup of December 5, 2016 to endorse a package of short-term debt relief measures for Greece. It draws on the relevant proposal submitted by the ESM and the general debt relief framework agreed at the Eurogroup of May 25, 2016 to provide a detailed analysis on the evolution of Greece's borrowing needs and the gross public debt ratio over the full-projection horizon (2016-2060) under a range of alternative scenarios. These assume different sets of macroeconomic conditions, fiscal policy targets and additional debt relief measures following the expiration of the present (3<sup>rd</sup>) bailout programme. We believe that the analysis provides a useful framework for evaluating alternative strategies to make Greek public debt sustainable under the new operational definition of sustainability.

(\*) see important disclaimer at the end of this document

## **Part 1**

### **Greek public debt**

Current state of affairs & short-term debt relief measures

- ❑ On 25<sup>th</sup> of May, the Eurogroup elaborated further on the general guidelines for debt relief for Greece agreed at the Eurogroup of May 9, 2016.
- ❑ In more detail, an agreement was reached on a package of measures that would be subject to the pre-defined conditionality of the ESM programme and be phased in progressively so as to ensure that Greek public debt remains sustainable under the new operational definition of sustainability.
- ❑ The latter requires Greece's annual government gross financing need to be *no higher than*:
  - 15% of GDP during the post-programme period for the medium-term (until 2040); and
  - 20% of GDP in outer years (i.e., over the period 2041-2060).
- ❑ One of the most important elements of the May 25 Eurogroup agreement was that a decision to provide more substantial debt relief has been postponed for after the completion of the current programme (mid 2018) and upon the full implementation of the underlying conditionality.
- ❑ Arguably, this is because the funding commitments of the present programme are deemed to be adequate to cover Greece's borrowing needs over the entire programme horizon (August 2015-August 2018).

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(\*) An analysis of the debt relief framework agreed at the May 24<sup>th</sup> Eurogroup can be found in the Appendix

- ❑ In the debt sustainability analysis presented in the European Commission's compliance report, a baseline macro scenario was presented under which:
  - Greece's gross public debt to GDP ratio follows a descendent path, reaching 117.1% and 100.7% in 2030 and 2060, respectively, from levels around 183% in 2016; and
  - the gross financing need (as % of GDP) declines from 16.9% in 2016 to 7.4% in 2020, before increasing gradually thereafter, reaching 23.3% in 2060.
- ❑ The aforementioned baseline assumes that real GDP growth levels off to 1.5% after 2021 and declines to 1.25% after 2030 due to ageing effects.
- ❑ Furthermore, the scenario assumes that a primary fiscal balance of 3.5% of GDP is maintained for a 10-year period after 2018, before it starts decreasing gradually to 1.5% by 2040.
- ❑ The European Commission's DSA analysis for Greece also presented a number of alternative scenarios, to conclude as follows:

*“The high debt-to-GDP and gross financing needs resulting from this analysis point to serious concerns regarding the sustainability of Greece's public debt. The concerns shall be addressed through the implementation of the far-reaching and credible reform programme contained in the supplemental MoU, very strong ownership of the Greek authorities for this programme and debt-mitigating measures granted on full implementation of conditionality measures agreed in the context of the ESM programme. An appropriate and phased combination of debt management measures (including locking in of current low levels of interest rates), extension of maturities and grace periods for principals and interest, plus the use of SMP and ANFA equivalent profits would allow to bring Greek debt back to a sustainable level in gross financing needs terms without the need for a nominal haircut.”*

(\*) “Compliance Report, The Third Economic Adjustment Programme for Greece, First Review”, European Commission, June 2016

## Key findings

- ❑ Under a no-policy-change scenario, Greece's general government gross borrowing requirement is projected to increase from c. 20% of GDP in 2017 to c. 60% of GDP in 2060, rendering the debt ratio highly unsustainable in the medium- & long-term (projected debt to GDP ratio at c. 250% at the end of the forecasting horizon).
- ❑ This unsustainable trajectory is attributed to:
  - downward revisions in the medium- and long-term projections for GDP growth and the primary balance relative to the IMF's previous DSA (June 2015); and
  - the fact that after the termination of the present programme, Greece will need to re-access market financing and thus, roll over maturing debt at interest rates that are projected to be much higher than the current (concessional) ones paid on official loans
- ❑ In order to address the issue of sustainability, the Fund's revised DSA presents an indicative debt relief package for Greece (OSI) that includes significant extensions of official loan maturities, extended grace periods for interest and amortization payments and the fixing of interest rates on (old and new) EU loans through long-term ESM borrowing from financial markets.
- ❑ According to the IMF estimates, such a package would be adequate to meet the new operational definition of debt sustainability i.e., projected gross funding needs no higher than: 15% of GDP until 2040 and 20% of GDP thereafter.
- ❑ In view of the above, the IMF stresses the need to bring forward significant debt relief (i.e., in a gradual/conditional manner and before the expiration of the current programme) so as to facilitate a swift restoration of investor confidence towards Greece.

- ❑ The Eurogroup of December 5, 2016 endorsed the full package of short-term debt relief measures that was presented by the ESM, in line with the general relief framework agreed at the May 25th meeting.
- ❑ As it was clarified in the relevant analysis submitted by the ESM, implementation of those measures could lead to a cumulative reduction of the Greek debt-to-GDP ratio of 21.8pps until 2060. That is, subject to market conditions and through the following interventions:
  - i. smoothening of the EFSF repayment profile via an extension in the maximum weighted average maturity of these loans to 32.5 years from 28.3 years, currently;
  - ii. use of the EFSF/ESM funding strategy to reduce interest rate risk without incurring any additional costs for former programme countries; and
  - iii. a waiver of the step-up interest rate margin related to the debt buy-back tranche of the 2nd Greek programme for the year 2017.

## **Part 2**

### **Short-term debt relief measures for Greece**

Projected impact on public debt and the general government gross borrowing requirement



### **I. Smoothing of the EFSF repayment profile**

Description: 4-year extension in the weighted average maturity of EFSF loans provided to Greece in the context of the 2nd bailout programme.

Objective: reduce refinancing risks for the Greek state, by back-loading EFSF loan amortizations and creating a much lighter (and smoother) redemptions profile over the next two decades or so.

Impact (FY-2060): -3.6ppts and -0.8ppts respective reductions in public debt and GFN ratios.

### **II. Use of the EFSF/ESM funding strategy to reduce interest rate risk**

**Scheme 1** - Issuance of long-term fixed rate notes and bonds to the market with maturities up to 30 years, with a view to fund the repurchase of floating rate notes held by Greece's four systemic banks.

Impact (FY-2060): -7.1ppts and -1.6ppts respective reductions in public debt and GFN ratios.

**Scheme 2** - Use of interest rate swaps to mitigate the risk of higher market rates, with the ensuing benefits to Greece from a sustainability standpoint varying with maturity, the rate and the size of the swap transactions that can be executed in the market.

Impact (FY-2060): -6.9ppts and -1.5ppts respective reductions in public debt and GFN ratios.

**Scheme 3** - Use of matched funding, via ESM fixed rate long-term issuances with maturities up to 30 years, for part of future disbursements to Greece under the current programme (c. €30bn).

Impact (FY-2060): -1.3ppts and -0.3ppts respective reductions in public debt and GFN ratios.

### **III. Waiver of the step-up interest rate margin on the DBB tranche**

Description: waiver of the step-up interest rate margin related to the debt buy-back tranche (€11.3bn) released in the context of the 2nd bailout programme.

Impact (FY-2060): -0.3ppts and -0.1ppts respective reductions in public debt and GFN ratios.

**Total projected impact of measures I., II, & III. (FY-2060)**: -21.8ppts and -4.9ppts respective reductions in public debt and GFN ratios.

