Outline
An alternative debt sustainability analysis for Greece

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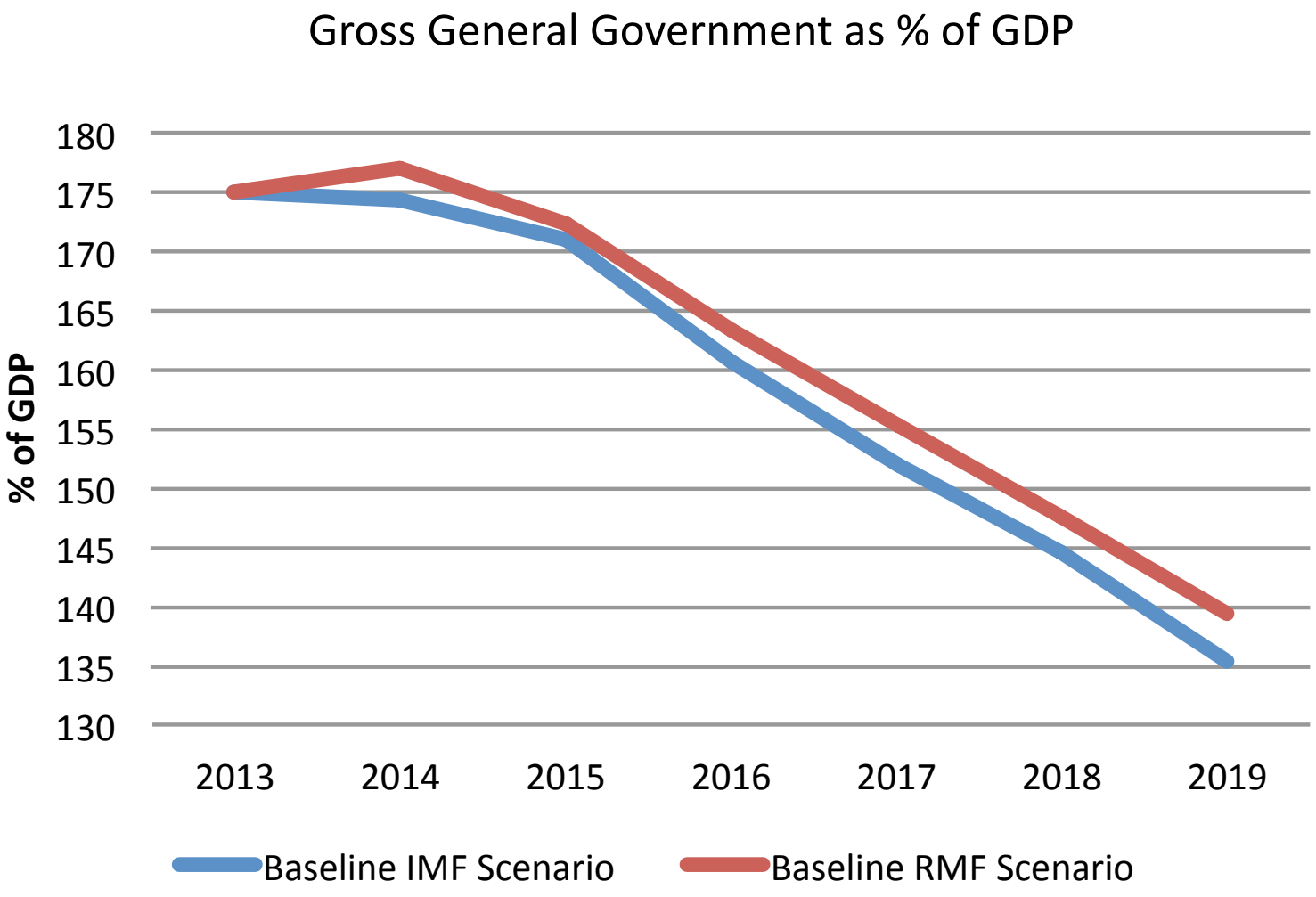
Is Greek Debt Sustainable?

"Public debt can be regarded as sustainable when the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level." IMF (2013)

To answer the question of sustainability of Greek debt requires then to analyze:

- **Realism of basic assumptions**
- Funding constraints present in a baseline scenario
- Projection of debt under an alternative set of assumptions

The baseline scenario



Source: European Commission (2014), IMF (2014). Calculations made by the author.

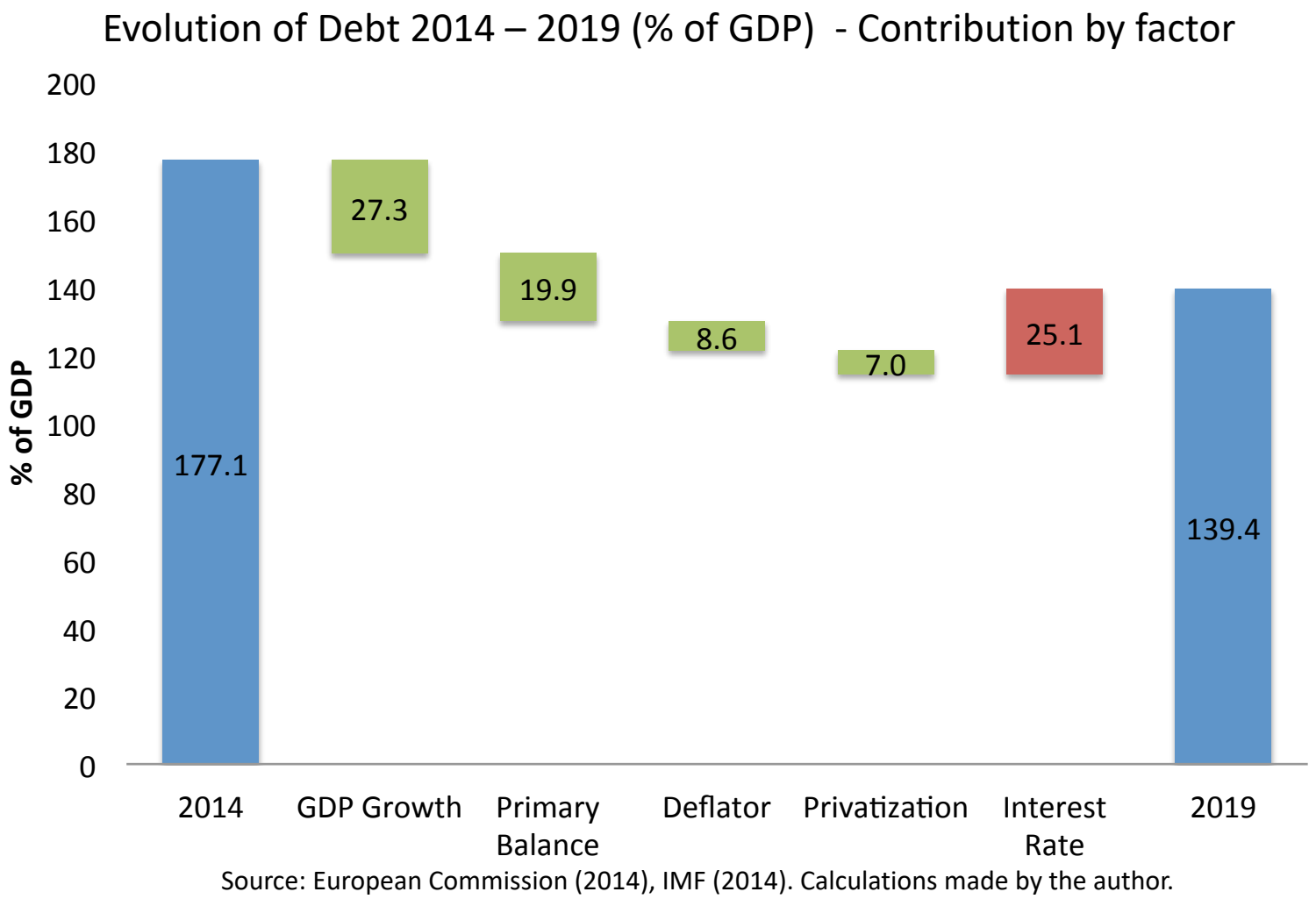
The baseline scenario

Base Assumptions (Average for 2015 - 2019)	
GDP Growth (% change)	3.4
CPI (% change)	1.1
Effective Interest Rate	3.3
Primary Balance (% of GDP)	4.1
Privatization Receipts (% of GDP)	1.4
Memo Item (Average for 2015 - 2017)	
Unidentified measures (% of GDP)*	1.3

*Included in IMF Baseline but not in RMF Baseline

Source: IMF (2014)

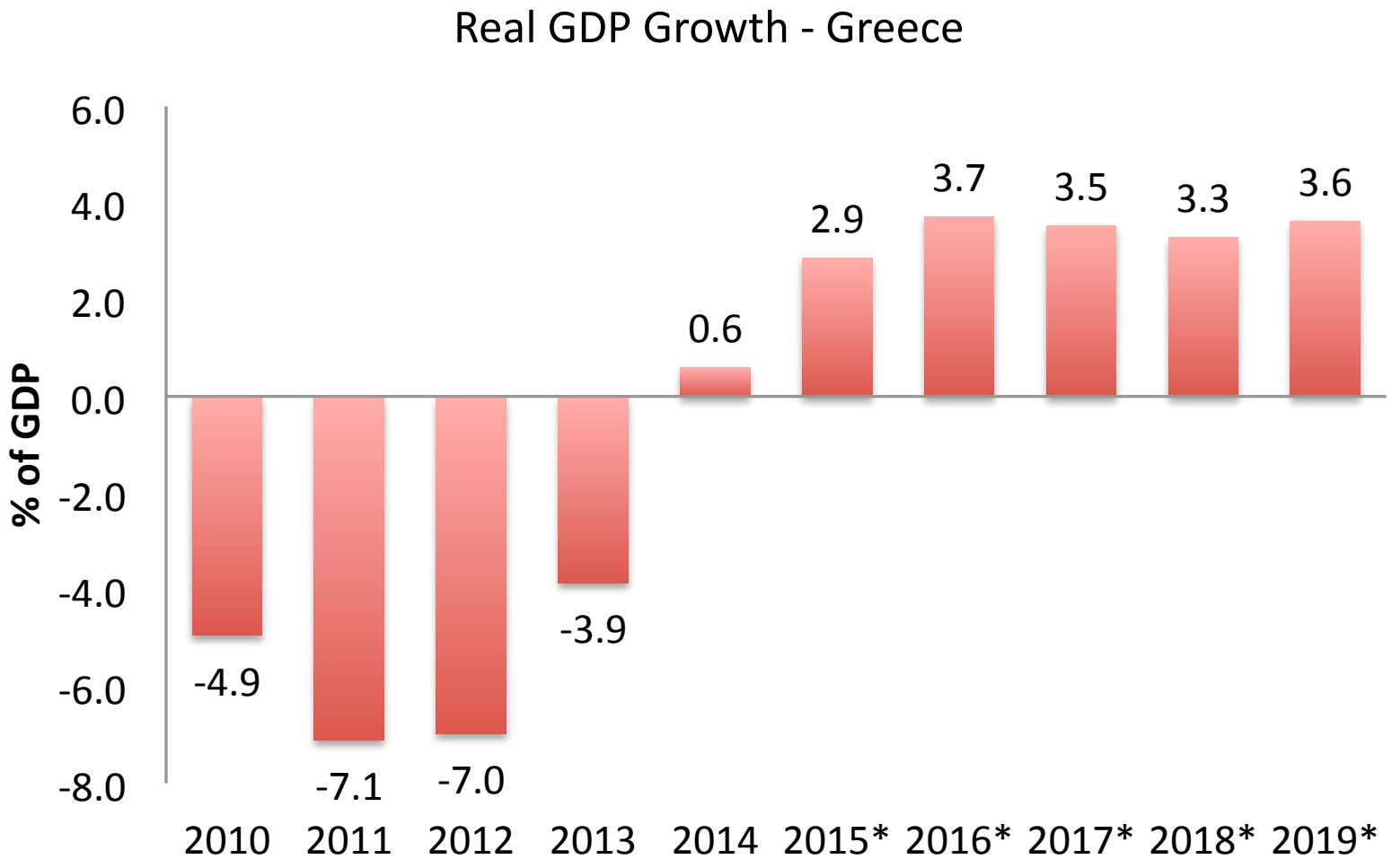
The Baseline Scenario



Source: European Commission (2014), IMF (2014). Calculations made by the author.

