Greece

Public debt restructuring strategies &
evaluation of the agreed framework for debt relief

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Foreword (*)

The study presented herein has been motivated by the recent publications of the IMF's updated DSA for Greece[1] (May 2016), the European Commission's first review compliance report[2] (June 2016) as well as the agreement on the debt relief framework reached at the Eurogroup of May 24, 2016. It provides a detailed analysis of Greece's future borrowing needs and gross public debt ratio based on the macroeconomic assumptions and the OSI modalities presented in the aforementioned publications. Furthermore, it compares these estimates with the estimates derived from a number of alternative scenarios, assuming different sets of macroeconomic conditions and fiscal policy targets. We believe that the analysis provides a useful framework for evaluating alternative strategies to make Greek public debt sustainable under the new definition of sustainability.

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

[1] "Preliminary Debt Sustainability Analysis – Updated Estimates and Further Considerations", IMF Country Report, No. 16/130, May 2016

[2] "Compliance Report, The Third Economic Adjustment Programme for Greece, First Review", European Commission, June 2016

Debt relief framework agreed at the May 24th Eurogroup

- The Eurogroup elaborated further on the general guidelines for debt relief agreed on May 9. In more detail, an agreement was reached on a package of measures that will 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 definition of sustainability i.e., annual government gross financing needs < 15% of GDP during the post-programme period for the medium-term and < 20% of GDP thereafter.

- One of the most important components of the May 24 Eurogroup agreement is 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).

An analysis of the debt relief framework agreed at the May 24th Eurogroup can be found in the Appendix

European Commission’s 1st programme review compliance report for Greece

- In the debt sustainability analysis presented in the Commission’s 1st programme review compliance report, a baseline macro scenario is presented under which Greece’s gross public debt to GDP ratio follows a descendent path in the years ahead, reaching 117.1% and 100.7% in 2030 and 2060, respectively, from levels around 183% in 2016. Under that scenario, the gross financing needs (as % of GDP) is projected to decline from 16.9% in 2016 to 7.4% in 2020, but to increase gradually from the 2020s onwards, reaching 23.3% in 2060, above the debt sustainability threshold of 15% to 20%. The EC’s baseline assumes that real GDP growth will level off to 1.5% after 2021 and will decline to 1.25% after 2030 due to ageing effects. Furthermore, the scenario assumes that a primary fiscal balance of 3.5% of GDP will be maintained for a 10-year period (starting in 2018), before it will start decreasing gradually to 1.5% by 2040.

- The European Commission’s DSA analysis for Greece also presents a range of alternative scenarios (more optimistic or more pessimistic than the baseline), 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.”

Some of the most important findings/implications of the Fund's updated debt sustainability analysis are as follows:

- 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).

- As explained by the IMF staff, this unsustainable trajectory is due to a) downward revisions in the medium- and long-term projections for GDP growth and the primary balance relative to their previous DSA (June 2015) and b) 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 IMF 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 definition of debt sustainability (gross funding needs projected to be no high than 15% of GDP until 2040, before converging gradually to c. 20% of GDP by 2060).

- In addition to the above, the IMF emphasizes the need to bring forward significant debt relief for Greece (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 the country.

Part 1

Greek public debt: DSA & restructuring strategies

Key findings & policy implications

DSA & restructuring strategies

No debt relief scenarios

- Based on the macroeconomic assumptions of the latest IMF DSA (May 2016) and assuming no debt relief by the official sector, our analysis points to an unsustainable trajectory for future public finances (general government gross borrowing needs approach 60% of GDP and debt ratio hits c. 250% of GDP in 2060).

- Under a more benign macro scenario assuming a general government primary surplus of c. 2.0% of GDP (vs. 1.5% of GDP in the IMF baseline) and somewhat higher medium- & long-term real GDP growth (c. 1.5% vs. 1.2% assumed in the IMF baseline) the gross funding need reaches c. 44% of GDP in 2060, but surpasses the 20% of GDP (upper) sustainability threshold from 2028 onwards.

- On the other hand, a more downbeat macro outlook than that assumed in the IMF baseline (steady-state real GDP growth of only 1% and a lower primary balance of 1% of GDP) instigates a further significant deterioration of fiscal dynamics, with the gross funding need reaching levels above 70% by 2060.

- It goes without saying that the aforementioned projections are highly sensitive to underlying assumptions for the evolution of the macro economy, the primary fiscal balance and the prevailing market rates for refinancing Greek debt after the current programme expires.

- It is important to note that under a scenario that is more in line with the European Commission’s baseline DSA and assumes a) slightly higher real GDP growth at steady-state (1.5% vs. 1.2% in the IMF’s baseline); b) a primary surplus of 3.5% of GDP from 2018 onwards; and c) c. €50bn in privatization revenue in 2016-2060 (vs. c. €20bn in the IMF’s baseline), the gross funding need remains mostly below 20% of GDP over the entire projection horizon, lessening the need for substantial debt relief down the road.

Debt relief strategies

- In the analysis included in this report we also present the *stock* and the *cash-flow* implications of an OSI package that bears significant similarities with that proposed by IMF staff in their May 2016 DSA, under a range of alternative scenarios for the evolution of key macroeconomic and fiscal variables.

- Assuming a debt relief strategy (OSI) with modalities that bear significant similarities with the debt relief package presented in the IMF's May 2016 DSA, we find that fiscal accounts remain sustainable throughout the projection horizon.

- Under the aforementioned scenario, gross funding needs peak near the 20%-of-GDP threshold in 2060, remaining well below that level for most of the projection horizon. Furthermore, the debt ratio reaches c. 100%-of-GDP in 2060 (vs. 250% in the IMF baseline), with the relief package generating savings of more than 40% of GDP in NPV terms.

- Notably, the scenario described above does not involve outright debt forgiveness (i.e., notional haircuts), but hypothesizes a significant lengthening of EU loan maturities, extended grace periods of interest and amortizations payments and the fixing of interest rates on EFSF/ESM loans to 1.5% until 2040 and 3.8% afterwards.

- Under an even more favorable OSI package that a) fixes the interest rate on all EFSF/ESM loans to 1.0% until 2040 and to 3.0% afterwards; and b) cuts the interest on GLF loans by 50bps, the gross funding need remains well below 20% of GDP throughout the entire projection horizon, with a peak near 17% materializing no earlier than in 2060.