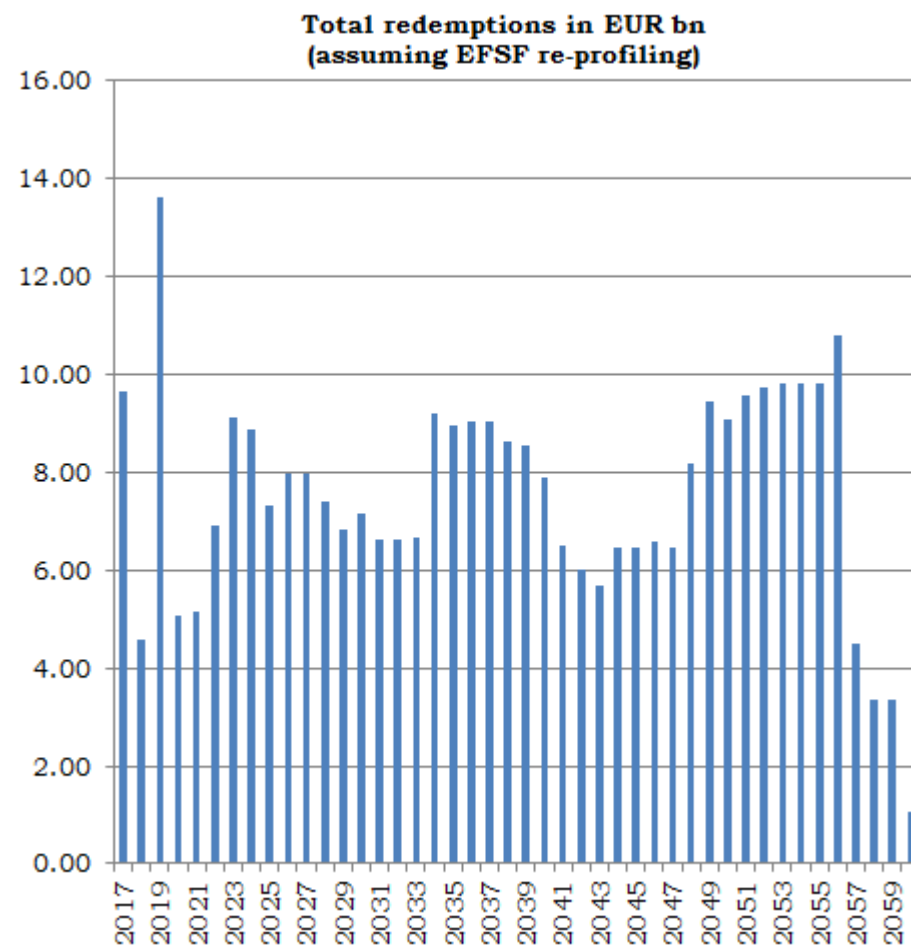
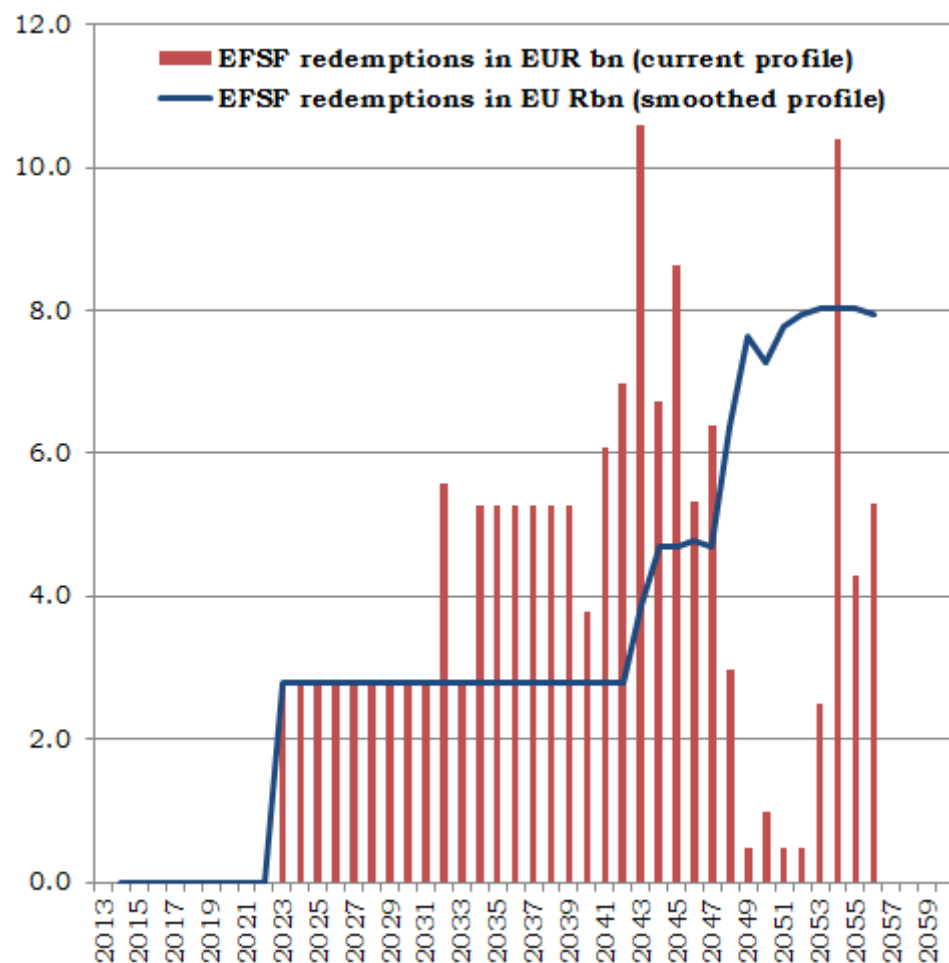
# Short-term debt relief package for Greece

## Impact (ESM projections)

Table 1. Impact of short - term relief measures on Dept - to GDP and GFN - to - GDP ratios under baseline scenario											
Greece, DSA ( central scenario )											
		2016	2017	2018	2019	2020	2022	2030	2040	2050	2060
Dept - to GDP	1. Smoothing the ESM repayment profile under the current WAM	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-1.0	-2.4	-3.6
	2. Use EFSF/ ESM diversified funding strategy										
	i. BtB extension	0.0	0.0	0.1	0.2	0.2	0.2	-1.2	-3.7	-5.7	-7.1
	ii. ESM, interest rate swap ( IRS )	0.0	0.0	0.1	0.2	0.3	0.4	-0.4	-2.9	-5.1	-6.9
	iii. Split of the pool with matched funding ( ESM )	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-1.1	-1.3
	3. Walver of the step-up in interest rate margin (DBB) , 2017	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3
	Second round effect on market rates	0.0	0.0	0.1	0.0	0.0	-0.1	-0.4	-1.0	-1.8	-2.6
GFN - to GDP	1. Smoothing the ESM repayment profile under the current WAM	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-1.3	-0.8	-0.8
	2. Use EFSF/ ESM diversified funding strategy										
	i. BtB extension	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.9	-1.2	-1.6
	ii. ESM, interest rate swap ( IRS )	0.0	0.0	0.1	0.1	0.1	0.1	-0.2	-0.7	-1.2	-1.5
	iii. Split of the pool with matched funding ( ESM )	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.3	-0.3
	3. Walver of the step-up in interest rate margin (DBB) , 2017	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
	Second round effect on market rates	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	-0.4	-0.6

# Impact of EFSF loans re-profiling

## Graphical depiction



# Central Government debt redemption schedule as of end-2016 (EUR bn)

## Assuming smoothed EFSF repayment profile

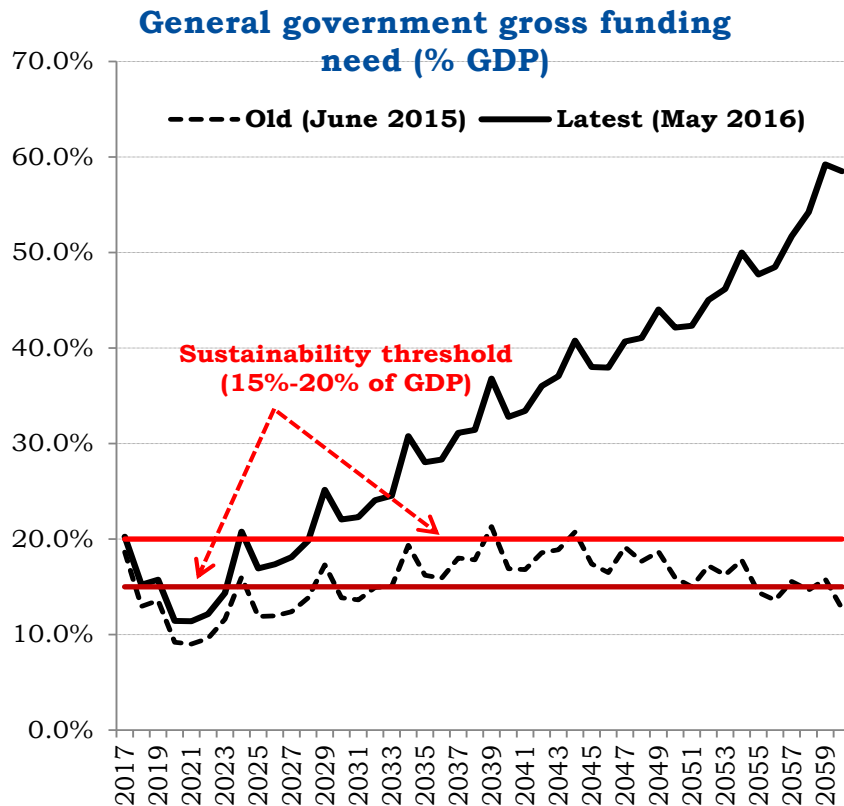
Greece- Central Government Amortization Payment Schedule (EUR bn) as of end 2016