- In a context of low interest rates, most of the projected reduction of Greek debt is a result of relatively high growth rates and primary surpluses. Evolution of prices and privatizations play a secondary but not insignificant role.
- As will be explained, baseline scenario is based on a highly optimistic set of assumptions

Revisiting the assumptions: GDP Growth



Source: Eurostat (2014), IMF (2014). Calculations made by the author.

Greece	**1965 - 2014**	**2001-2007**	**2015-2019***
GDP Growth Average	2.5	4.2	3.4
St. Dev.	4.3	1.3	0.3

*IMF Projections
Source: World Bank (2014), IMF (2014)

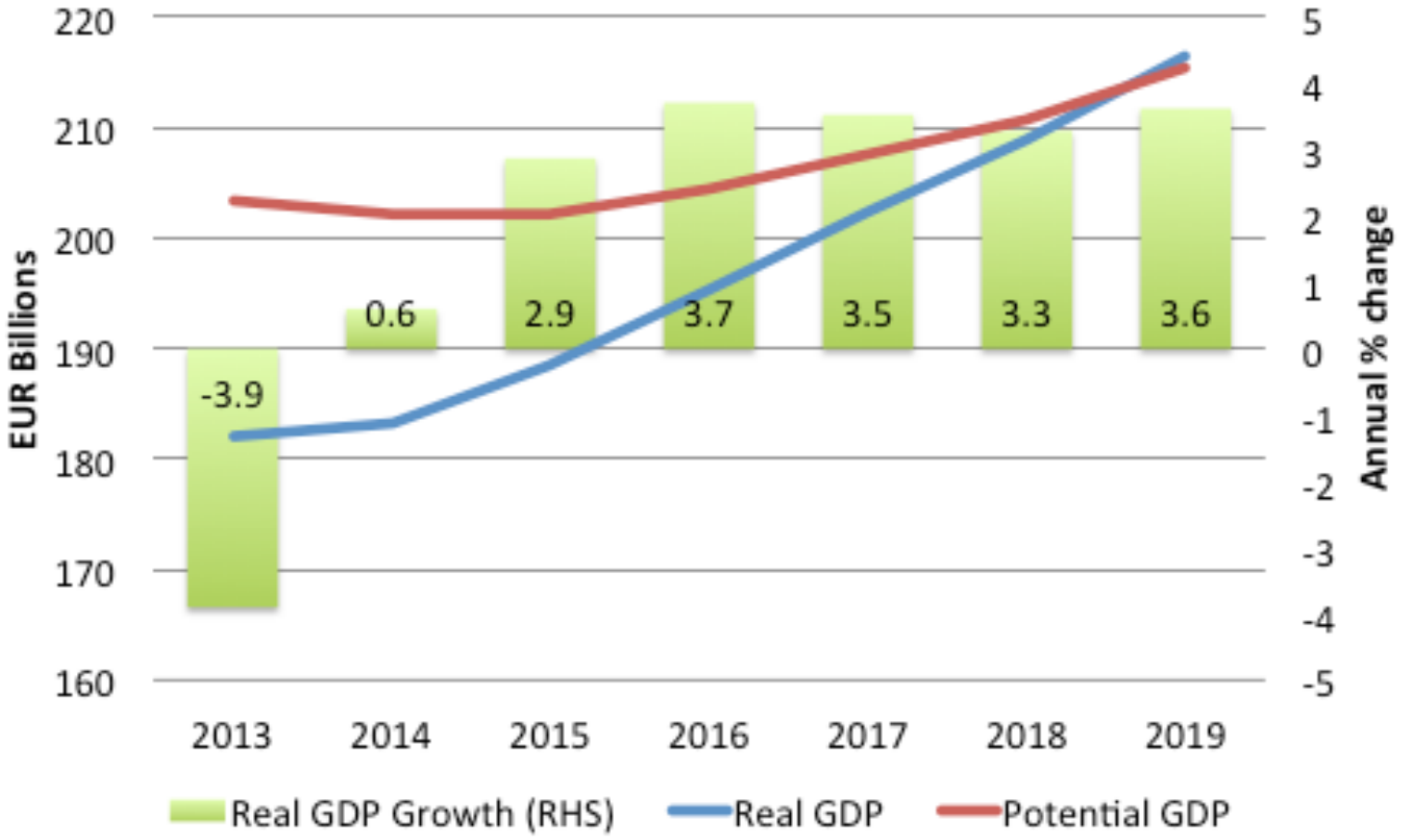
Growth rates above historical average and with significantly lower levels of volatility

IMF Greece median forecast error (2005 – 2013): -2.91

Revisiting the assumptions: GDP Growth Macroeconomic Inconsistency

- Four key issues with macro baseline scenario:
  - Macro projections start from the assumption that the country will be able to close the output gap within the 5 next years.
  - Nonetheless, Greece has no economic engine to restart growth. It is assumed that recovery will be led by private demand in a context of high unemployment, low salaries and utilization rates.
  - In the medium term, the IMF expects a positive contribution of public demand on GDP growth without an actual increase in government expenditures as a share of GDP.
  - Furthermore, it is assumed that recovery will have a negative impact on imports as a share of GDP.

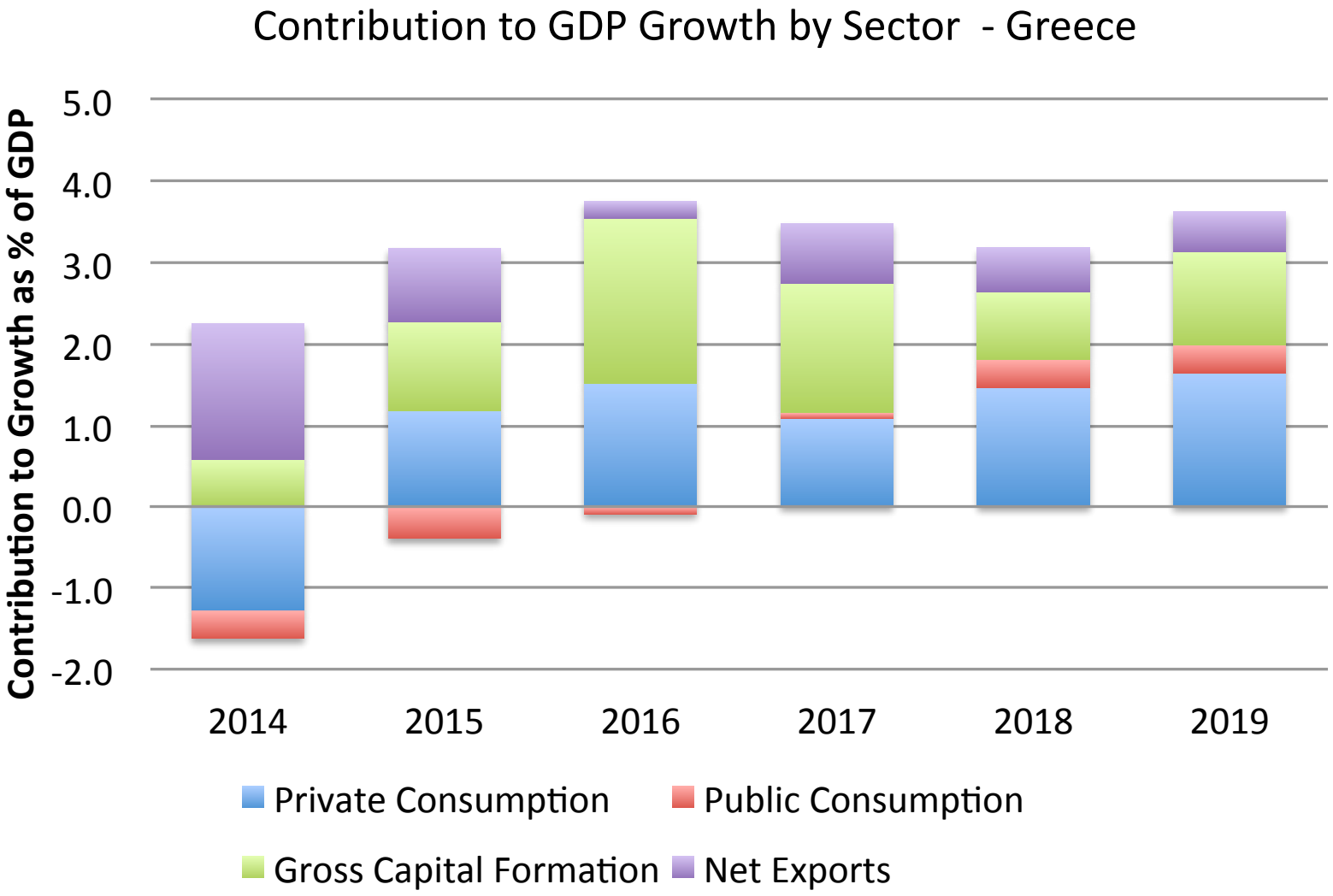
Revisiting the assumptions: GDP Growth
Macroeconomic Inconsistency 1: The output gap



Source: Eurostat (2014), IMF (2014). Calculations made by the author.

The macroeconomic baseline scenario of the IMF is based on the assumption that Greece will be able in the medium term to close the output gap.

Revisiting the assumptions: GDP Growth
Macroeconomic Inconsistencies 2&3: Private and Public Demand



Source: Eurostat (2014), IMF (2014). Calculations made by the author.

Scenario assumes a domestic led recovery with marginal support from net exports and public demand

Revisiting the assumptions: GDP Growth
Macroeconomic Inconsistencies 2&3: Private and Public Demand

Greece - Key Economic Indicators 2014 - 2019

	2014	2015	2016	2017	2018	2019
Unemployment Rate	25.8	23.8	20.9	18.6	15.8	12.7
Unit Labor Costs (% change)	-1.8	-0.3	1.7	1.5	1.3	0
Private Credit Growth (% change)	-3.7	-1.6	3.6	-	-	-

Source: IMF (2014)

81% of the growth for the 2015-2019 period is explained by private consumption and gross capital formation. This will be achieved (?) in an environment of high unemployment, stagnant wages and low growth of private credit.