Concluding remarks & policy implications

- The analysis presented in this study argues strongly in favor of substantial debt relief for Greece from the official sector, with characteristics and modalities that are in broad agreement with the framework decided at the May 24 Eurogroup.

- This would be necessary to address gradually increasing funding challenges in the years after the expiration of the present programme due to the need to refinance a rising volume of expiring public debt at market interest rates significantly higher than the current (concessional) ones applied on official loans.

- The main aim of such debt relief would be to postpone interest and amortization payments on official loans for a extended period of time, lengthen loan maturities and fixing interest rates so as to provide the necessary fiscal space for the economy to grow, allow substantial savings in NPV terms and hedge the risk of unforeseen spikes in Euribor & EFSF/ESM funding rates in outer years.

- Even more importantly, our analysis demonstrates (in broad agreement with the IMF's May DSA) that a debt re-profiling package involving no notional haircuts could be structured in such a way so as to ensure debt sustainability (under the revised, cash-flow related definition) even under scenarios that assume a substantial relaxation of the present primary fiscal target (3.5% of GDP from 2018 onwards).

- As we have repeatedly noted in our earlier studies on the subject, a quick resumption of domestic growth and compliance with programme targets would be instrumental in improving debt dynamics and facilitating the provision of a substantial debt relief package from the official sector.

- Finally, the front loading of substantial debt relief (based on e.g. certain programme milestones) could engineer a quicker stabilization of investor confidence towards Greece than would otherwise be the case.

Part 2

Greek public debt: DSA & restructuring strategies

Scenario analysis (*)

(*) **important note**: Some of the estimates presented in this study may deviate from these presented in the IMF's May 2016 DSA or the Commission's programme compliance report for Greece (June 2016) due to differences in some underlying assumptions

Greece: DSA scenarios
key assumptions

Assumptions common to all scenarios

- **ESM disbursements**: €10.3bn in 2016; €20.6bn in €2017; and c. €12.5bn in 2018
- **Gross funding need (GFN)** = debt amortization & interest payments + cash primary balance + official funding for clearing arrears, rebuilding cash buffer & reducing inter governmental borrowing
  - **Arrears clearance**: €3.5bn in 2016; €2.5 in 2017; and €1.5bn in 2018
  - **Cash buffer** (annual amounts): €2.5 in 2016; €2.5 in 2017; and €2.5bn in 2018
  - **Reduction of inter-governmental borrowing**: €2bn in 2017; and €2bn in 2018
  - **Outstanding T-bills**: c. €15bn throughout the entire projection horizon

Scenario *"Baseline_June 2015"*

- **Macro assumptions broadly in line with the IMF's June 2015 DSA**
  - Long-term **real GDP growth**: 1.5%
  - Long-term **GDP deflator** inflation: 2.0%
  - General government **primary balance** (2018 onwards): 3.5% of GDP
  - **Privatization revenue** in line with the IMF's DSA

Scenario *"Baseline_May 2016"*

- **Macroeconomic assumptions broadly in line with the IMF's May 2016 DSA**
  - Long term **real GDP growth**: 1.2%
  - Long term **GDP deflator** inflation: 1.9%
  - General government **primary balance** (2018 onwards): 1.5% of GDP
  - **€10bn set aside** to cover any new bank recap needs
  - **Privatization revenue** in line with the IMF's DSA
  - 3m & 6m Euribor, EFSF/ESM funding rates in line with the IMF's DSA
  - **Market rate** for refinancing Greek debt assumed c. 6.0% in 2019 and increasing/decreasing afterwards by 4bps per 1ppt increase/decline in debt ratio For simplicity, **market refinancing** is assumed to take place through issuance of 5 years fixed coupon bonds

Scenario "Baseline_May 2016 with debt restructuring" (*)

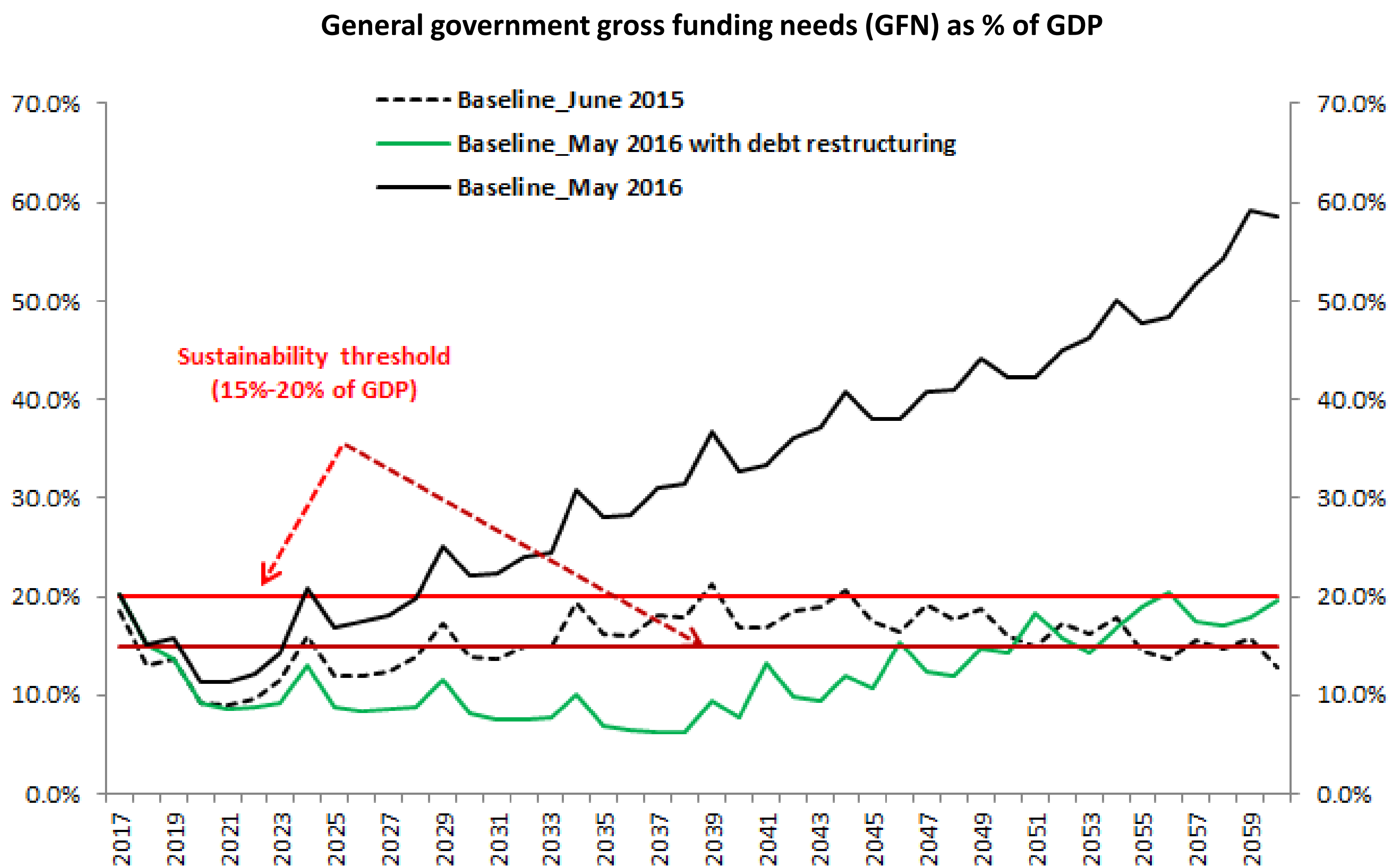
- **Macroeconomic assumptions broadly in line with the IMF's May 2016 DSA**
  - Long term **real GDP growth**: 1.2%
  - Long term **GDP deflator** inflation: 1.9%
  - General **government primary balance** (2018 onwards): 1.5% of GDP
  - **Privatization revenue** in line with the IMF's DSA
  - **Market rate** for refinancing Greek debt assumed c. 6.0% in 2019 and increasing/decreasing afterwards by 4bps per 1ppt increase/decline in debt ratio
- **Debt restructuring** after completion of current programme (mid 2018)
- For simplicity, **market refinancing** is assumed to take place through issuance of 5 years fixed coupon bonds