	T-bills (EUR 14.94bn outstanding)	NCBs (ANFA)	ECB (SMP)	Bonds	BoG loans	Special purpose & bilateral international loans (EIB)	Other international loans	EFSF loans re-profiled	GLF loans (1st bailout)	IMF loans	Repos (EUR 11.9bn outstanding)	ESM loans (all disbursements assumed to reach 64.8bn by late 2018)	Total (netting out T- bills & repos)
2017	15.0	1.62	3.66	2.68	0.47	0.30	0.21	0.00	0.00	0.71	2.00	0.00	9.65
2018	15.0	0.59	1.28	0.03	0.47	0.30	0.16	0.00	0.00	1.76	2.00	0.00	4.60
2019	15.0	1.00	4.79	4.84	0.47	0.32	0.17	0.00	0.00	2.05		0.00	13.63
2020	15.0	0.23	1.13		0.47	0.32	0.17	0.00	0.71	2.05		0.00	5.08
2021	15.0				0.47	0.39	0.17	0.00	2.07	2.05		0.00	5.15
2022	15.0	0.77	0.54	0.01	0.47	0.39	0.18	0.00	2.65	1.91		0.00	6.91
2023	15.0			1.79	0.49	0.39	0.18	2.29	2.65	1.34		0.00	9.13
2024	15.0	0.22	1.09	1.77		0.40	0.19	2.30	2.65	0.28		0.00	8.89
2025	15.0	0.06		1.74		0.41	0.19	2.30	2.65			0.00	7.34
2026	15.0	0.24	0.70	1.50		0.41	0.20	2.30	2.65			0.00	7.98
2027	15.0			1.47		1.37	0.21	2.30	2.65			0.00	7.98
2028	15.0			1.73		0.52	0.21	2.30	2.65			0.00	7.39
2029	15.0			1.50		0.15	0.22	2.30	2.65			0.00	6.82
2030	15.0	0.09	0.01	1.44		0.45	0.22	2.29	2.65			0.00	7.14
2031	15.0			1.37		0.11	0.23	2.30	2.65			0.00	6.65
2032	15.0			1.37		0.09	0.24	2.30	2.65			0.00	6.65
2033	15.0			1.45		0.05	0.24	2.29	2.65			0.00	6.68
2034	15.0			1.72		0.03	0.25	2.29	2.65			2.28	9.23
2035	15.0			1.44		0.03	0.26	2.30	2.65			2.28	8.95
2036	15.0			1.51		0.03	0.27	2.30	2.65			2.28	9.02
2037	15.0	0.12	0.02	1.40		0.02	0.28	2.30	2.65			2.28	9.04
2038	15.0			1.38		0.01		2.30	2.65			2.28	8.62
2039	15.0			1.34		0.01		2.30	2.65			2.28	8.57
2040	15.0			1.37		0.01		2.30	1.94			2.28	7.90
2041	15.0			1.36		0.01		2.30	0.57			2.28	6.52
2042	15.0			1.43				2.30				2.28	6.01
2043	15.0							3.40				2.28	5.68
2044	15.0							4.20				2.28	6.48
2045	15.0							4.20				2.28	6.48
2046	15.0							4.30				2.28	6.58
2047	15.0							4.20				2.28	6.48
2048	15.0							5.90				2.28	8.18
2049	15.0							7.15				2.28	9.43
2050	15.0							6.80				2.28	9.08
2051	15.0							7.30				2.28	9.58
2052	15.0							7.45				2.28	9.73
2053	15.0							7.55				2.28	9.83
2054	15.0							7.55				2.28	9.83
2055	15.0							7.55				2.28	9.83
2056	15.0							7.45				3.36	10.81
2057	15.0			1.14				0.00				3.36	4.50
2058	15.0											3.36	3.36
2059	15.0											3.36	3.36
2060	15.0											1.08	1.08
Total		4.93	13.21	38.78	3.32	6.49	4.44	130.90	52.90	12.14	4.00	64.80	331.90

**Part 3**  
**Greek public debt sustainability**  
*Scenario analysis*

# The IMF's view

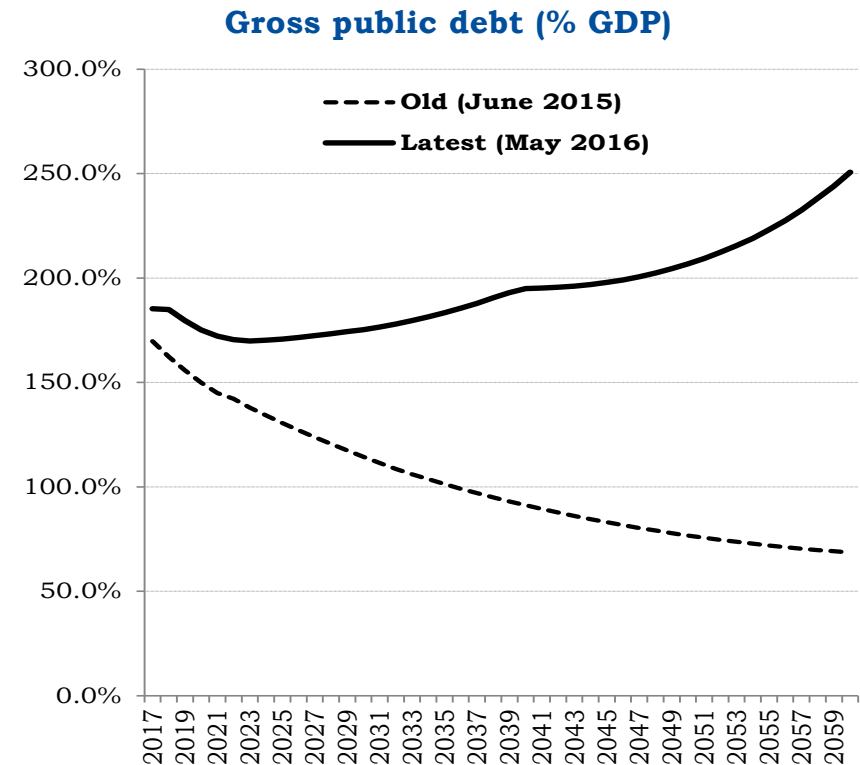
*Greek public debt highly unsustainable without further significant relief*



**IMF baseline DSA for Greece - Old (June 2015)**

**Key assumptions**

- Long-term real GDP growth: 1.5%
- Long-term GDP deflator inflation: 2.0%
- Primary fiscal balance (2018 onwards): 3.5% of GDP
- Privatization revenue: €20bn



**IMF baseline DSA for Greece - Latest (May 2016)**

**Key assumptions**

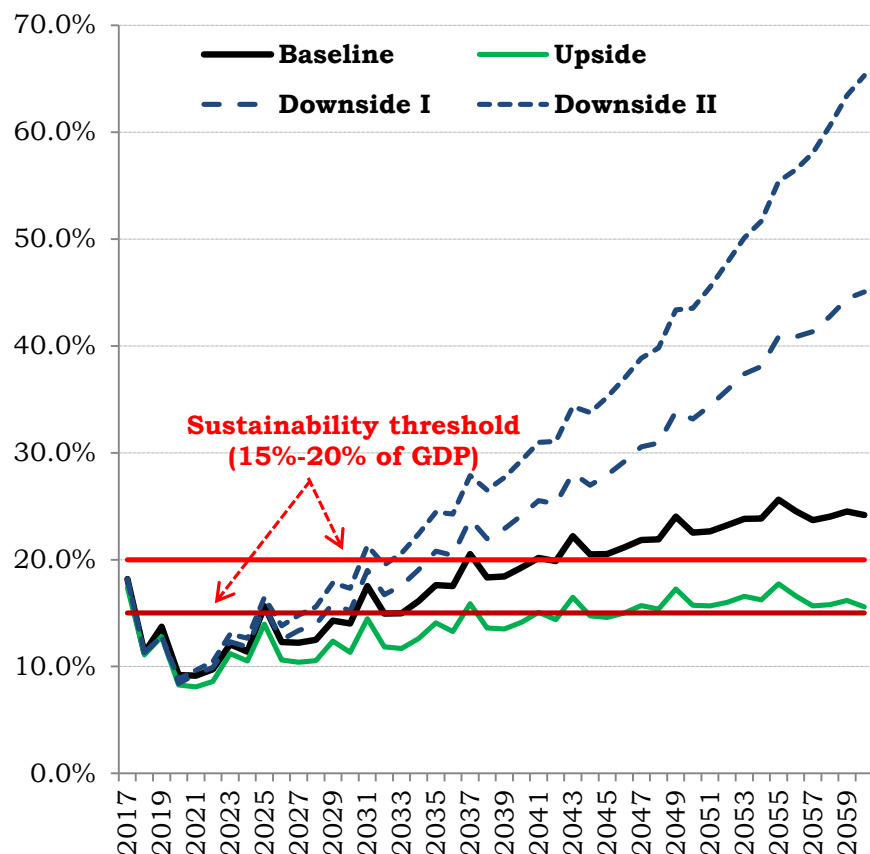
- Long term real GDP growth: 1.2%
- Long term GDP deflator inflation: 1.9%
- Primary fiscal balance (2018 onwards): 1.5% of GDP
- €10bn set aside to cover any new bank recap needs
- Privatization revenue: €20bn
- Market refinancing rates: c. 6.0% in 2019 and increasing/decreasing afterwards by 4bps per 1ppt increase/decline in debt ratio

**(\*) The projected paths for Greece's public debt and GFN ratios depicted above are based on (i) some key underlying assumptions used in the most recent IMF DSAs published in June 2015 and May 2016; and (ii) our own assumptions about Greek debt refinancing conditions in the post-programme period. For simplicity, we assume that market refinancing is conducted through the issuance of 5 years fixed coupon bonds**

# The view of the EU institutions

Serious concerns regarding Greek debt sustainability, despite milder underlying assumptions relative to these hypothesized by the IMF