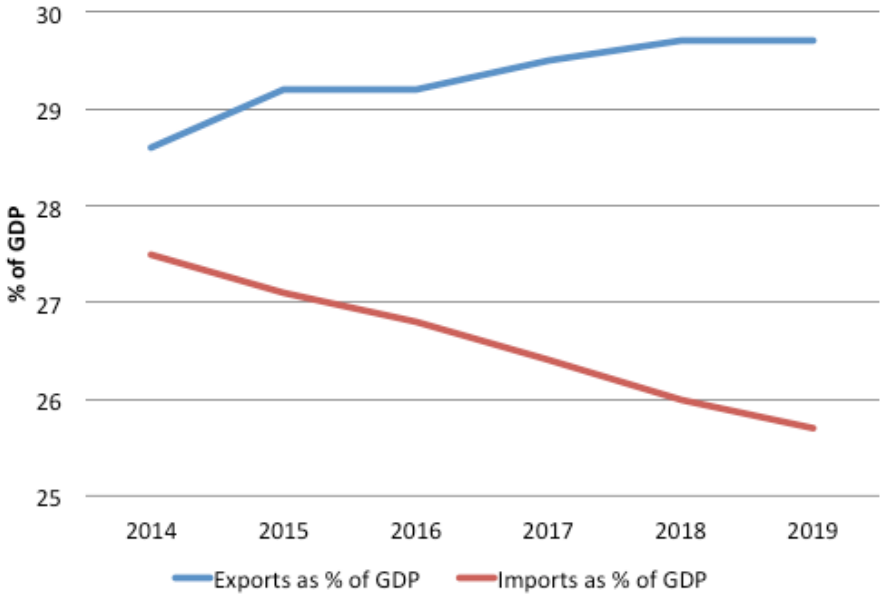
Public Sector and GDP Growth

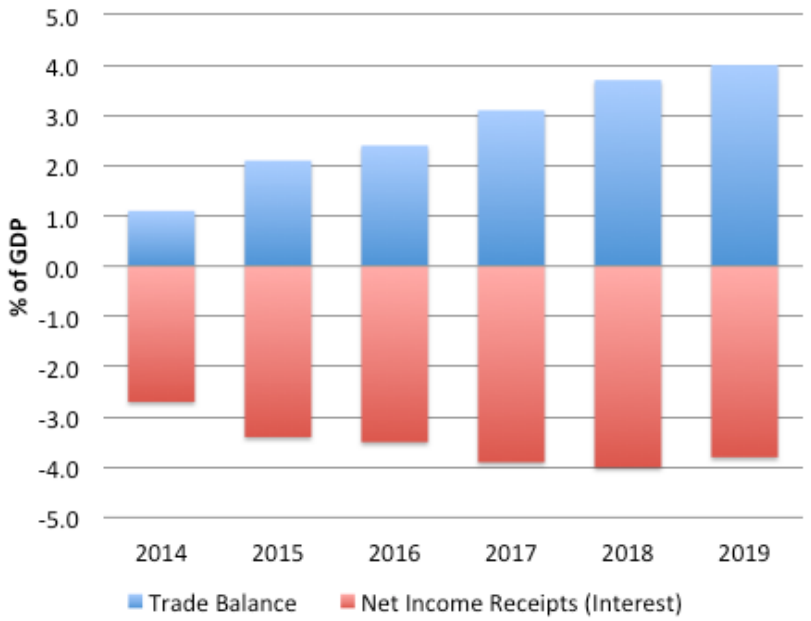
	2014	2015	2016	2017	2018	2019
Public Sector Contribution to GDP Growth	-0.3	-0.4	-0.1	0.1	0.3	0.3
Primary Expenditures as % of GDP	42.9	40.2	37.9	37.7	37.9	37.9

Source: IMF (2014). Calculation made by the author.

Baseline scenario projects an intensification of austerity measures in the next 2 years. Furthermore, it assumes a positive impact on GDP growth of fiscal policy despite the fact that it will remain stable between 2016 and 2019.

Revisiting the assumptions: GDP Growth
Macroeconomic Inconsistency 4: Net Exports

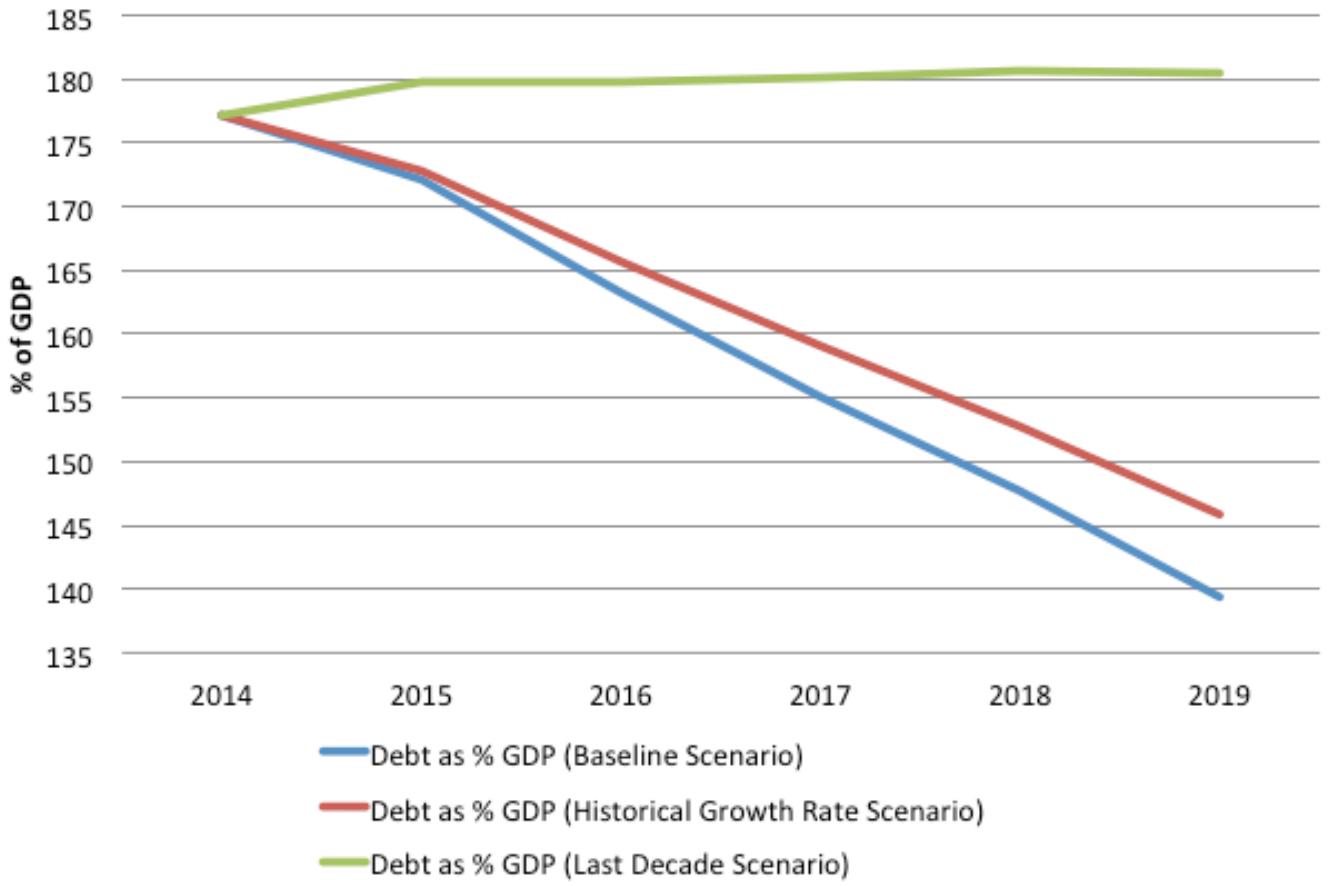




Source: IMF (2014)

- Scenario assumes that a full economic recovery will take place in Greece while simultaneously reducing the imports of the country.
- Assumption is made so as to ensure that for purposes of consistency of the model, the country will be able to service its foreign debt without additional external support.
- A relaxation of this assumption means that in an scenario of recovery, either the private or public sector will have to run correspondent deficits and therefore further accumulation of external debt.
- **Given the current debt overhang, economic growth in Greece is not compatible with a sustainable framework for either external or public debt.**

Revisiting the assumptions: GDP Growth
Impact of alternative growth scenarios on public debt

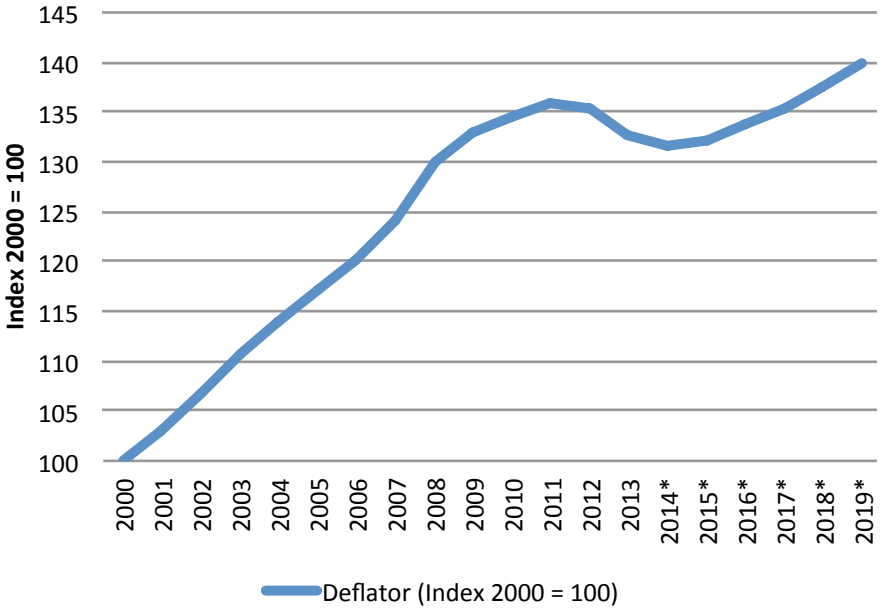


Source: IMF (2014). Calculations made by the author.

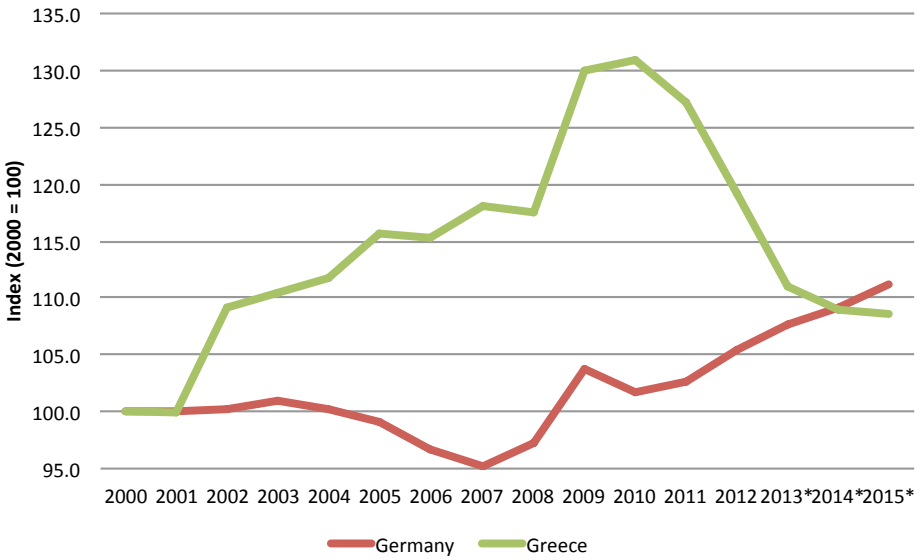
- Historical growth rate scenario: Average GDP growth 1965 – 2014 (2.5%)
- Last decade scenario: Average GDP growth 2005 – 2014 (-1.4%)
- IMF baseline scenario relies heavily on economic recovery to ensure sustainability of public debt

Revisiting the assumptions: GDP Deflator

GDP Deflator



Unit Labor Costs



* Projections

Source: OECD (2014), Eurostat (2014), IMF (2014). Calculations made by the author.