(*) Debt restructuring (OSI) modalities

- **Debt relief** implemented after expiration of current programme (mid-2018)
- **GLF -** loan maturity extension (30 years) along with longer deferrals on interest and principal payments (by 21 and 20 years, respectively)
- **EFSF -** loan maturity extension (14 years) along with longer deferrals on interest and principal payments (by 20 and 17 years, respectively)
- **ESM -** loan maturity extension (10 years) along with longer deferrals on interest and principal (by 19 and 6 years, 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 <u>plus</u> profits accrued from 2019 onwards

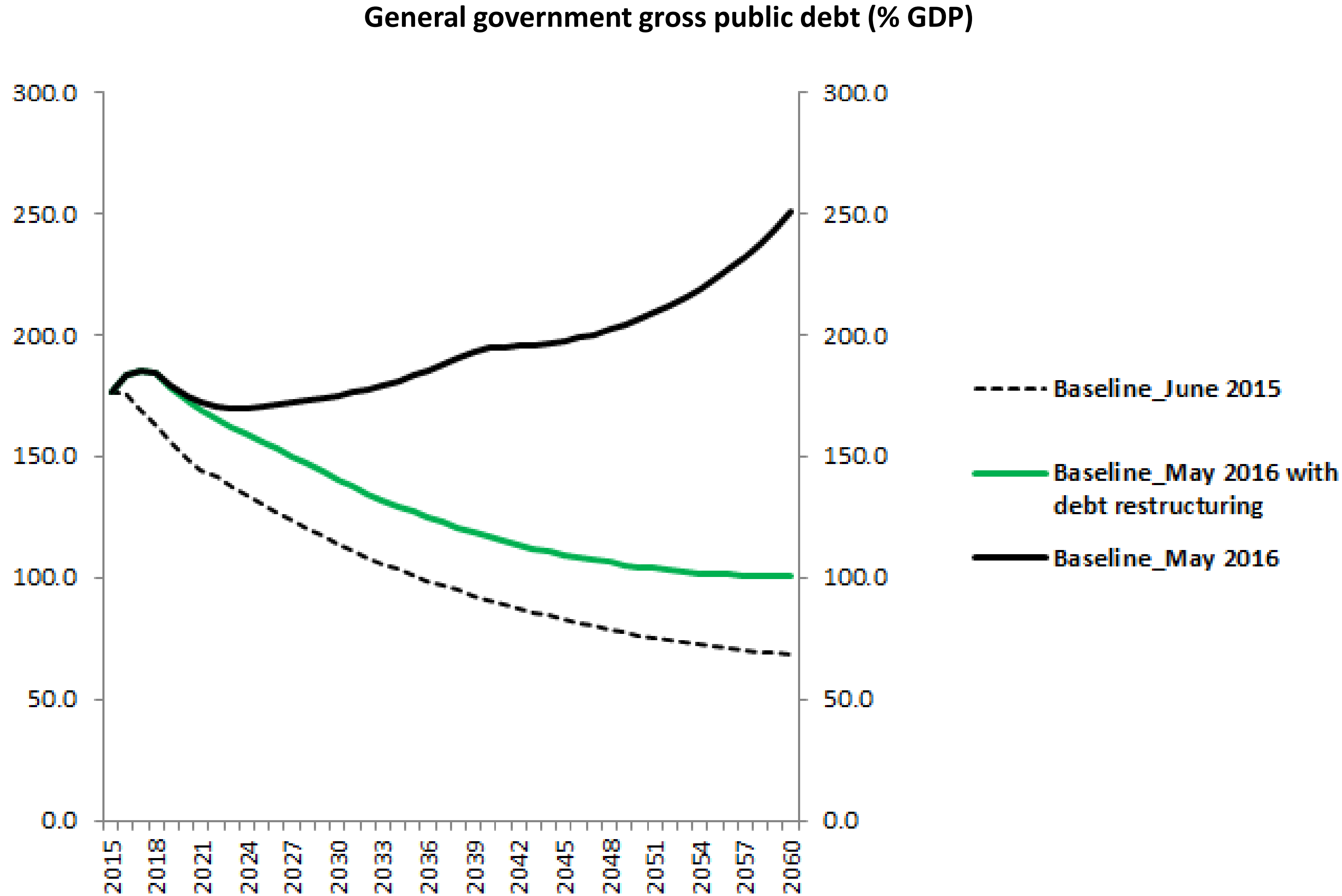
Source: IMF (June 2015 & May 2016), Eurobank Economic Research