**General government gross funding needs as % of GDP (\*\*)**



(\*\*) A more detailed presentation of the underlying assumptions used in the above figure is provided in Appendix

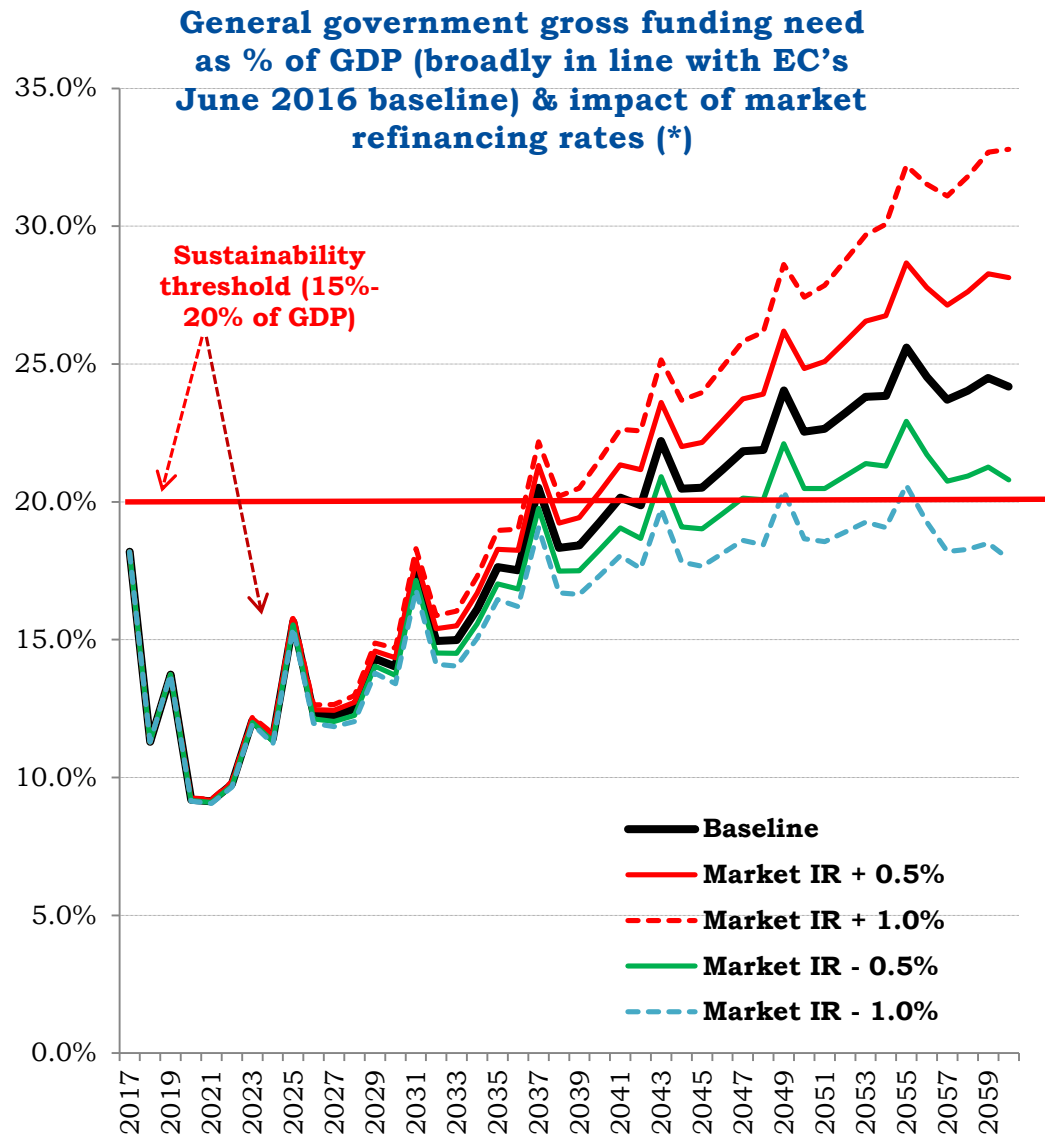
## Excerpt from the EC's compliance report (\*)

*“The high debt-to-GDP and gross financing needs resulting from this analysis point to serious concerns regarding the sustainability of Greece's public debt. The concerns shall be addressed through the implementation of the far-reaching and credible reform programme contained in the supplemental MoU, very strong ownership of the Greek authorities for this programme and debt-mitigating measures granted on full implementation of conditionality measures agreed in the context of the ESM programme. An appropriate and phased combination of debt management measures (including locking in of current low levels of interest rates), extension of maturities and grace periods for principals and interest, plus the use of SMP and ANFA equivalent profits would allow to bring Greek debt back to a sustainable level in gross financing needs terms without the need for a nominal haircut.”*

(\*) Compliance Report, The Third Economic Adjustment Programme for Greece, First Review”, European Commission, June 2016

# Greece: evolution of gross financing needs

## Scenarios for market refinancing rates



(\*) Scenario analysis assumes parallel shift of market rates for refinancing Greek public debt by 0.5pp, 1.0pp, -0.5pp and -1.0pp, respectively vs. baseline

### Baseline scenario assumptions

<b>Medium-/long-term real GDP (%)</b>	1.5% after 2021 & 1.25% after 2030
<b>General government primary surplus (% GDP)</b>	3.5% for 10 years post-programme completion & decreasing gradually to 1.5% by 2040
<b>Privatization revenue</b>	€18 bn
<b>Average market refinancing rate (%) post-programme</b>	5.0%
<b>Market refinancing assumed to take place through issuance of</b>	6-year fixed coupon bonds
<b>Other assumptions</b>	Broadly in line with the EC's DSA (June 2016)



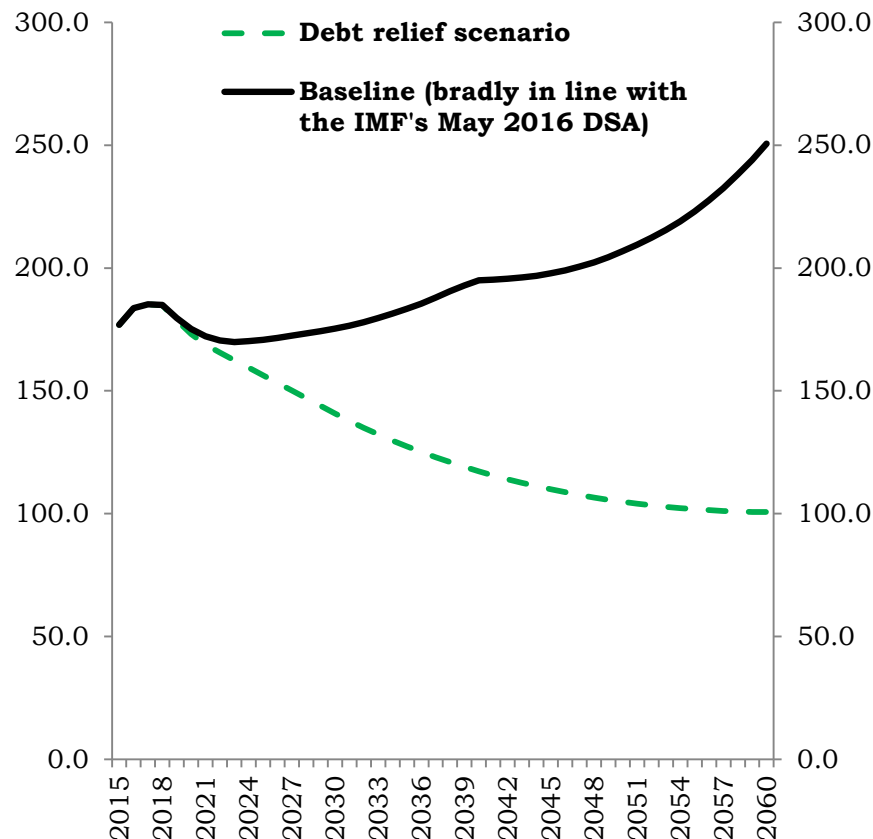
## **Part 4**

### **Medium-term restructuring strategies**

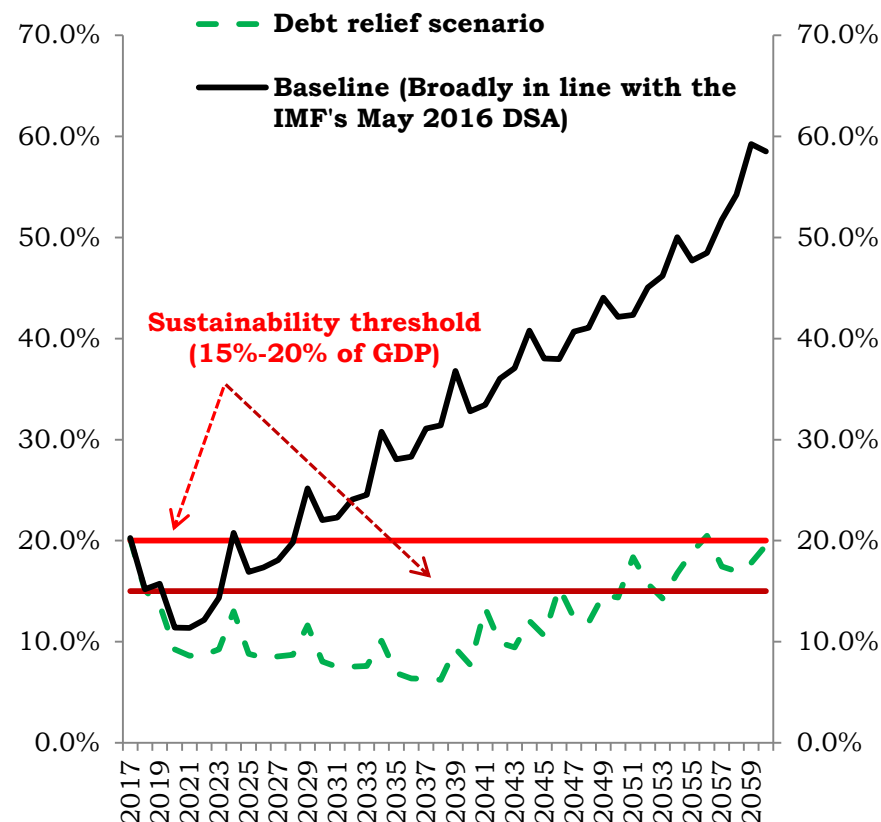
*for reinforcing the sustainability of Greek public debt*