- Baseline scenario assumes a moderate growth of the price index in the following years
- It is expected that this growth will not undermine the reduction in labor costs, and therefore the international competitiveness of the country.
- Note that in a context of low credit and economic growth it will be a daunting task to accomplish the expected increase in the price index of the country

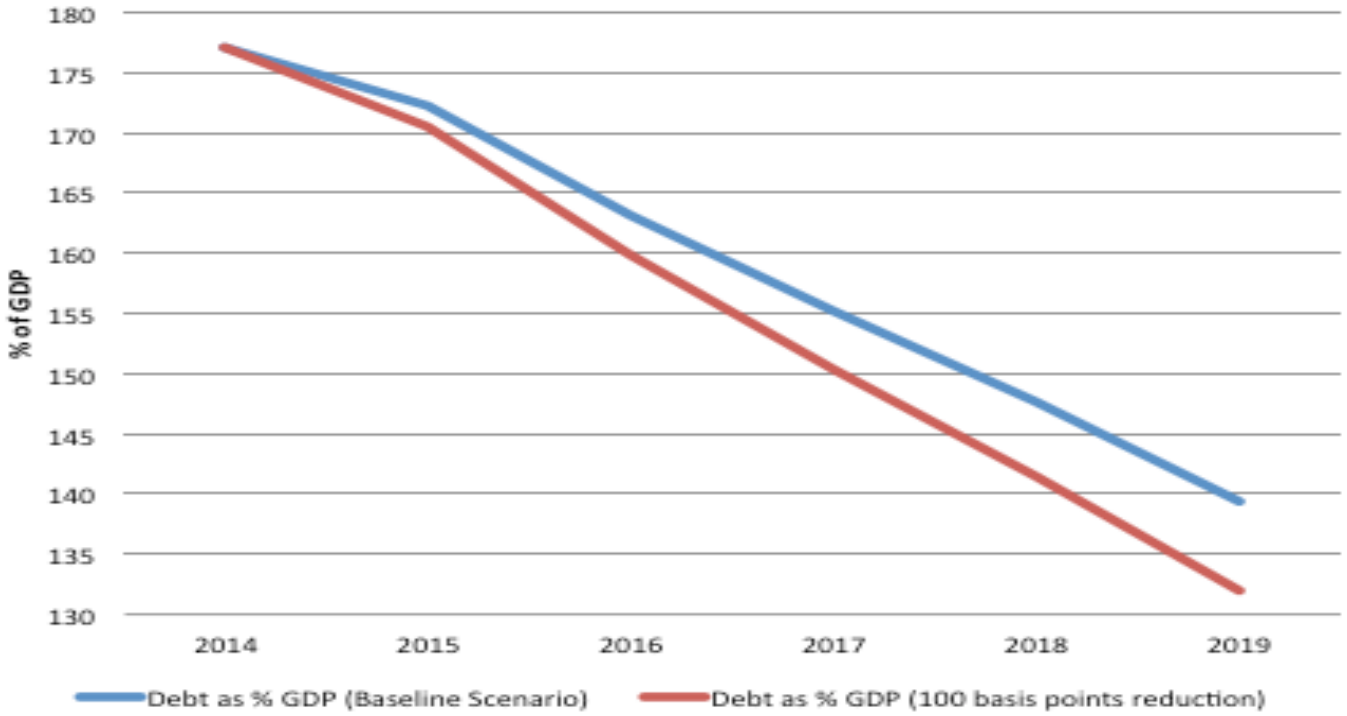
Revisiting the assumptions: Interest Rates

Composition of Greek Debt (End of 2013)	EUR Bn	Interest Rates 2014	2015	2016	2017	2018	2019
New bonds from the 2012 debt exchange (€bn)	31	2.0	2.0	3.0	3.0	3.0	3.0
Hold-outs (€bn)	4	5.0	5.0	5.0	5.0	5.0	5.0
ECB/NCB holdings (€bn)	38	5.0	5.0	5.0	5.0	5.0	5.0
Short-term securities (€bn)	15	5.0	5.0	5.0	5.0	5.0	5.0
IMF loans (€bn)	29	3.6	3.7	3.7	3.7	3.6	3.5
Bilateral EU loans (€bn)	53	0.7	0.7	0.8	1.3	1.5	2.1
EFSF loans (PSI sweetener and accrued interes	35	1.2	1.5	1.7	2.2	2.5	2.7
EFSF loans (2nd programme) (€bn)	99	1.2	1.5	1.7	2.2	2.5	2.7
Others (€bn)	15	5.0	5.0	5.0	5.0	5.0	5.0
Total (€bn)	319						
Memo Item							
Average Interest Rate		3.2	3.3	3.4	3.6	3.7	3.8
Weighted Average Interest Rate		2.3	2.4	2.6	2.9	3.0	3.2
Interest Rate Baseline Scenario		2.4	2.8	3.2	3.4	3.5	3.6

Source: IMF (2014), Darvas (2014). Calculations made by the author.

- Baseline scenario seems to assume a significant increase in the market rates (Short term securities and others)
- **Any scenario of reduction of interest rates would involve important reductions on the lending rates of the ECB and the IMF**

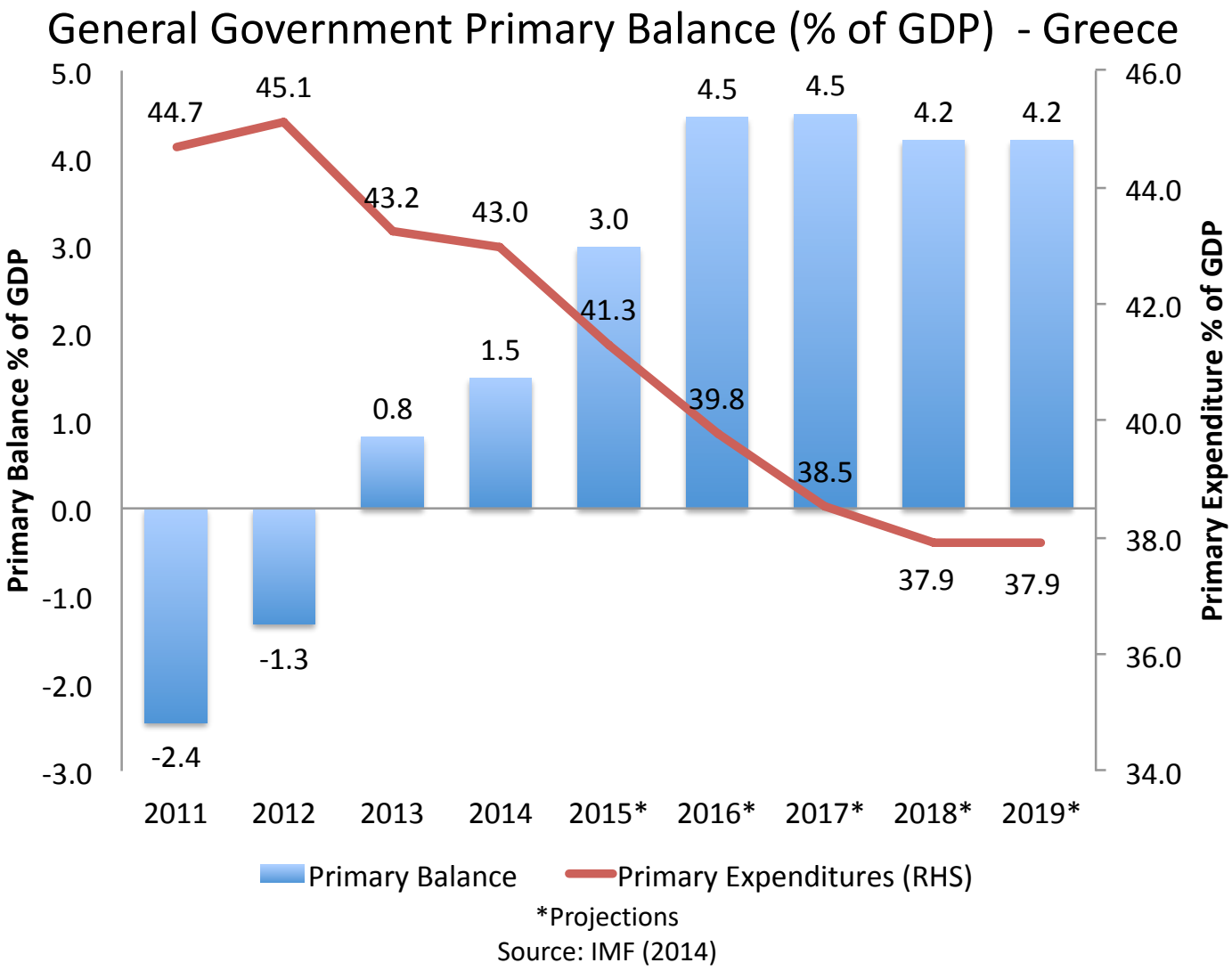
Revisiting the assumptions: Interest Rates
Impact of alternative interest rate scenarios on public debt



Source: IMF (2014). Calculations made by the author.

- Given low interest rates of the rest of the public and multilateral creditors, a 100 basis point reduction on the Greek public debt could be achieved in 2 ways:
  - In an scenario of low market rates, it would require at least a 300 basis points reduction on the ECB debt and 200 basis points on the IMF debt.
  - In an scenario of high market rates, it would require the aforementioned measures, plus and additional 100 basis points reduction on the interest rates of the EFSF
- Note that despite these efforts, public debt as a % of GDP would still be above 130% of GDP by the end of the decade.

Revisiting the assumptions: Fiscal Policy and Debt Sustainability

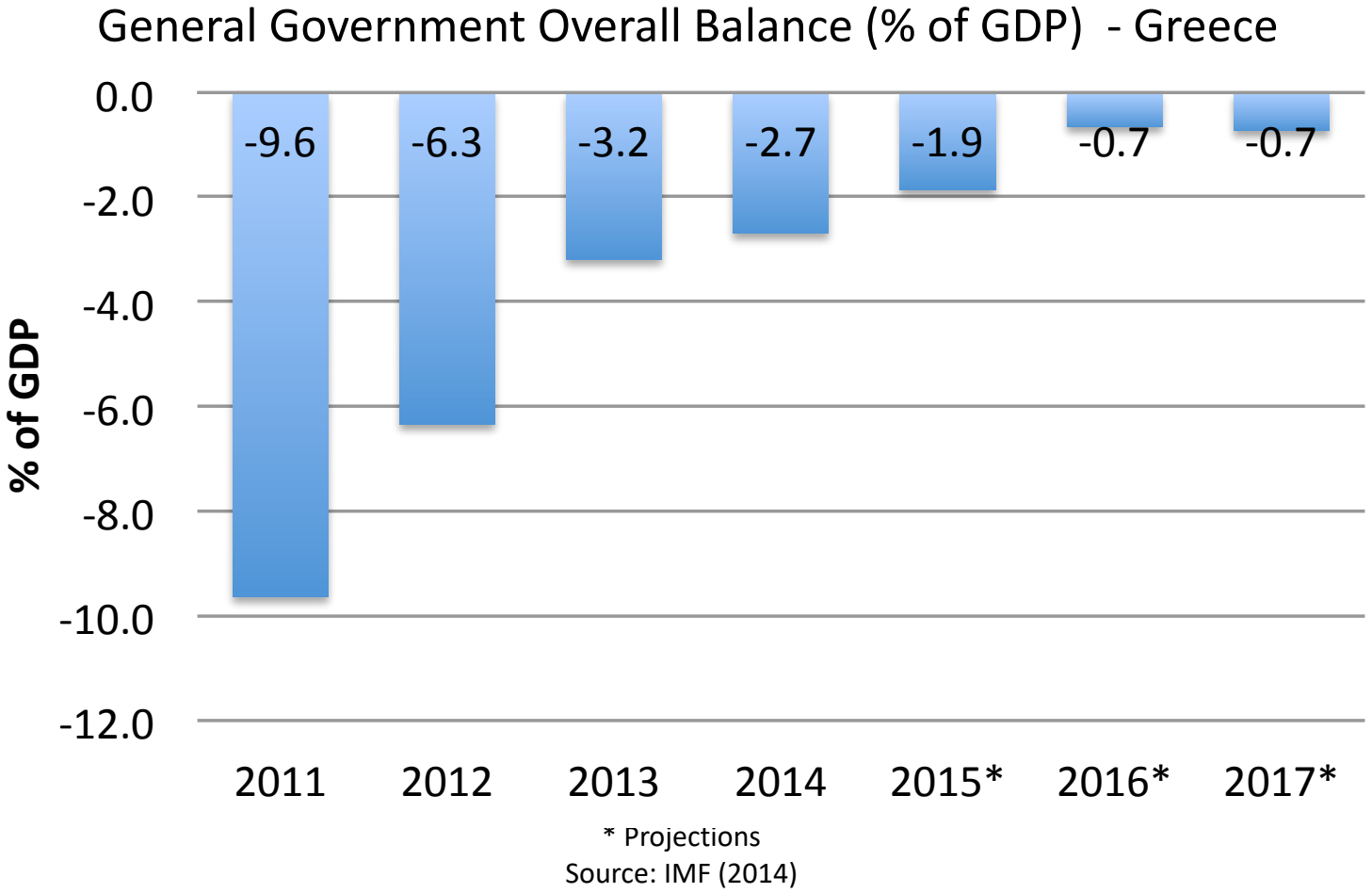


*Projections

Source: IMF (2014)