Greece: evolution of general government gross funding needs



Source: IMF (June 2015 & May 2016), Eurobank Economic Research

Greece: evolution of general government debt to GDP ratio



Source: IMF (June 2015 & May 2016), Eurobank Economic Research

Greece: evolution of gross financing needs & funding sources

Scenario *"Baseline_May 2016"*

	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

Source: IMF (June 2015 & May 2016), Eurobank Economic Research

Greece: evolution of gross financing needs & funding sources

Scenario *“Baseline_May 2016 with debt restructuring”*

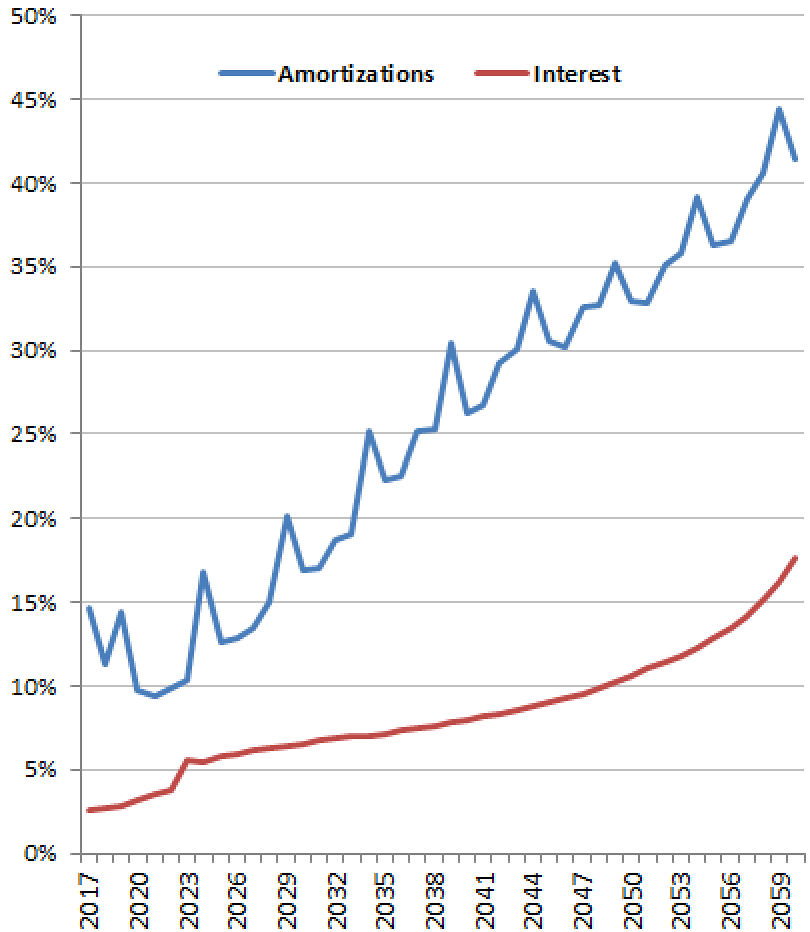
	Total gross financing needs (EURbn)													Gross financing sources EUR bn)				Funding gap (EUR bn)
	Amortization payments						Interest payments	Arrears clearance	Cash buffer for deposit build up	Primary surplus (-)	Privatisation (-)	Return of ANFA & SMP profits (-)		Short-term	Official financing (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	18.3	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

Source: IMF (June 2015 & May 2016), Eurobank Economic Research

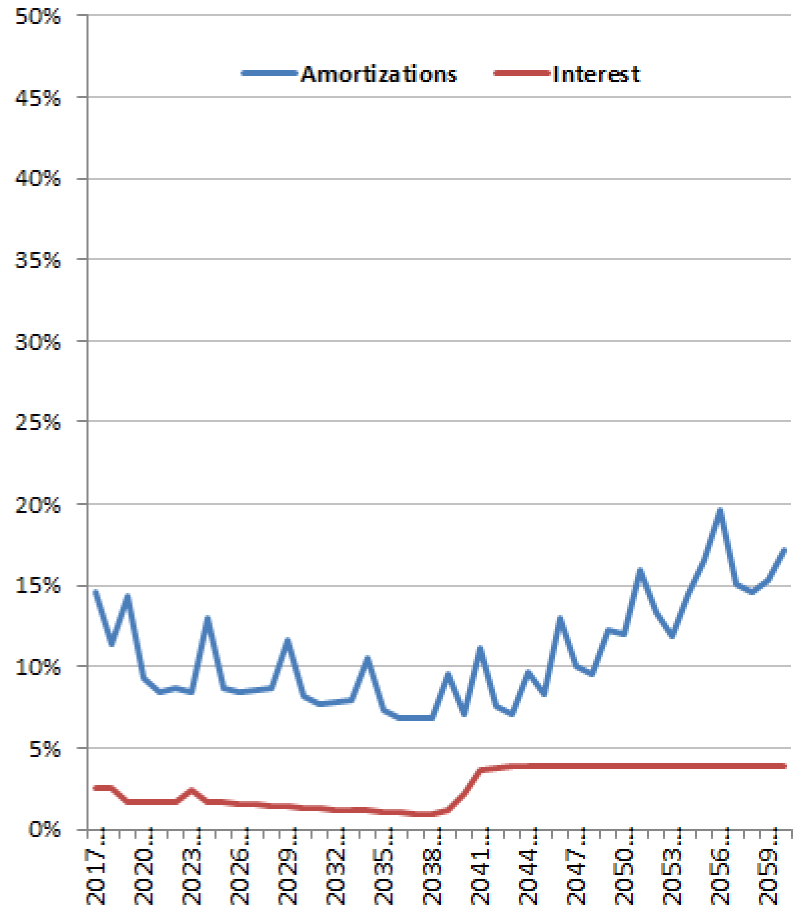
Greece: amortization & interest payments (% GDP)