# A hypothetical medium-term relief package (\*) to reinforce Greek public debt sustainability

**General government gross funding need (% GDP) & impact of medium-term debt relief**



**Gross public debt (% GDP) & impact of medium-term debt relief**



## (\*) Assumed debt restructuring (OSI) modalities

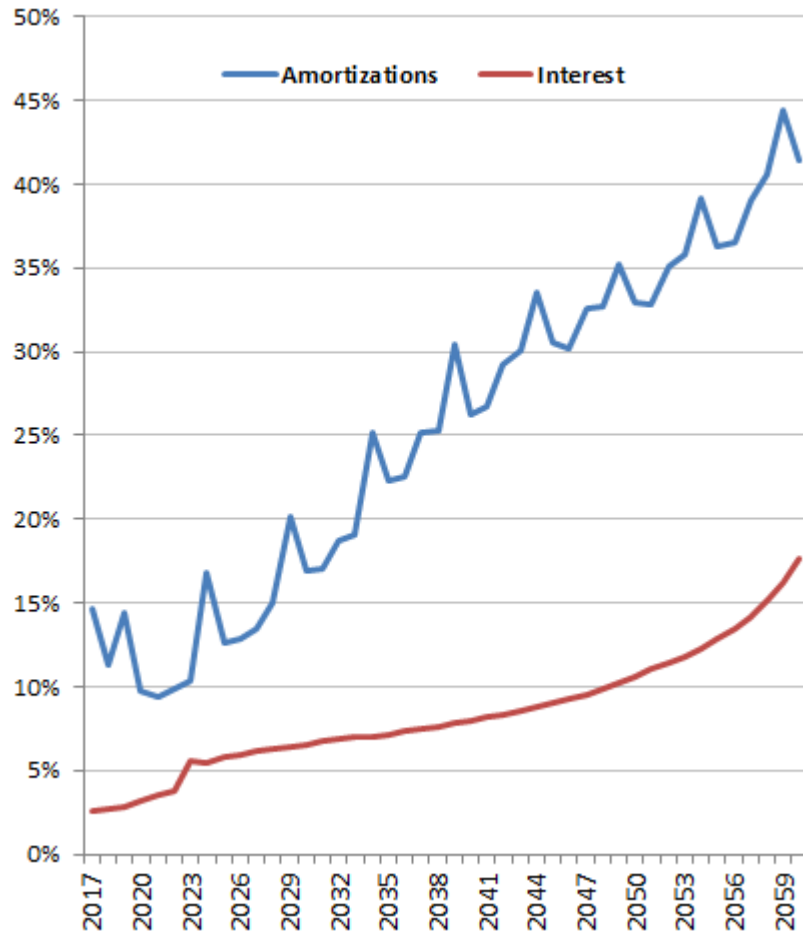
- Debt restructuring takes place after completion of current programme (mid 2018)
- GLF - loan maturity extension (30 yrs) along with longer deferrals on interest and principal payments (by 21 & 20 yrs, respectively)
- EFSF - loan maturity extension (14 yrs) along with longer deferrals on interest and principal payments (by 20 & 17 yrs, respectively)
- ESM - loan maturity extension (10 yrs) along with longer deferrals on interest and principal (by 19 & 6 yrs, respectively)
- Interest on deferred interest assumed to accrue at a fixed rate of 1½ % per year until 2040 and a long-run official rate of 3.8% afterwards
- Return of ANFA and SMP profits: €1.8bn pending from 2014 plus profits accrued from 2019 onwards

# Greece: amortization & interest payments as % of GDP (\*)

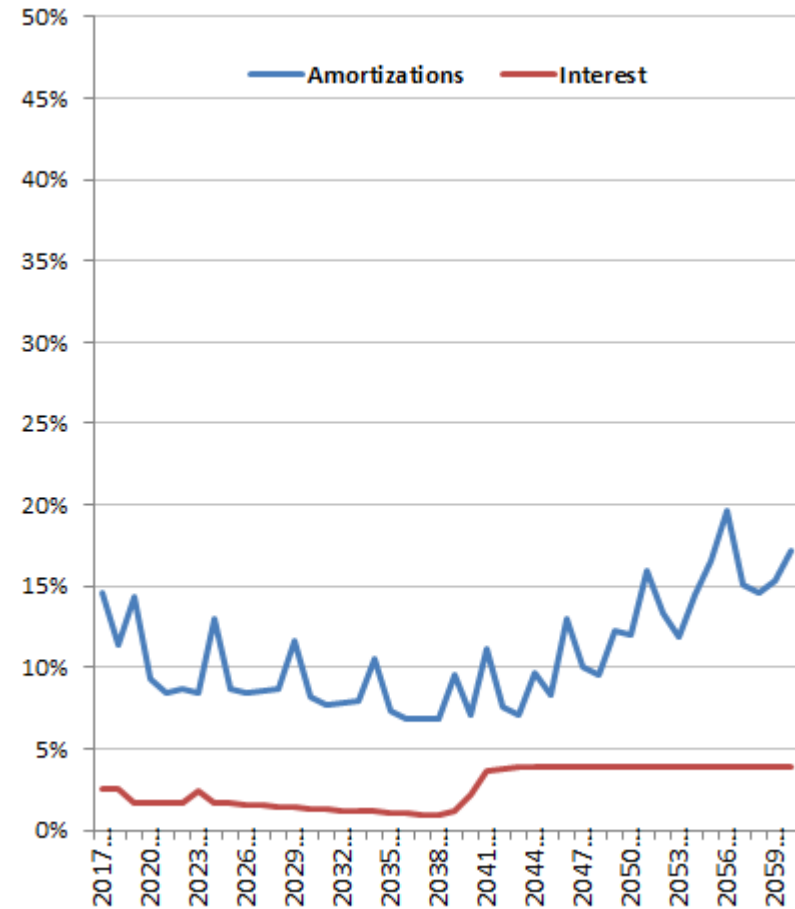
Based on the scenarios presented on page # 17

## Baseline

(broadly in line with the IMF's May 2016 DSA)



## Debt relief scenario

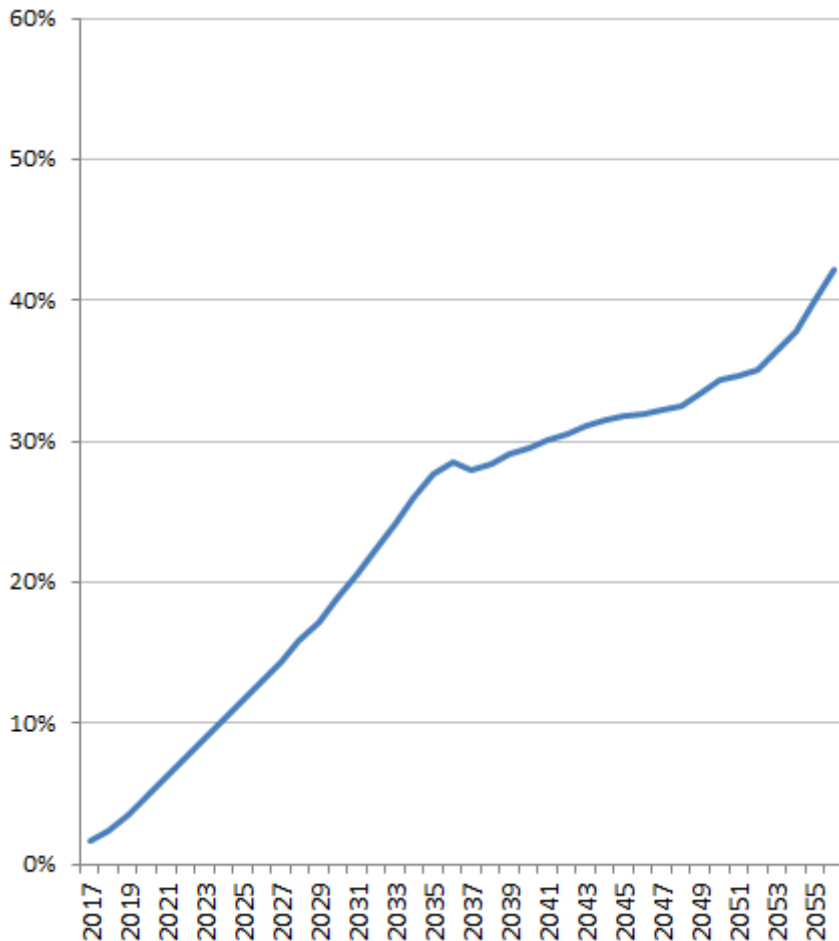


(\*) Assuming market access is re-established post-2018 to cover projected funding gaps