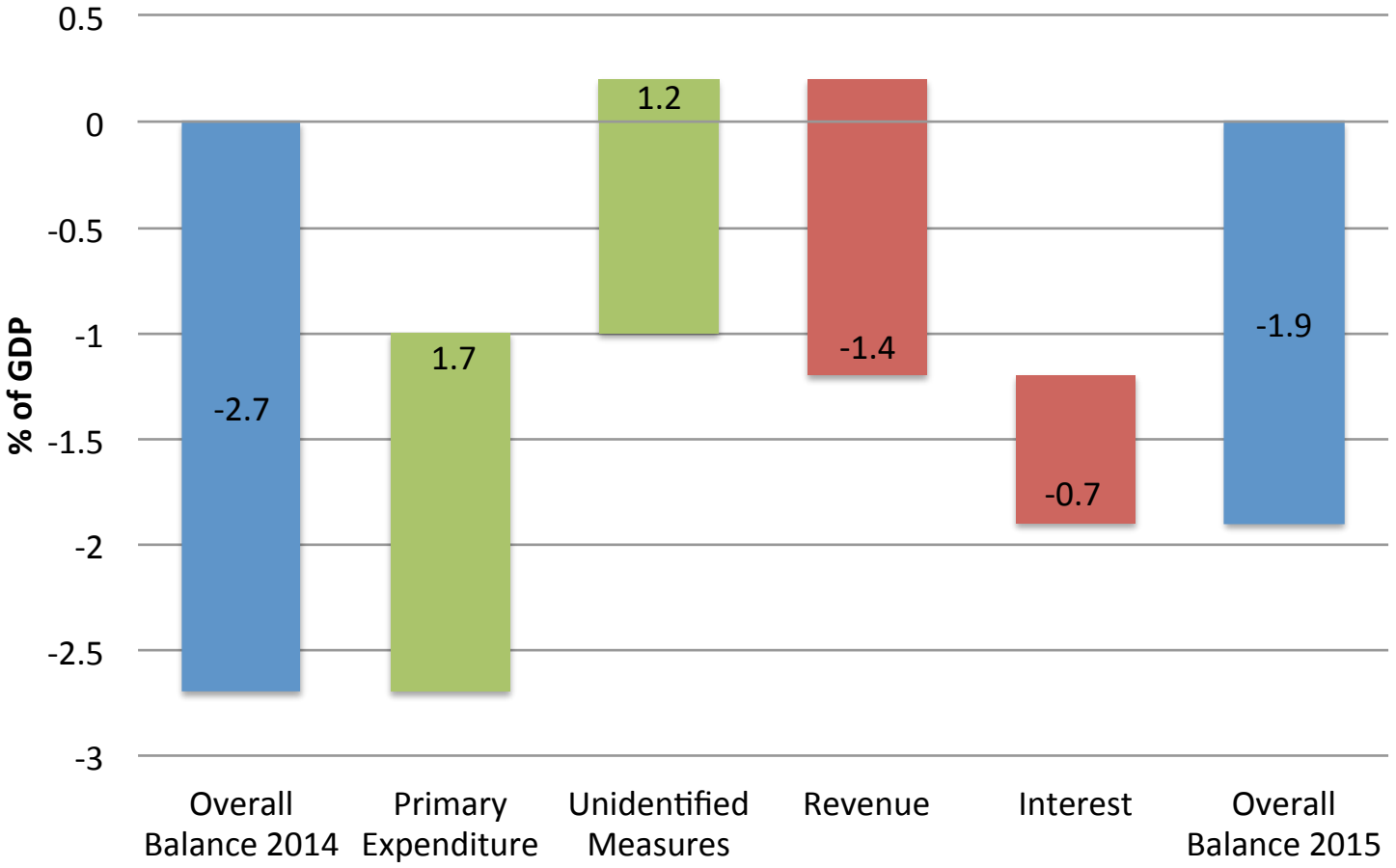
- Baseline scenario is based on the assumption that the Government of Greece will be able to steadily increase its primary balance in the medium term.
- As in the case of GDP growth, fiscal projections are based on an overly optimistic scenario.

Revisiting the assumptions: Fiscal Policy and Debt Sustainability



- The improvement in the overall balance assumes a further compression of expenditure and a set of unidentified measures which compensate an increase on interest expenditures and a expected decrease on revenues.

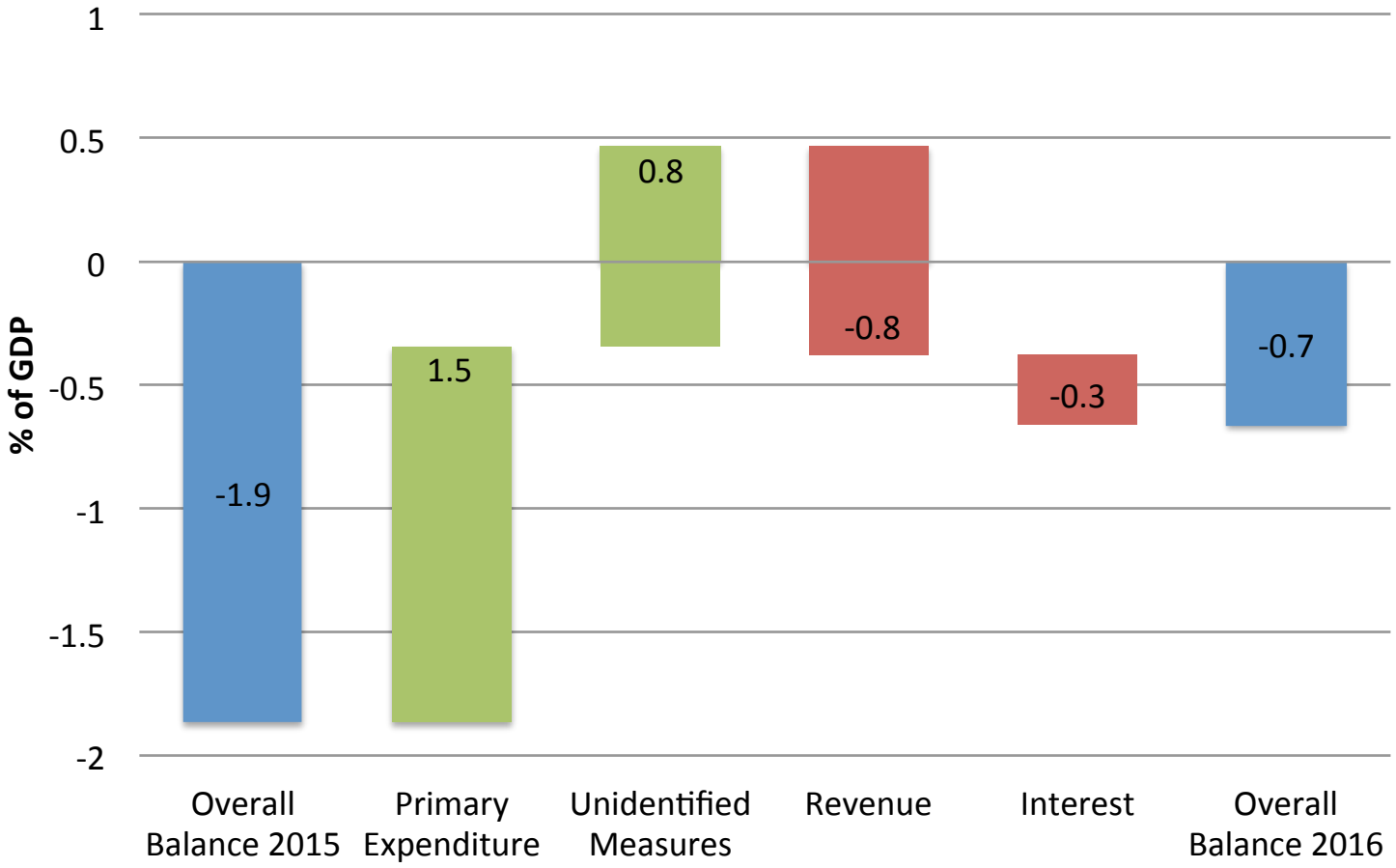
Revisiting the assumptions: Fiscal Policy and Debt Sustainability Adjustments in Overall Balance 2014 - 2015



Source: IMF (2014)

- For 2015, further reduction in expenditures and unidentified measures are expected to compensate a reduction on revenues and an increase on interest payments

Revisiting the assumptions: Fiscal Policy and Debt Sustainability Adjustments in Overall Balance 2015 - 2016

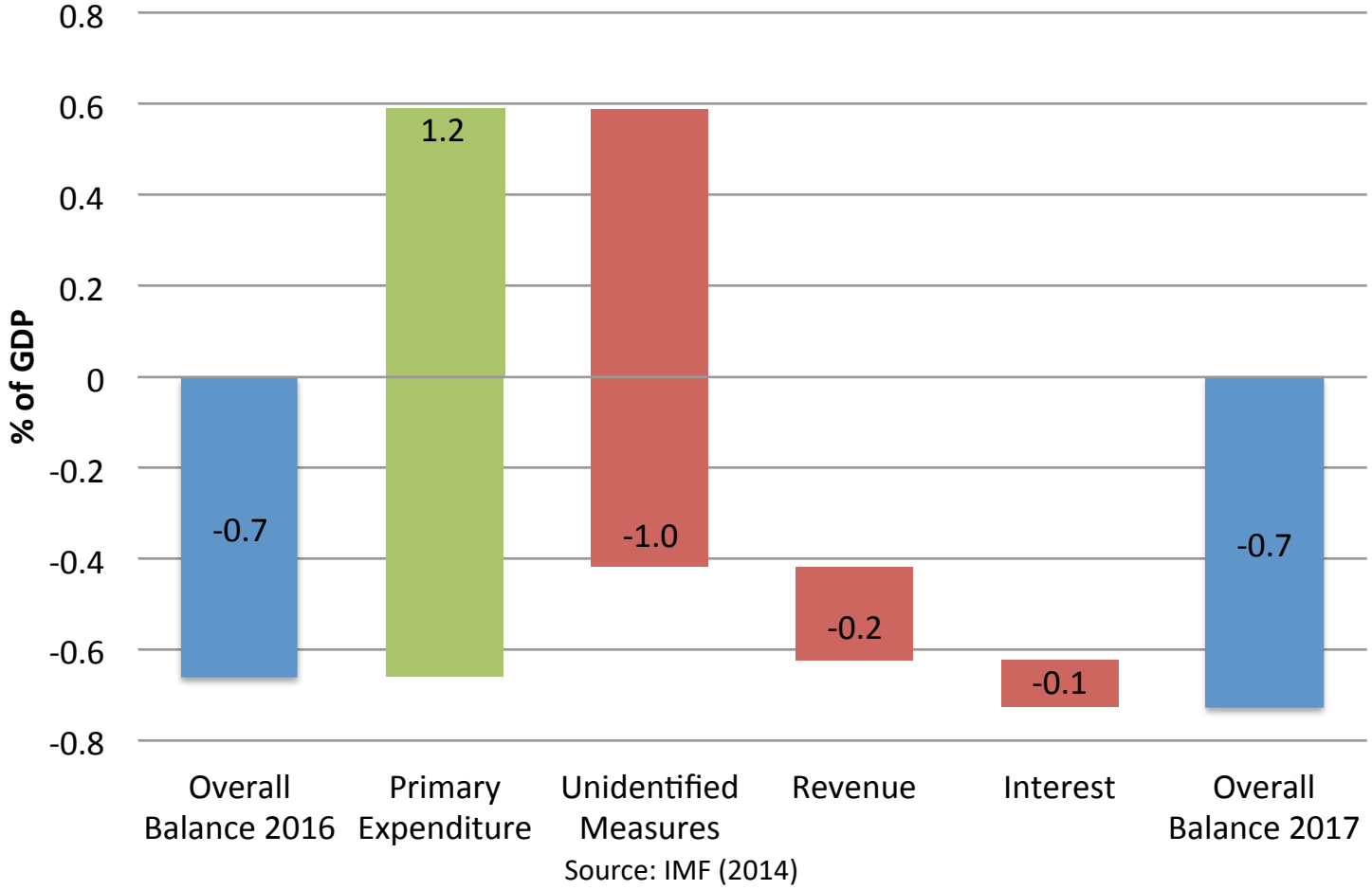


Source: IMF (2014)