Assuming market access is re-established post-2018 to cover projected funding gaps

Scenario *"Baseline_May 2016"*



Scenario *"Baseline_May 2016 with debt restructuring"*



Source: IMF (June 2015 & May 2016), Eurobank Economic Research

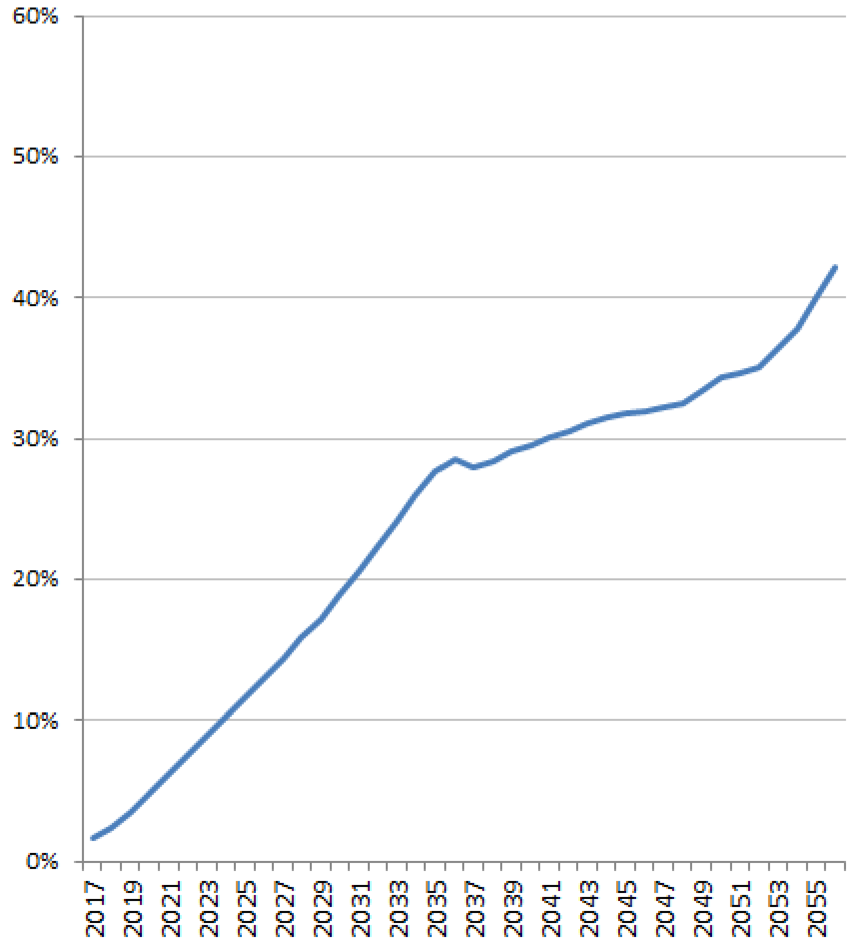
Greece: cash flow & stock relief due to debt re-profiling (% of GDP)

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"

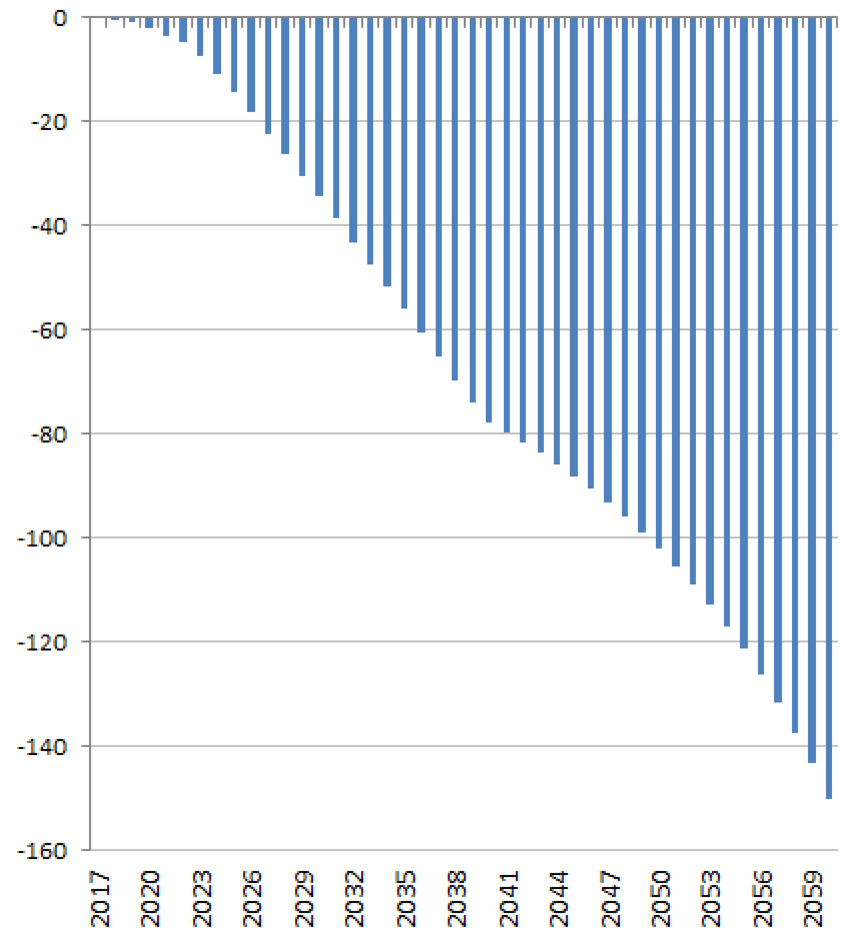


(*) Discount rate for NPV calculation assumed at 3%

Stock relief

Decline of debt to GDP ratio due to debt re-profiling

"Baseline_May 2016" Vs. "Baseline_May 2016 with debt restructuring"



Acknowledgement: The Author would like to thank Christos Pnevmatikatos, Head International ALM & Trading of Eurobank, for his assistance in deriving the NPV calculations