# Greece: cash flow & stock relief due to debt re-profiling (% of GDP)

## Cash flow relief

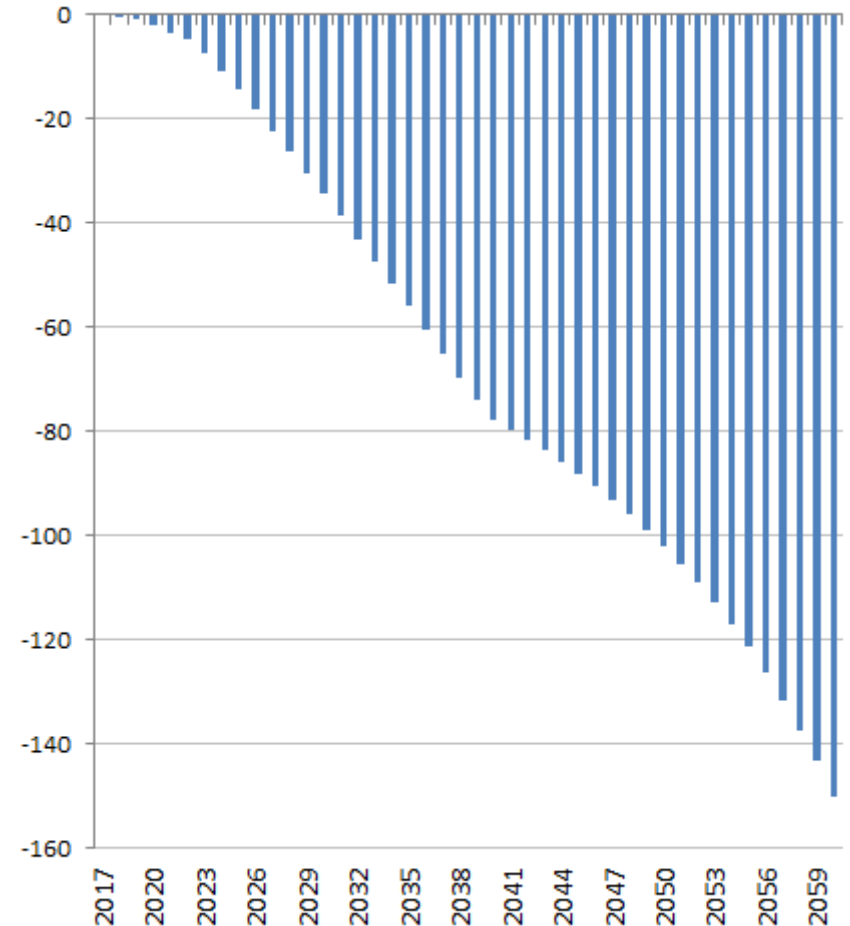
Time evolution of NPV savings as % of GDP (\*)  
from  $t_0 = 2017$  to  $T = 2060$   
“Baseline\_May 2016” Vs. “Baseline\_May 2016 with  
debt restructuring”



(\*) Discount rate for NPV calculation assumed at 3%

## Stock relief

Decline of debt to GDP ratio due to debt re-profiling  
“Baseline\_May 2016” Vs. “Baseline\_May 2016 with  
debt restructuring”



# Greece: evolution of gross financing needs & funding sources

Baseline (broadly in line with the IMF's May 2016 DSA)

	Total gross financing needs (EURbn)													Gross financing sources (EURbn)			Funding gap (EURbn)
	Amortization payments					Interest payments	Arrears clearance	Cash buffer for deposit build up	Primary surplus (-)	Privatisation (-)		Short-term	Official financing (ESM loans)	Market access			
	Short term	ANFA & SMP bonds	Medium- and long-term bonds (non-official)	Official creditors (EU and IMF loans)	Inter-governmental borrowing												
2017	15.00	5.28	3.66	0.71	2.00	26.65	4.74	2.50	3.50	0.5	1.3	35.6	15.0	20.6		35.6	0.0
2018	15.00	1.87	0.97	1.76	2.00	21.60	5.04	1.50	3.50	2.7	0.9	28.0	15.0	13.0		28.0	0.0
2019	15.00	5.79	5.80	2.05	0.00	28.63	5.62	0.00	0.00	3.0	0.4	30.9	15.0	0.0	15.9	30.9	0.0
2020	15.00	1.37	0.96	2.75	0.00	20.08	6.64	0.00	0.00	3.1	0.4	23.2	15.0	0.0	8.2	23.2	0.0
2021	15.00	0.00	1.03	4.12	0.00	20.15	7.48	0.00	0.00	3.2	0.2	24.2	15.0	0.0	9.2	24.2	0.0
2022	15.00	1.31	1.05	4.56	0.00	21.91	8.30	0.00	0.00	3.3	0.2	26.7	15.0	0.0	11.7	26.7	0.0
2023	15.00	0.00	2.85	5.71	0.00	23.56	12.64	0.00	0.00	3.4	0.2	32.5	15.0	0.0	17.5	32.5	0.0
2024	15.00	1.31	18.23	5.14	0.00	39.67	12.83	0.00	0.00	3.5	0.2	48.7	15.0	0.0	33.7	48.7	0.0
2025	15.00	0.06	10.55	5.10	0.00	30.70	14.12	0.00	0.00	3.6	0.2	40.9	15.0	0.0	25.9	40.9	0.0
2026	15.00	0.94	11.30	5.10	0.00	32.34	15.03	0.00	0.00	3.8	0.3	43.3	15.0	0.0	28.3	43.3	0.0
2027	15.00	0.00	14.71	5.10	0.00	34.81	15.95	0.00	0.00	3.9	0.3	46.6	15.0	0.0	31.6	46.6	0.0
2028	15.00	0.00	20.00	5.10	0.00	40.10	16.89	0.00	0.00	4.0	0.3	52.7	15.0	0.0	37.7	52.7	0.0
2029	15.00	0.00	35.61	5.10	0.00	55.70	17.85	0.00	0.00	4.1	0.3	69.1	15.0	0.0	54.1	69.1	0.0
2030	15.00	0.10	28.04	5.10	0.00	48.23	18.75	0.00	0.00	4.3	0.3	62.4	15.0	0.0	47.4	62.4	0.0
2031	15.00	0.00	30.05	5.10	0.00	50.15	19.74	0.00	0.00	4.4	0.3	65.2	15.0	0.0	50.2	65.2	0.0
2032	15.00	0.00	33.31	8.32	0.00	56.63	20.83	0.00	0.00	4.5	0.3	72.6	15.0	0.0	57.6	72.6	0.0
2033	15.00	0.00	39.45	5.10	0.00	59.55	21.79	0.00	0.00	4.7	0.3	76.3	15.0	0.0	61.3	76.3	0.0
2034	15.00	0.00	56.14	10.17	0.00	81.31	22.75	0.00	0.00	4.8	0.3	98.9	15.0	0.0	83.9	98.9	0.0
2035	15.00	0.00	49.16	10.17	0.00	74.32	23.91	0.00	0.00	5.0	0.3	92.9	15.0	0.0	77.9	92.9	0.0
2036	15.00	0.00	51.99	10.17	0.00	77.15	25.10	0.00	0.00	5.1	0.3	96.8	15.0	0.0	81.8	96.8	0.0
2037	15.00	0.13	59.30	14.58	0.00	89.01	26.39	0.00	0.00	5.3	0.4	109.7	15.0	0.0	94.7	109.7	0.0
2038	15.00	0.00	62.73	14.58	0.00	92.31	27.86	0.00	0.00	5.5	0.4	114.3	15.0	0.0	99.3	114.3	0.0
2039	15.00	0.00	85.25	14.58	0.00	114.83	29.40	0.00	0.00	5.6	0.4	138.2	15.0	0.0	123.2	138.2	0.0
2040	15.00	0.00	79.29	7.81	0.00	102.10	31.15	0.00	0.00	5.8	0.4	127.0	15.0	0.0	112.0	127.0	0.0
2041	15.00	0.00	83.14	9.06	0.00	107.20	32.78	0.00	0.00	6.0	0.4	133.6	15.0	0.0	118.6	133.6	0.0
2042	15.00	0.00	96.17	9.51	0.00	120.68	34.52	0.00	0.00	6.2	0.4	148.6	15.0	0.0	133.6	148.6	0.0
2043	15.00	0.00	99.33	13.81	0.00	128.14	36.37	0.00	0.00	6.4	0.4	157.7	15.0	0.0	142.7	157.7	0.0
2044	15.00	0.00	123.20	9.33	0.00	147.53	38.56	0.00	0.00	6.6	0.4	179.0	15.0	0.0	164.0	179.0	0.0
2045	15.00	0.00	112.04	11.52	0.00	138.55	40.89	0.00	0.00	6.8	0.5	172.2	15.0	0.0	157.2	172.2	0.0
2046	15.00	0.00	118.56	7.72	0.00	141.28	43.50	0.00	0.00	7.0	0.5	177.3	15.0	0.0	162.3	177.3	0.0
2047	15.00	0.00	133.58	8.99	0.00	157.58	46.25	0.00	0.00	7.2	0.5	196.1	15.0	0.0	181.1	196.1	0.0
2048	15.00	0.00	142.68	5.16	0.00	162.84	49.38	0.00	0.00	7.5	0.5	204.2	15.0	0.0	189.2	204.2	0.0
2049	15.00	0.00	164.05	2.28	0.00	181.33	52.88	0.00	0.00	7.7	0.5	226.0	15.0	0.0	211.0	226.0	0.0
2050	15.00	0.00	157.18	2.86	0.00	175.04	56.47	0.00	0.00	8.0	0.5	223.0	15.0	0.0	208.0	223.0	0.0
2051	15.00	0.00	162.29	2.28	0.00	179.58	60.30	0.00	0.00	8.2	0.5	231.1	15.0	0.0	216.1	231.1	0.0
2052	15.00	0.00	181.09	2.28	0.00	198.38	64.42	0.00	0.00	8.5	0.6	253.8	15.0	0.0	238.8	253.8	0.0
2053	15.00	0.00	189.24	4.60	0.00	208.84	68.93	0.00	0.00	8.7	0.6	268.4	15.0	0.0	253.4	268.4	0.0
2054	15.00	0.00	210.98	9.58	0.00	235.56	73.94	0.00	0.00	9.0	0.6	299.9	15.0	0.0	284.9	299.9	0.0
2055	15.00	0.00	208.02	2.28	0.00	225.31	79.79	0.00	0.00	9.3	0.6	295.2	15.0	0.0	280.2	295.2	0.0
2056	15.00	0.00	216.12	2.28	0.00	233.41	86.14	0.00	0.00	9.6	0.6	309.3	15.0	0.0	294.3	309.3	0.0
2057	15.00	0.00	239.90	2.28	0.00	257.18	93.92	0.00	0.00	9.9	0.7	340.5	15.0	0.0	325.5	340.5	0.0
2058	15.00	0.00	253.45	7.68	0.00	276.13	103.25	0.00	0.00	10.2	0.7	368.5	15.0	0.0	353.5	368.5	0.0
2059	15.00	0.00	284.88	12.28	0.00	312.17	114.16	0.00	0.00	10.5	0.7	415.1	15.0	0.0	400.1	415.1	0.0
2060	15.00	0.00	280.18	5.00	0.00	300.18	127.41	0.00	0.00	10.9	0.7	416.0	15.0	0.0	401.0	416.0	0.0