- A situation that is expected to be repeated in 2016…

Revisiting the assumptions: Fiscal Policy and Debt Sustainability

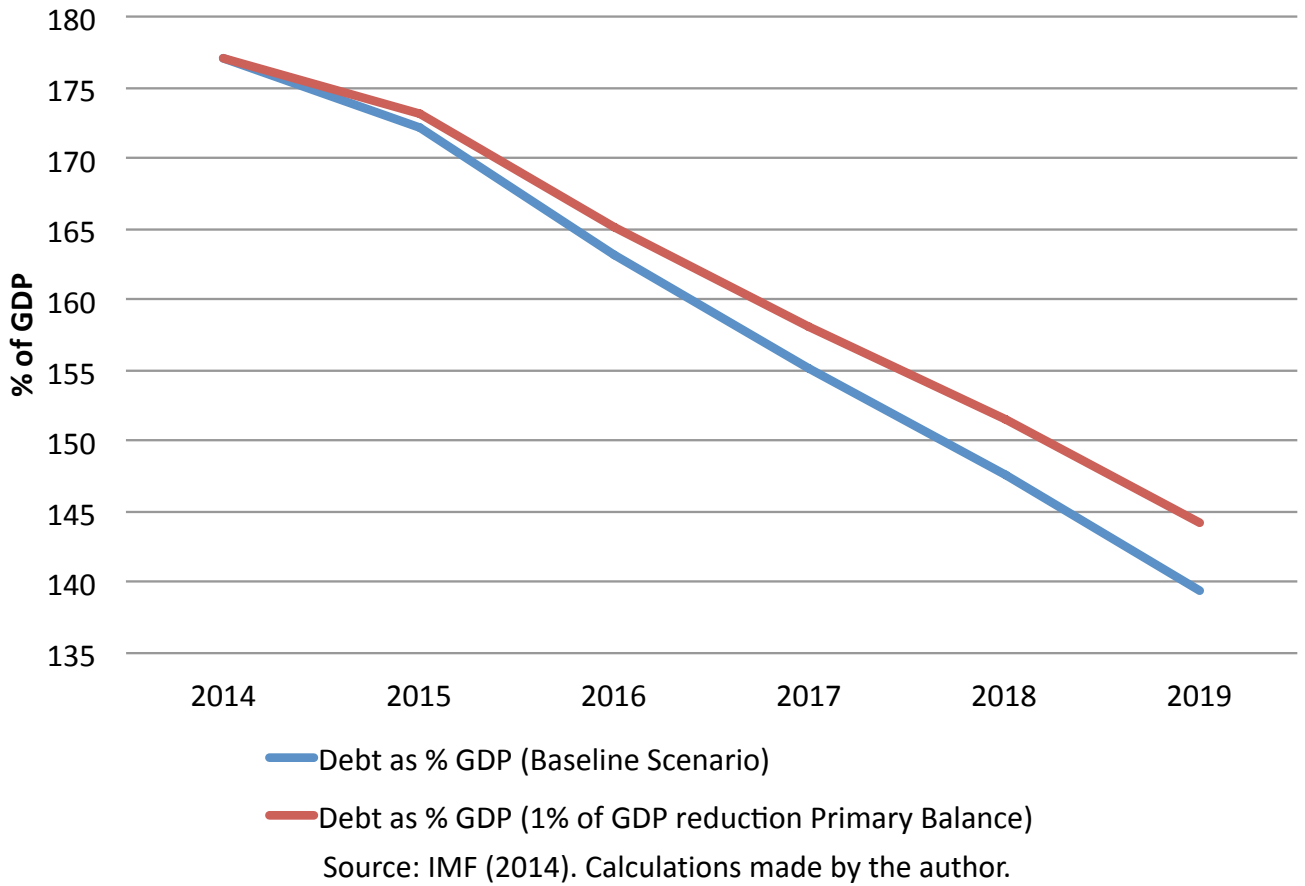
Adjustments in Overall Balance 2016 - 2017



Source: IMF (2014)

- A situation that is expected to be repeated and 2017
- The massive reduction in primary expenditures between 2014 and 2017 (4.4% of GDP), with a heavy component of reductions in social benefits (2% of GDP) and compensation of employees (1.6% of GDP), is expected to take place even though the IMF recognizes the presence of reform exhaustion.

Revisiting the assumptions: Revisiting the assumptions: Fiscal policy
Impact of alternative fiscal scenarios on public debt

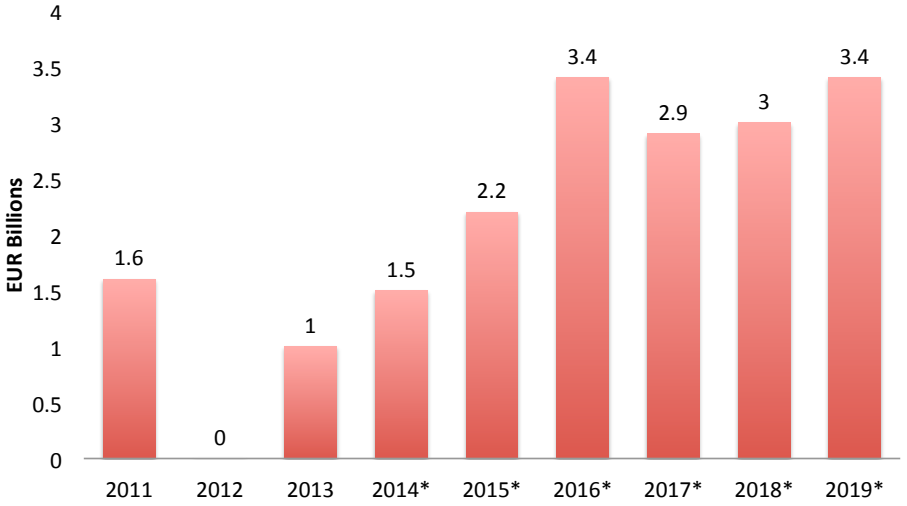


Source: IMF (2014). Calculations made by the author.

- A reduction of 1% of GDP of the primary balance throughout the medium term has a similar impact than a reduction of 1% in the rate of GDP growth.
- Note that in an environment of low economic growth, the emphasis of stabilization programs is placed on higher primary surplus (IMF 2012).

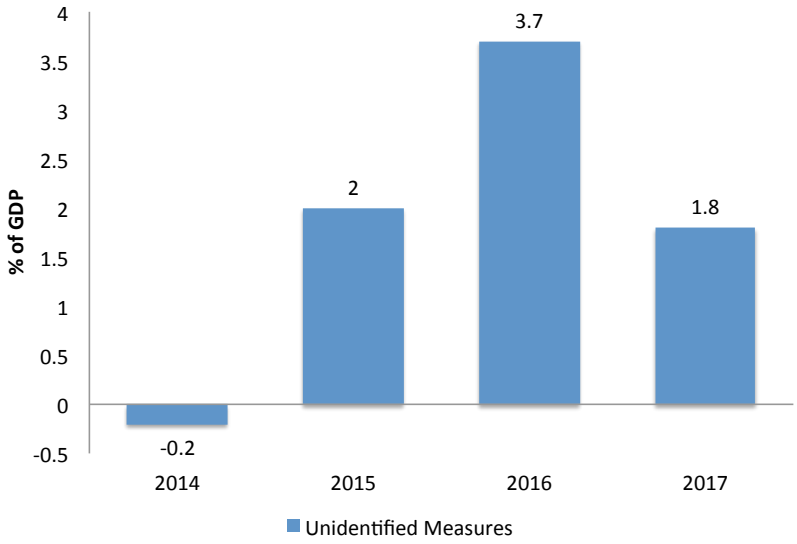
Revisiting the assumptions: Fiscal Policy and Debt Sustainability
Privatizations & Unidentified Measures

Privatizations



*Projections
Source: European Commission (2014)

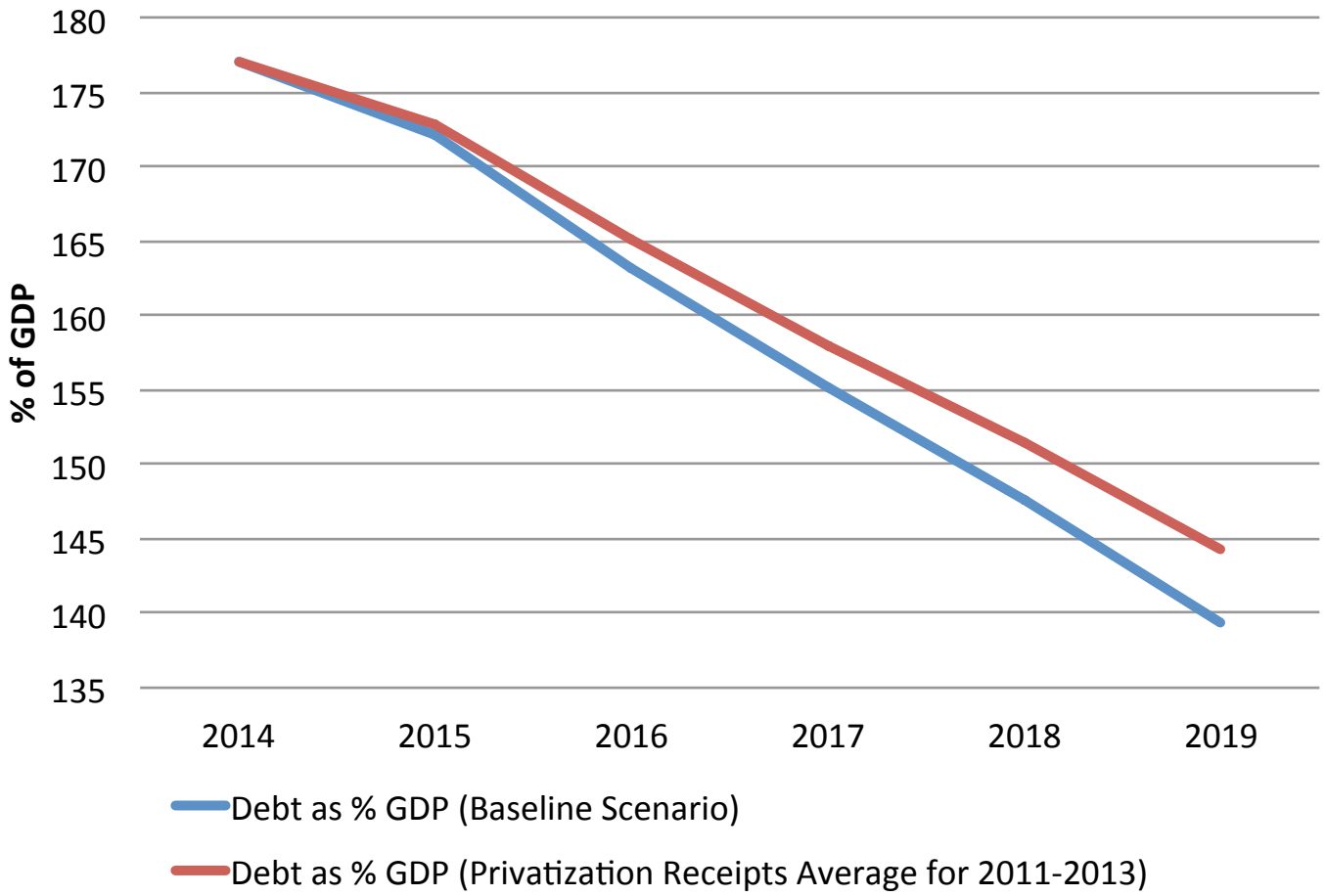
Unidentified Measures



Source: IMF (2014)

- Adjustment program for Greece envisions an ambitious increase in the receipts from privatizations, as well as a total of 7.3 billion Euros of unidentified measures between 2014 and 2017.
- Given the already ambitious plan of reduction of expenditures, is unclear where such additional resources could be found.