Source: IMF (June 2015 & May 2016), Eurobank Economic Research

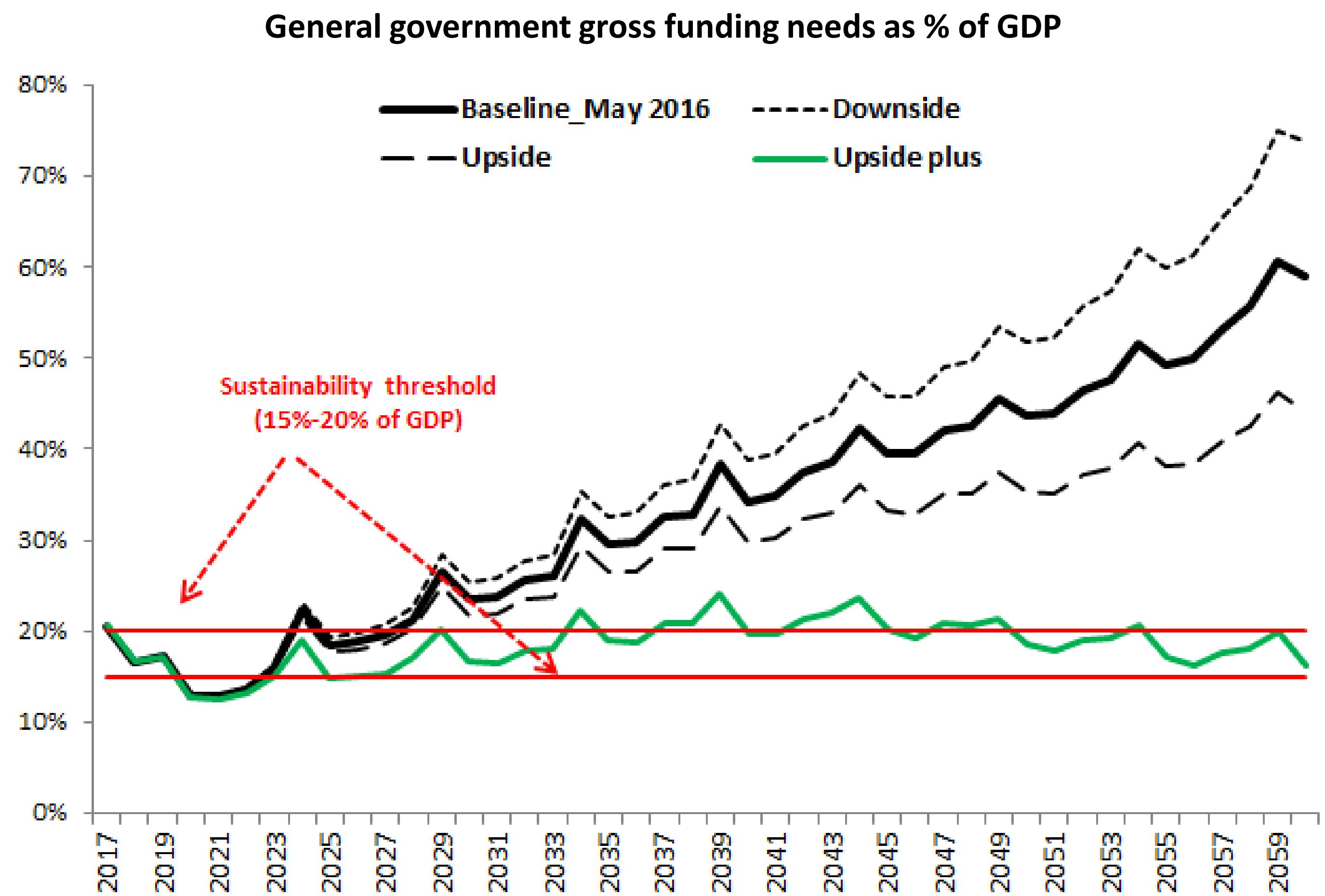
Part 3

Greek public debt: DSA & restructuring strategies

Other scenarios

Greece: evolution of general government gross funding needs

Upside and downside macro adjustments to the baseline scenario



"Baseline_May 2016": broadly in line with baseline macro assumptions presented in the IMF's May 2016 DSA

"Upside": baseline adjusted for higher long-term real GDP growth (1.5% vs. 1.2%) and no additional bank recap needs (vs. up to €10bn assumed in the baseline)