# Greece: evolution of gross financing needs & funding sources

## Debt relief scenario

	Total gross financing needs (EURbn)													Gross financing sources EUR bn)				Funding gap (EUR bn)
	Amortization payments					Interest payments	Arrears clearance	Cash buffer for deposit build up	Primary surplus (-)	Privatisation (-)	Return of ANFA & SMP profits (-)		Short-term	Official financing (ESM loans)	Market access			
	Short term	ANFA & SMP bonds	Medium- and long-term bonds (non-official)	Official creditors (EU and IMF loans)	Inter-governmental borrowing													
2017	15.00	5.28	3.66	0.71	2.00	26.65	4.55	2.50	3.50	0.5	0.91		35.78	15.0	20.8		35.8	0.0
2018	15.00	1.87	0.97	1.76	2.00	21.60	4.73	1.50	3.50	2.6	0.90		27.83	15.0	12.8		27.8	0.0
2019	15.00	5.79	5.80	2.05	0.00	28.63	3.26	0.00	0.00	3.0	0.40	1.80	26.71	15.0	0.0	11.7	26.7	0.0
2020	15.00	1.37	0.96	2.05	0.00	19.37	3.40	0.00	0.00	3.1	0.41	0.55	18.71	15.0	0.0	3.7	18.7	0.0
2021	15.00	0.00	1.03	2.05	0.00	18.08	3.65	0.00	0.00	3.2	0.21	0.00	18.30	15.0	0.0	3.3	18.30	0.0
2022	15.00	1.31	1.05	1.91	0.00	19.26	3.84	0.00	0.00	3.3	0.22	0.52	19.04	15.0	0.0	4.0	19.0	0.0
2023	15.00	0.00	2.85	1.34	0.00	19.19	5.39	0.00	0.00	3.4	0.23	0.00	20.92	15.0	0.0	5.9	20.9	0.0
2024	15.00	1.31	14.07	0.28	0.00	30.66	4.06	0.00	0.00	3.5	0.24	0.52	30.42	15.0	0.0	15.4	30.4	0.0
2025	15.00	0.06	6.05	0.00	0.00	21.11	3.98	0.00	0.00	3.6	0.24	0.02	21.17	15.0	0.0	6.2	21.2	0.0
2026	15.00	0.94	5.40	0.00	0.00	21.34	3.98	0.00	0.00	3.8	0.25	0.37	20.93	15.0	0.0	5.9	20.9	0.0
2027	15.00	0.00	7.09	0.00	0.00	22.09	3.96	0.00	0.00	3.9	0.26	0.00	21.90	15.0	0.0	6.9	21.9	0.0
2028	15.00	0.00	8.38	0.00	0.00	23.38	3.95	0.00	0.00	4.0	0.27	0.00	23.05	15.0	0.0	8.1	23.1	0.0
2029	15.00	0.00	17.29	0.00	0.00	32.29	3.92	0.00	0.00	4.1	0.28	0.00	31.80	15.0	0.0	16.8	31.8	0.0
2030	15.00	0.10	8.28	0.00	0.00	23.38	3.83	0.00	0.00	4.3	0.28	0.04	22.62	15.0	0.0	7.6	22.6	0.0
2031	15.00	0.00	7.63	0.00	0.00	22.63	3.79	0.00	0.00	4.4	0.29	0.00	21.73	15.0	0.0	6.7	21.7	0.0
2032	15.00	0.00	8.60	0.00	0.00	23.60	3.75	0.00	0.00	4.5	0.30	0.00	22.51	15.0	0.0	7.5	22.5	0.0
2033	15.00	0.00	9.79	0.00	0.00	24.79	3.70	0.00	0.00	4.7	0.31	0.00	23.50	15.0	0.0	8.5	23.5	0.0
2034	15.00	0.00	18.80	0.00	0.00	33.80	3.65	0.00	0.00	4.8	0.32	0.00	32.30	15.0	0.0	17.3	32.3	0.0
2035	15.00	0.00	9.35	0.00	0.00	24.35	3.60	0.00	0.00	5.0	0.33	0.00	22.62	15.0	0.0	7.6	22.6	0.0
2036	15.00	0.00	8.53	0.00	0.00	23.53	3.53	0.00	0.00	5.1	0.34	0.00	21.57	15.0	0.0	6.6	21.6	0.0
2037	15.00	0.13	9.19	0.00	0.00	24.33	3.45	0.00	0.00	5.3	0.35	0.05	22.06	15.0	0.0	7.1	22.1	0.0
2038	15.00	0.00	9.89	0.00	0.00	24.89	3.36	0.00	0.00	5.5	0.37	0.00	22.41	15.0	0.0	7.4	22.4	0.0
2039	15.00	0.00	18.64	2.57	0.00	36.21	4.69	0.00	0.00	5.6	0.38	0.00	34.87	15.0	0.0	19.9	34.9	0.0
2040	15.00	0.00	9.00	3.50	0.00	27.50	8.35	0.00	0.00	5.8	0.39	0.00	29.64	15.0	0.0	14.6	29.6	0.0
2041	15.00	0.00	7.94	21.65	0.00	44.59	14.84	0.00	0.00	6.0	0.40	0.00	53.01	15.0	0.0	38.0	53.0	0.0
2042	15.00	0.00	8.50	7.90	0.00	31.40	15.85	0.00	0.00	6.2	0.41	0.00	40.64	15.0	0.0	25.6	40.6	0.0
2043	15.00	0.00	7.41	7.90	0.00	30.31	16.37	0.00	0.00	6.4	0.43	0.00	39.86	15.0	0.0	24.9	39.9	0.0
2044	15.00	0.00	19.87	7.90	0.00	42.78	16.90	0.00	0.00	6.6	0.44	0.00	52.64	15.0	0.0	37.6	52.6	0.0
2045	15.00	0.00	14.64	7.90	0.00	37.54	17.45	0.00	0.00	6.8	0.45	0.00	47.72	15.0	0.0	32.7	47.7	0.0
2046	15.00	0.00	38.01	7.90	0.00	60.92	18.01	0.00	0.00	7.0	0.47	0.00	71.43	15.0	0.0	56.4	71.4	0.0
2047	15.00	0.00	25.64	7.90	0.00	48.54	18.58	0.00	0.00	7.2	0.48	0.00	59.39	15.0	0.0	44.4	59.4	0.0
2048	15.00	0.00	24.86	7.90	0.00	47.77	19.17	0.00	0.00	7.5	0.50	0.00	58.96	15.0	0.0	44.0	59.0	0.0
2049	15.00	0.00	37.64	10.54	0.00	63.18	19.77	0.00	0.00	7.7	0.51	0.00	74.72	15.0	0.0	59.7	74.7	0.0
2050	15.00	0.00	32.72	16.15	0.00	63.88	20.40	0.00	0.00	8.0	0.53	0.00	75.80	15.0	0.0	60.8	75.8	0.0
2051	15.00	0.00	56.43	16.15	0.00	87.58	21.10	0.00	0.00	8.2	0.55	0.00	99.93	15.0	0.0	84.9	99.9	0.0
2052	15.00	0.00	44.39	16.15	0.00	75.55	21.81	0.00	0.00	8.5	0.56	0.00	88.32	15.0	0.0	73.3	88.3	0.0
2053	15.00	0.00	43.96	10.54	0.00	69.50	22.55	0.00	0.00	8.7	0.58	0.00	82.73	15.0	0.0	67.7	82.7	0.0
2054	15.00	0.00	59.72	11.97	0.00	86.70	23.26	0.00	0.00	9.0	0.60	0.00	100.34	15.0	0.0	85.3	100.3	0.0
2055	15.00	0.00	60.80	26.61	0.00	102.40	24.00	0.00	0.00	9.3	0.62	0.00	116.48	15.0	0.0	101.5	116.5	0.0
2056	15.00	0.00	84.93	25.39	0.00	125.32	24.87	0.00	0.00	9.6	0.64	0.00	139.95	15.0	0.0	125.0	140.0	0.0
2057	15.00	0.00	74.46	9.75	0.00	99.21	25.74	0.00	0.00	9.9	0.66	0.00	114.40	15.0	0.0	99.4	114.4	0.0
2058	15.00	0.00	67.73	16.51	0.00	99.23	26.55	0.00	0.00	10.2	0.68	0.00	114.89	15.0	0.0	99.9	114.9	0.0
2059	15.00	0.00	85.34	7.74	0.00	108.08	27.41	0.00	0.00	10.5	0.70	0.00	124.25	15.0	0.0	109.3	124.3	0.0
2060	15.00	0.00	101.48	7.74	0.00	124.22	28.24	0.00	0.00	10.9	0.72	0.00	140.88	15.0	0.0	125.9	140.9	0.0