Revisiting the assumptions: Fiscal policy
Impact of privatizations on public debt



Source: European Commission (2014), IMF (2014). Calculations made by the author.

- A reduction in the projection of privatizations, under the assumption they are equal to the average observed between 2011 and 2013 (0.87 EUR billion per year), renders an increase in debt as % of GDP of 5 pp.

Is Greek Debt Sustainable?

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To answer the question of sustainability of Greek debt requires then to analyze:

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Sources of Funding

Greece Financing Requirements and Sources 2014 - 2016

Financing Requirements	2014	2015	2016
Gross Borrowing Need	39.7	35	18.6
Overall Balance (Cash)	3.3	2.2	1.2
Amortization	38	34.5	22.4
Short Term	15	18	15
Medium and Long Term (Non official)*	15.6	7.9	4.3
Official Creditors	7.4	8.6	3.1
IMF	7.4	8.6	3.1
EC	0	0	0
Other	-1.5	-1.7	-5
Arrears	2	2.5	0
Privatization	-1.5	-2.2	-3.3
ECB	-2.5	-2	-1.7
ESM	0.5	0	0

Sources	2014	2015	2016
Gross Financing	39.7	22.4	18.6
Short Tem	18	15	15
Market Access	3	0	0
Official Financing	20.8	7.1	1.8
EC Bilateral Loans	10.2	0	0
IMF	10.6	7.1	1.8
Deposit Financing	-2.1	0.3	1.8
Financing Gap	**0**	**12.6**	**0**

Memo Item			
Primary Balance (Cash)	4	3.3	3.9

*Reflects the buyback of preference shares by commerical banks and corresponding cancellation of Pillar I bonds.

Source: IMF (2014)

- Both short term and official requirements/sources cancel each other out.
- In practical terms, the primary cash balance, along privatization and ECB receipts allow to fund interest payments and the final stages of the bank bailout program.
- Structure of funding design to rollover the adjustment program for Greece. Given the primary surplus of the country, a default would have no impact on the funding needs of the government.
- Also note, Without further official support, Greece faces a funding gap of EUR 12.6 billions in 2015. This was expected to be compensated through an increase in short term bills.

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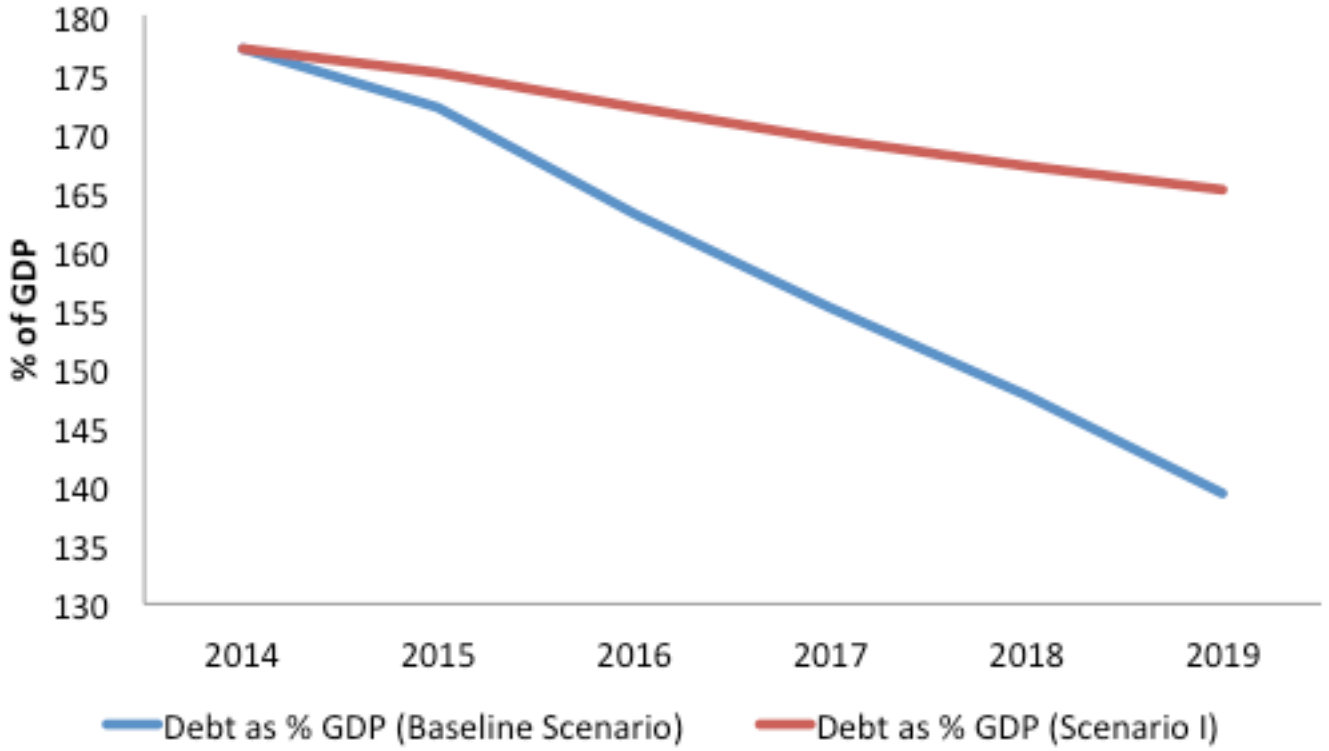
An Alternative Scenario
Fiscal policy in a more challenging macroeconomic scenario

Scenario I - Assumptions (Average for 2015 - 2019)

	Baseline	Alternative Scenario	Assumption
GDP Growth (% change)	3.4	2.5	Historical Rate
CPI (% change)	1.1	-0.4	Average since beginning of program (2011 - 2013)
Effective Interest Rate	3.3	3.3	Baseline
Primary Balance (% of GDP)	4.1	4.1	Baseline
Privatization Receipts (% of GDP)	1.4	0.4	Average since beginning of program (2011 - 2013)

Source: IMF (2014). Author calculations

An Alternative Scenario
Fiscal policy in a more challenging macroeconomic scenario



% of GDP	2014	2015	2016	2017	2018	2019
Primary Balance (Baseline Scenario)	1.5	3.0	4.5	4.5	4.2	4.2
Primary Balance (where Baseline Scenario = Scenario I)	1.5	5.8	10.5	9.8	9.3	10.1

Source: European Commission (2014), IMF (2014). Calculations made by the author.

- A less favorable macroeconomic scenario would have a negative impact on debt. In order to reduce debt to the level projected in the baseline scenario, fiscal policy would need to adjust to unrealistic levels.
- **Therefore is clear Greek debt is unsustainable.**

Ensuring Debt Sustainability
Reduction of interest rates

- The key to understand restructuring scenarios lies in the composition of Greek debt

Composition of Greek Debt (End of 2013)

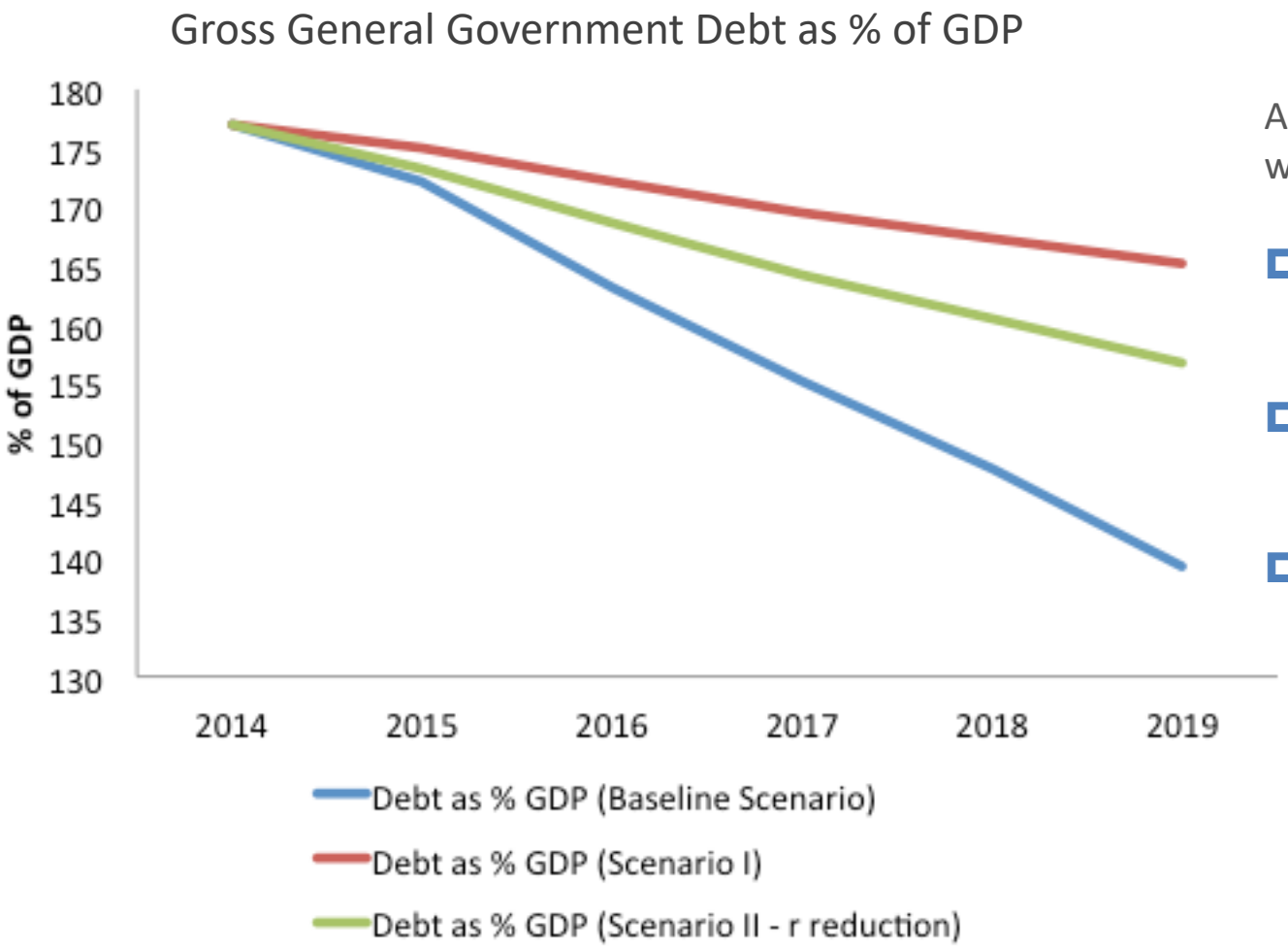
	EUR Bn	Average Interest Rate 2014 - 2019	Share
Private Creditors			
New bonds from the 2012 debt exchange (€bn)	31	2.7	
Hold-outs (€bn)	4	5.0	
Short-term securities (€bn)	15	5.0	20%
Others (€bn)	15	5.0	
Total	**65**	**4.4**	
ECB / IMF			
ECB/NCB holdings (€bn)	38	5.0	
IMF loans (€bn)	29	3.6	21%
Total	**67**	**4.3**	
EU / EFSF			
Bilateral EU loans (€bn)	53	1.2	
EFSF loans (PSI sweetener and accrued interest) (€bn)	35	2.0	59%
EFSF loans (2nd programme) (€bn)	99	2.0	
Total	**187**	**1.7**	
Total	**319**	**2.7**	

Source: IMF (2014), Darvas (2014). Calculations made by the author.