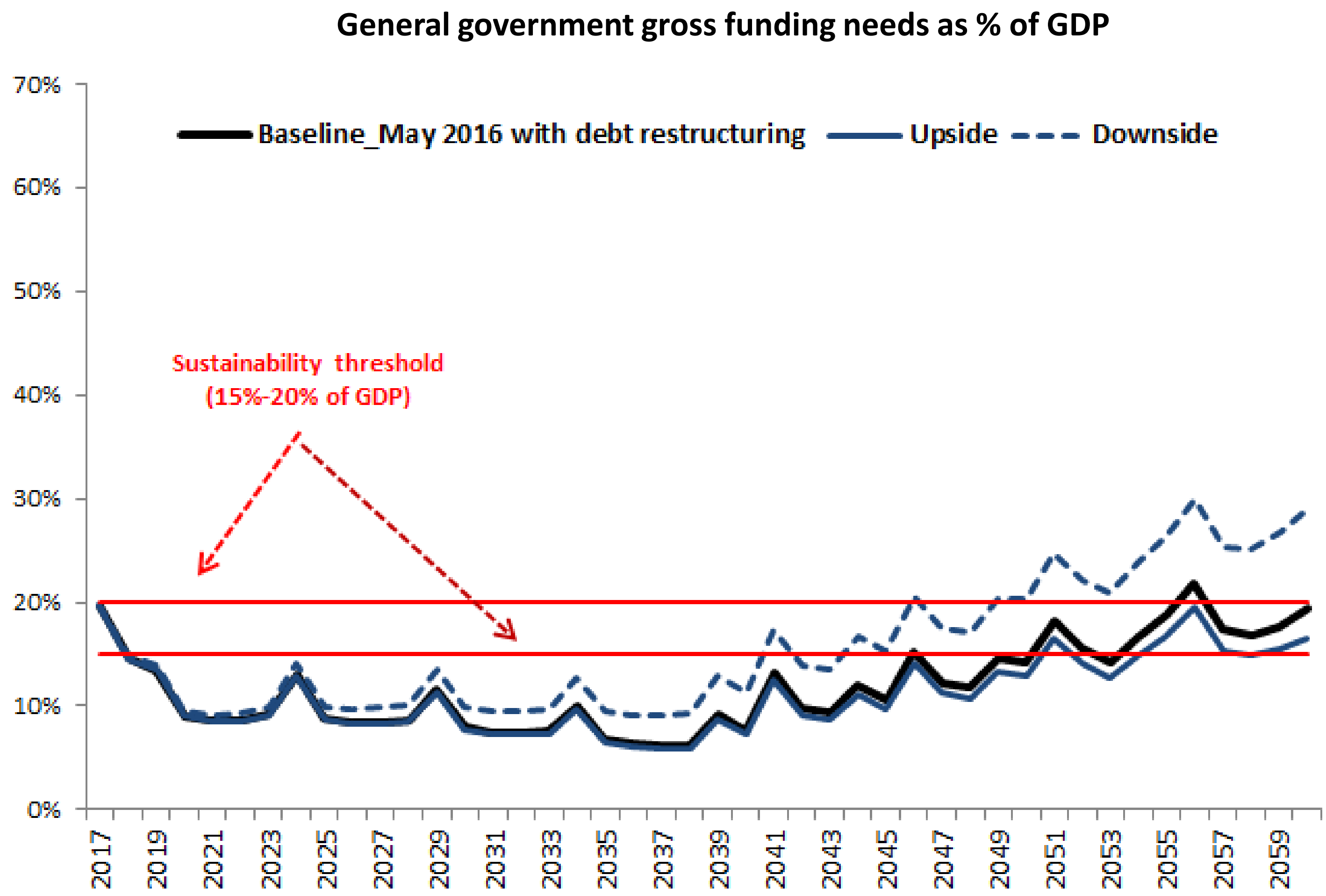
"Downside": baseline adjusted for lower long-term real GDP growth (1.0% vs. 1.2%) & a lower primary balance (1.0% vs. 1.5% of GDP)

"Upside plus" baseline adjusted for higher long-term real GDP growth (1.5% vs. 1.2%), higher long-term primary balance (3.5% vs. 1.5% of GDP), higher privatization revenue (€50bn vs. c. €20bn in 2016-2060) and no additional bank recap needs (vs. up to €10bn assumed in the baseline)

Source: IMF (June 2015 & May 2016), EC (June 2016), Eurobank Economic Research

Greece: evolution of general government gross funding needs

Upside and downside macro adjustments to the debt restructuring scenario



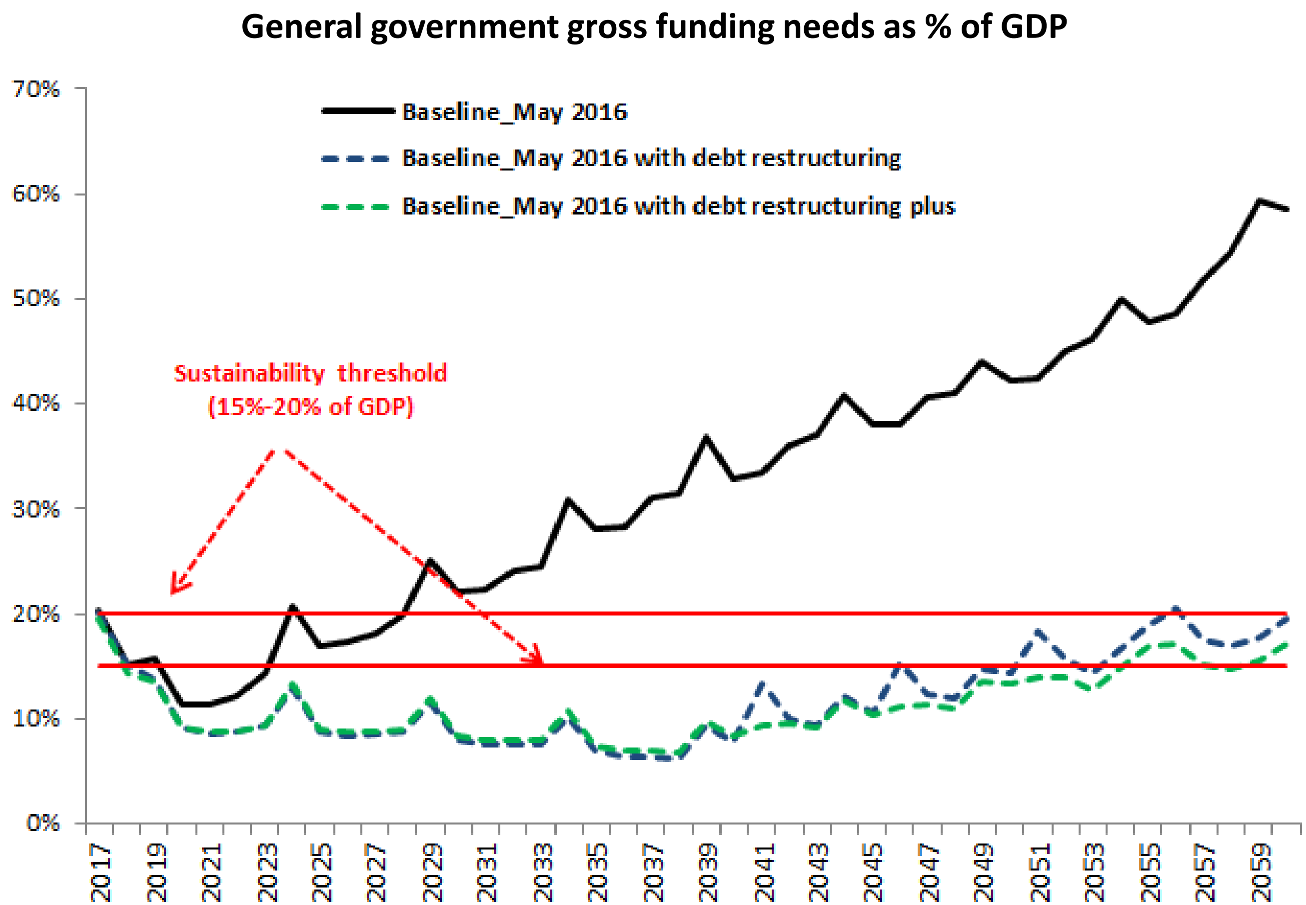
"Baseline_May 2016 with debt restructuring": based on the macroeconomic assumptions & proposed OSI modalities presented in the IMF's May 2016 DSA