## **Part 5**

### **QE for Greece**

*Estimating the potential size of PSPP purchases of eligible Greek debt*

### **European Central Bank Decision (EU) 2015/774**

- ✓ *For a euro area member state that is under a financial assistance program (and for which a waiver on the required credit quality threshold has been granted), eligibility for PSPP purchases should be suspended during a program review and resume only in the event of its successful completion*
- ✓ *The period of purchases under the PSPP is generally limited to two months following the successful completion of a review. That is, unless there are exceptional circumstances justifying a suspension of purchases before or a continuation of purchases after this period and until the start of the next review*
- ✓ *All other PSPP modalities as regards eligibility criteria, purchase eligibility limits and allocation of portfolios are the same for both program and non-program euro area countries*
- ✓ *Restrictions to be taken into account when estimating the potential size of marketable debt that can be purchased by the ECB and NCBs of the euro area:*
  - security-specific limit of 33% (notional terms)
  - issuer-specific limit of 33% (notional terms)
  - $1\text{-yr} \leq \text{eligible security tenor (remaining maturity)} \leq 30\text{-yrs plus 364 days}$

### **Estimating the potential size of Greek debt that can be purchased by the Eurosystem**

- ✓ *the monthly notional amount of Greek debt that could be purchased (after Mar. 2017) should not exceed €1.57bn ( $=2.9055\% \times 90\% \times €60\text{bn}$ ), or c. €2.24bn in prevailing market prices, where:*
  - 2.9055% is Bank of Greece's subscription key in the ECB capital;
  - 90% is the share of PSPP purchases of securities issued by eligible central governments and recognized agencies; and
  - €60bn is the amount of combined (average) monthly purchases under PSPP
  - The maximum *cumulative* amount of Greek securities (in notional terms) that could be purchased is between €3bn and €4bn



# Greece: impact from inclusion in the PSPP

Purchases equivalent to over a year's worth of the daily trading volume in GGBs



## Evolution of cumulative purchases of eligible Greek debt under PSPP (in EUR bn)

*Maximum purchases limit could be attained over a period of at least two months*

	<b>PSI &amp; post-PSI bonds</b> (eligible outstanding amount)	<b>Public enterprises</b> (eligible outstanding amount)	<b>SMP bonds</b> (eligible outstanding amount)	<b>ANFA bonds</b> (eligible outstanding amount)	<b>Total eligible amount</b>	<b>of which, ECB and euro area NCB holdings</b>	<b>% owned by ECB &amp; euro area NCBs</b>	<b>Remaining percentage to reach 33% issuer limit</b>	<b>Eurosystem purchases</b>
Dec-16	34.9	0.1	9.6	3.2	47.8	12.81	26.8%	6.2%	<b>4.2</b>
Jan-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>4.2</b>
Feb-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>4.2</b>
Mar-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>2.9</b>
Apr-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>2.9</b>
May-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>2.9</b>
Jun-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>2.9</b>
Jul-17	34.9	0.0	9.6	3.2	47.7	12.81	26.8%	6.2%	<b>2.9</b>
Aug-17	34.9	0.0	8.4	2.6	45.9	10.95	23.9%	9.1%	<b>4.2</b>
Sep-17	34.9	0.0	8.4	2.6	45.9	10.95	23.9%	9.1%	<b>4.2</b>
Oct-17	34.9	0.0	8.4	2.6	45.9	10.95	23.9%	9.1%	<b>4.2</b>
Nov-17	34.9	0.0	8.4	2.6	45.9	10.95	23.9%	9.1%	<b>4.2</b>
Dec-17	34.9	0.0	8.4	2.6	45.9	10.95	23.9%	9.1%	<b>4.2</b>

## **Appendix**

# Debt relief measures for Greece agreed at the May 25<sup>th</sup> Eurogroup

Time horizon	Measures
Short term (From completion of 1st review to the expiration of the current programme in Aug. 2018)	Smoothering the EFSF repayment profile under the current weighted average maturity
	Use EFSF/ESM diversified funding strategy to reduce interest rate risk without incurring any additional costs for former programme countries
	Waiver of the step-up interest rate margin related to the debt buy-back tranche of the 2nd Greek programme for the year 2017
Medium term (Upon successful completion of ESM programme)	Abolish the step-up interest rate margin related to the debt buy-back tranche of the 2nd Greek programme as of 2018
	Use of 2014 SMP profits from the ESM segregated account and the restoration of the transfer of ANFA and SMP profits to Greece (as of budget year 2017) to the ESM segregated account as an ESM internal buffer to reduce future gross financing needs.
	Liability management - early partial repayment of existing official loans to Greece by utilizing unused resources within the ESM programme to reduce interest rate costs and to extend maturities. Due account will be taken of exceptionally high burden of some Member States.
Long term (After finalization of the ESM programme)	If necessary, some targeted EFSF reprofiling (e.g. extension of the weighted average maturities, re-profiling of the EFSF amortization as well as capping and deferral of interest payments) to the extent needed to keep GFN under the agreed benchmark in order to give comfort to the IMF and without incurring any additional costs for former programme countries or to the EFSF.
	Activation of a contingency debt relief mechanism after the finalization of the ESM programme so as to ensure debt sustainability in the long run in case that a more adverse scenario were to materialize.

## Underlying assumptions to derive Greece's GFN ratio (see page # 14)

	Baseline	Upside	Downside I	Downside II
<b>Medium-/long-term real GDP (%)</b>	1.5% after 2021 & 1.25% after 2030	0.25 pp higher relative to baseline after 2019	0.25 pp lower relative to baseline between 2019 & 2030	0.25 pp lower relative to baseline between 2019 & 2031
<b>General government primary surplus (% GDP)</b>	3.5% for 10 years post-programme completion & decreasing gradually to 1.5% by 2040	assumed to average 2.4% of GDP during post-programme period	assumed to average 2% of GDP during post-programme period	assumed to average 1.7% of GDP during post-programme period
<b>Privatization revenue</b>	€18 bn	€20 bn over 2015-2022 (c. €50bn over entire projection horizon - Eurobank Research assumption)	€6.5 bn (Eurobank Research assumption)	€6.0 bn (Eurobank Research assumption)
<b>Average market refinancing rate (%) post-programme</b>	5.0%	5% (Eurobank Research assumption)	6.5% (Eurobank Research assumption)	7.3% (Eurobank Research assumption)
<b>Other assumptions</b>	Broadly in line with the EC's DSA (June 2016)	Broadly in line with the EC's DSA (June 2016)	Broadly in line with the EC's DSA (June 2016)	Broadly in line with the EC's DSA (June 2016)

## Disclaimer

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