- A reduction on the average interest rate of Greece would require a substantial reduction on the interest rates of both the IMF and the ECB

Ensuring Debt Sustainability
Reduction of interest rates

- Impact of a 100 basis points reduction on Greek debt

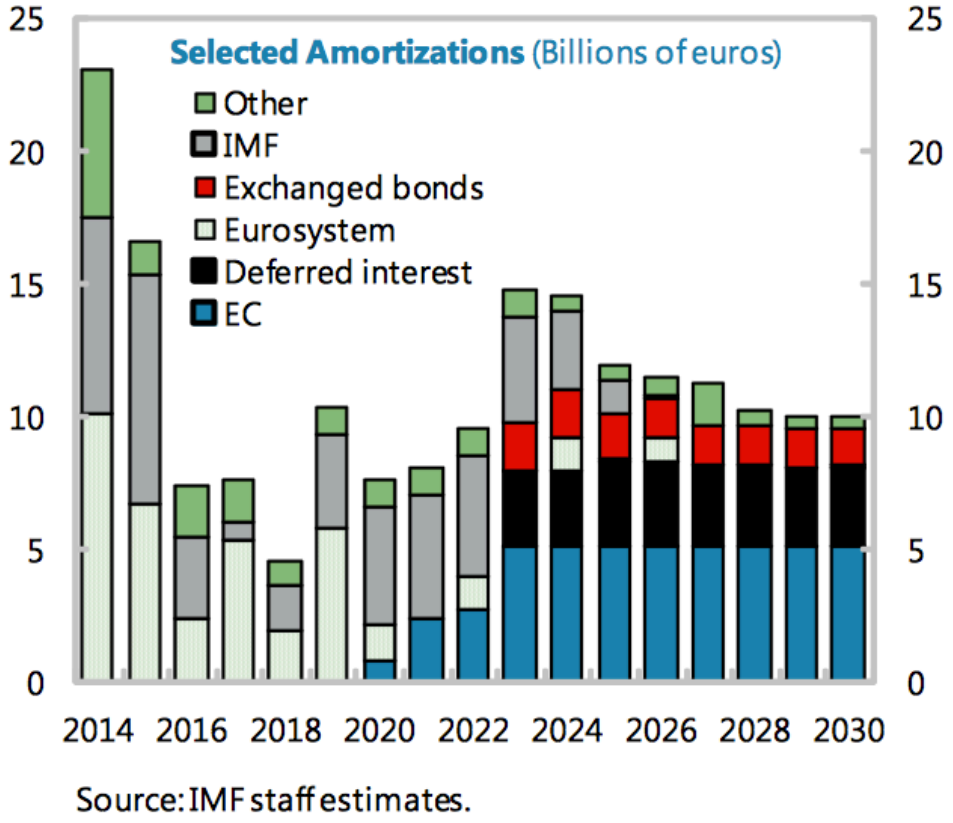


A reduction of 100 basis points would require:

- A 300 basis points reduction on the ECB interest rate
- A 200 basis points on the IMF interest rate.
- An additional 100 basis points reduction on the interest rates of the EFSF

Source: European Commission (2014), IMF (2014). Calculations made by the author.

Lengthening of maturities – the impact is likely to be limited



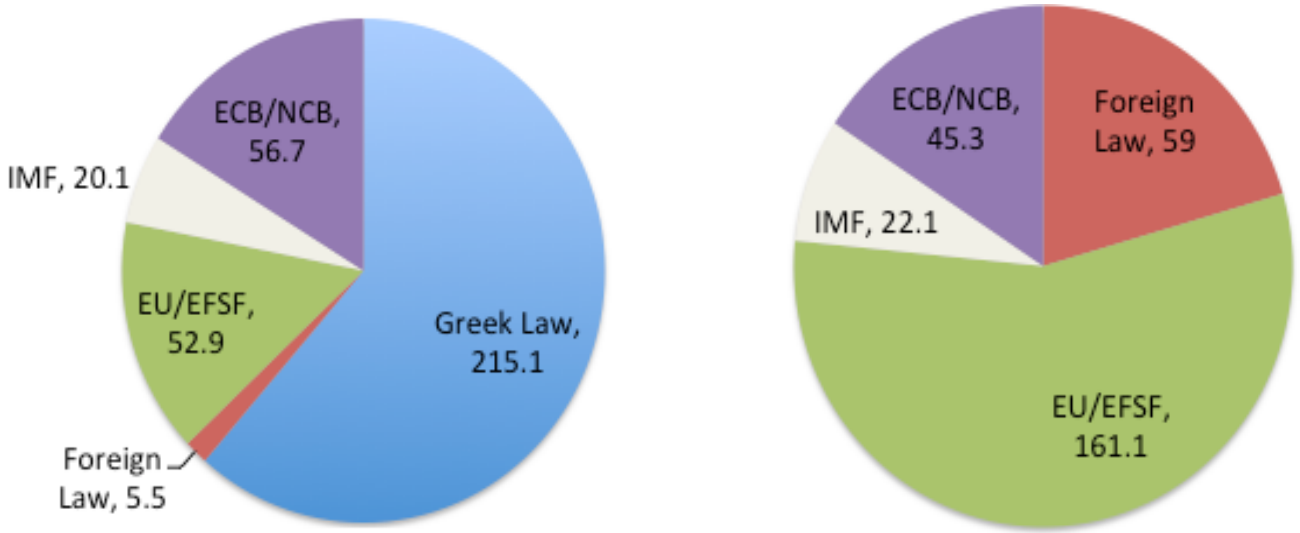
Source: IMF staff estimates.

- Lengthening of maturities:
  - Reduce net present value of debt as well as funding requirements.
  - Do not reduce interest payments or provide fiscal space in the short run.
  - PSI of 2012 already increased maturity and postponed for 10 years amortization on EU /EFSF loans.
  - The only amortizations which can be further postponed are those of the IMF and the ECB.

Writing off debt

- Neither an increase in the maturity nor a further reduction of interest rates provide policy space in the medium term.
- Any serious attempt to restore debt sustainability in Greece requires a significant reduction in the nominal value of the debt.
- This situation has been clear since the debt restructuring in 2012. Hence the change in the governing law of Greek debt:

Governing Law Greek Debt: Pre and Post Restructuring 2012 (EUR Billion)



Source: Zettelmeyer (2013)

Writing off debt

- Debt write off will take place in a context in which conflict with the Troika is **unavoidable**

Pros and cons of a debt restructuring in Greece	
Pros	Cons
1. Government primary surplus.	1. Foreign denominated law (implies lengthy litigation abroad).
2. Domestic bank – Sovereign link was severed in 2012.	2. Past rejection of nominal reductions in the value of debt by the IMF and ECB.
3. Ability to implement countercyclical fiscal policy.	3. Direct conflict with the EFSF.

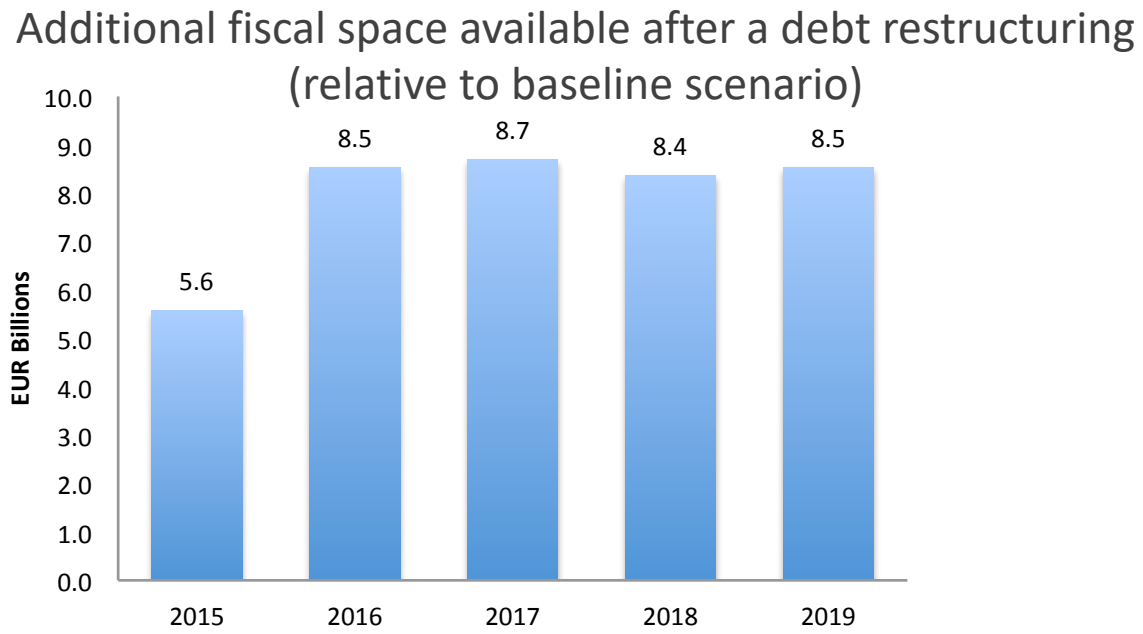
Writing off debt

- Given the current context, possibility of reaching a negotiated restructuration is very limited.

Context of a restructuring			
	Who bears the loses?	Ability to absorb losses	Political Context
Germany (1953)	Public creditors (USA, UK)	Limited in the case of the UK	Cold War
Greece (201?)	EFSF / ECB / IMF	Thin capital buffer for EFSF and ECB. Requires further national contributions.	Strong German opposition Strong opposition from other peripheral countries.
Greece, Spain, Portugal, Italy	European Banking System / Germany	Very limited. Implies massive bailout of European TBTF.	Strong German opposition

Writing off debt

- Two basic scenarios:
  - Muddle through: Stagnation. Decades of Austerity. Systematic weakening of public sector. Loss of economic sovereignty.
  - Unilateral measures: Trade and financial sanctions. Possible Euro exit. Short term economic crisis. Economic growth and sovereignty.
- Any attempt to successfully recover growth and improve competitiveness of the country will require active participation of the public sector.



Source: European Commission (2014), IMF (2014). Calculations made by the author.

Writing off debt

Scenario of Debt Restructuring - Assumptions (Average for 2015 - 2019)

	Baseline	Alternative Scenario	Assumption
Debt (% of GDP)	**177**	**55**	Reduction of debt to 55% of GDP
GDP Growth (% change)	3.4	2.5	Historical Rate
CPI (% change)	1.1	-0.4	Average since beginning of program (2011 - 2013)
Effective Interest Rate	3.3	3.3	Baseline
Primary Balance (% of GDP)	4.1	0.0	Implementation of fiscal recovery program
Privatization Receipts (% of GDP)	1.4	0.0	No further privatizations

Source: IMF (2014). Author calculations

- Scenario assumes fulfillment of Maastricht criteria (debt as % of GDP below 60%)
- It also assumes a balanced primary fiscal result (ensures no need of external finance)

Source: European Commission (2014), IMF (2014). Calculations made by the author.