"Upside": baseline debt relief scenario adjusted for somewhat higher long-term real GDP growth (1.5% vs. 1.2%) and no additional bank recap needs (vs. up to €10bn assumed in the baseline)

"Downside": baseline debt relief scenario adjusted for lower long-term real GDP growth (1.0% vs. 1.2%) & a lower primary balance (1.0% vs. 1.5% of GDP)

Source: IMF (June 2015 & May 2016), EC (June 2016), Eurobank Economic Research

Greece: evolution of general government gross funding needs
Other scenarios



"Baseline_May 2016": broadly in line with baseline macro assumptions presented in the IMF's May 2016 DSA

"Baseline_May 2016 with debt restructuring": based on the macroeconomic assumptions & proposed OSI modalities presented in the IMF's May 2016 DSA

"Baseline_May 2016 with debt restructuring plus: restructuring scenario assuming fixing of interest rates on official loans at 1% until 2040 and 3% afterwards (vs. 1.5% and 3.8% assumed in the IMF's May 2016 DSA proposal)

Source: IMF (June 2015 & May 2016), EC (June 2016), Eurobank Economic Research

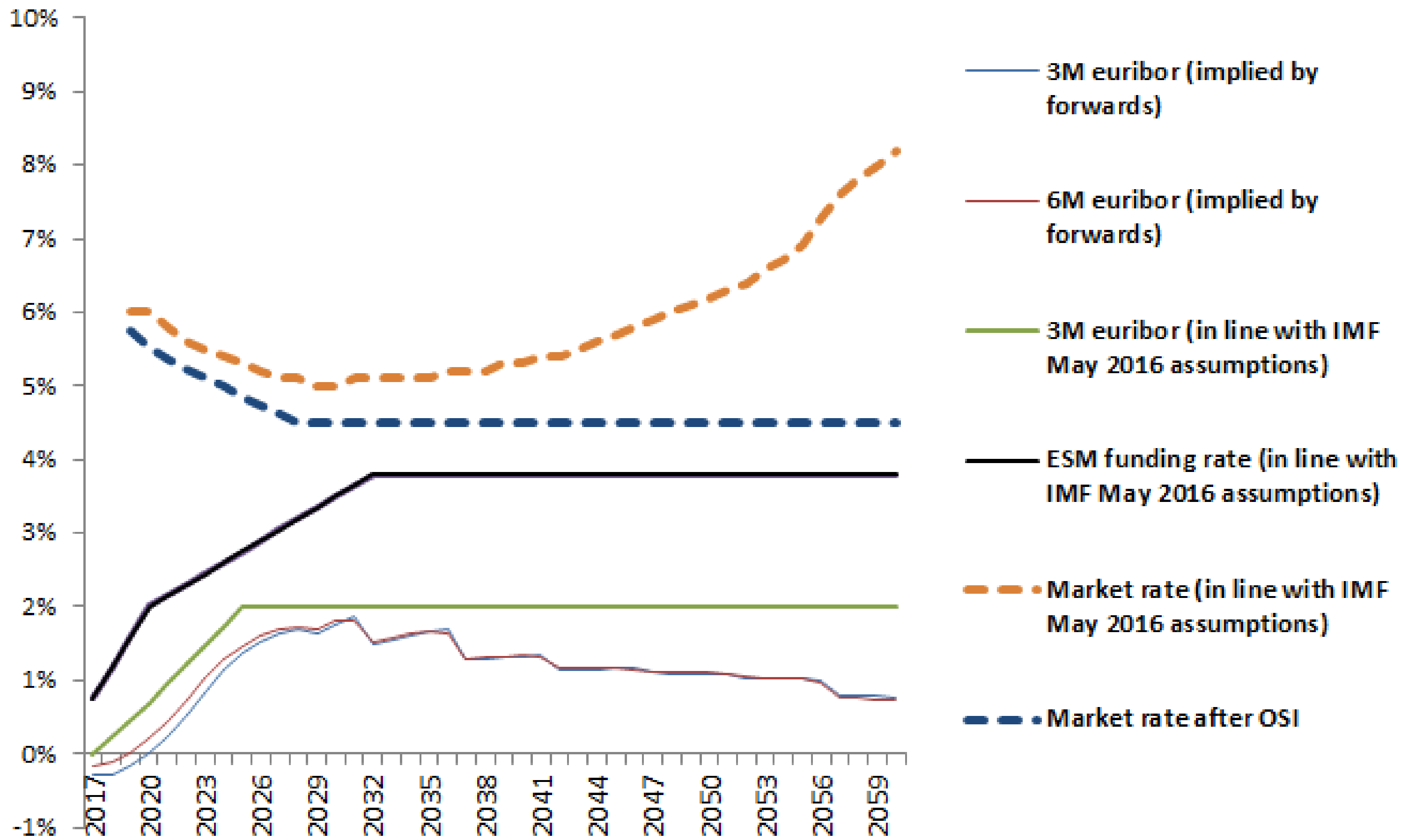
Appendix

Debt relief measures for Greece agreed at the Eurogroup of May 24, 2016

Time horizon	Measures
Short term (From completion of 1st review to the expiration of the current programme in Aug 2018)	Smoothening 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 succesful 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.
	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.
Long term (After finalization of the ESM programme)	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.

Interest rate assumptions

Evolution of relevant interest rates used in the DSA analysis (*)



(*) Greece is assumed to re-access markets after the end of the current programme (mid 2018) an initial market rate of 6.00%
The said rate is assumed to increase (decrease) by 4bps per 1ppt increase (decrease) in the debt ratio, up to a floor of 4 ½ percent

Acknowledgement: The Author would like to thank Maria Katrantzi, Eurobank Derivatives Trading Desk, for her assistance in deriving the Euribor rates implied by the forwards curve

Source: IMF (June 2015 & May 2016), Eurobank Economic Research

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