



EUROPEAN CENTRAL BANK

EUROSYSTEM

Maria Grazia Attinasi
European Central Bank
Vladimir Borgy
Banque de France

WGPF Working Team

M. G. Attinasi, V. Borgy,
C. Checherita-Westphal,
M. Freier, G. Palaiodimos,
D. Prammer, P. Tommasino,
J. Zimmer

The effects of low inflation on public finances

Ninth meeting network of Public Finance
Economists

Bruxelles, 10 February 2015

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

6 Conclusions

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

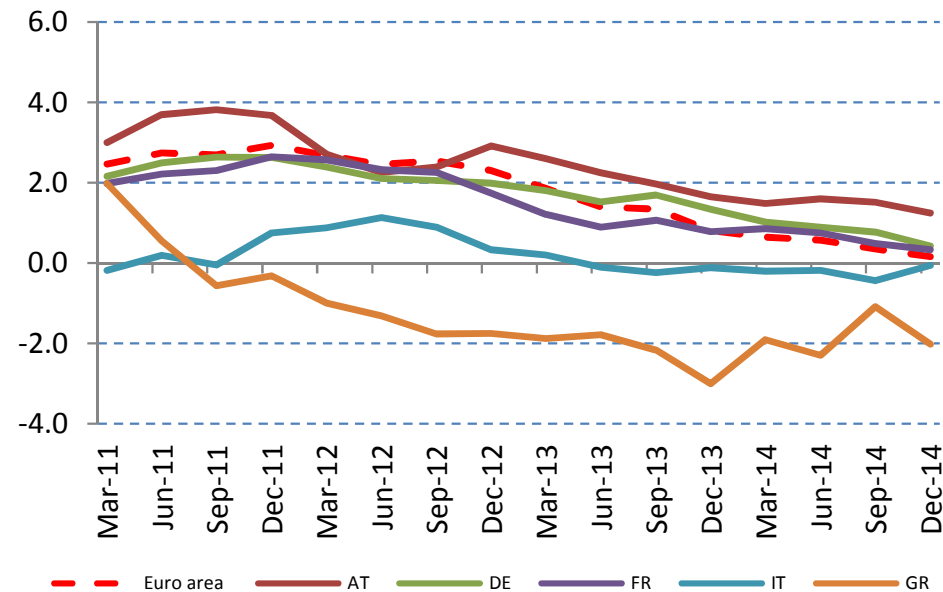
5 Policy implications

6 Conclusions

Background...

- Gradual decline in inflation rates in euro area countries

HICP inflation rates for selected euro area countries
(% of GDP)



- Longer-term inflation expectations as captured by the ECB Survey of Professional Forecasters declined to 1.7% in January 2015.

...and motivation

- Inflation affects public finances through a number of channels:

$$\Delta b_t = \frac{i_t - g_t}{1 + g_t} b_{t-1} - p b_t + s f_t$$

- An **unexpected** disinflationary shock may have adverse effects on government debt and deficit...
- ...with negative consequences for **fiscal sustainability**
- ...and countries' ability to comply with the **SGP requirements**

→ It is important to understand significance of various channels *as well as* the role of country specific features.

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

6 Conclusions

A preview of main findings

1. A disinflation shock worsens the **primary balance**
2. If $\downarrow \pi \rightarrow \downarrow$ int. rates \rightarrow **cushioning effect** on budget balance
3. **Country specific features** matter \rightarrow more persistent effects
4. **Negative inflation** shock: challenging to simulate, intuition of main macro effects
5. Impact more important on debt ratio \rightarrow jeopardize **debt sustainability**...
6. ...but no major **hindrance to compliance with SGP** requirements pertaining to structural effort
7. No specific provisions in SGP **escape clauses** regarding inflation developments
8. ...but if tail risks and deflation materialise use of the **general escape clause** may be considered

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

6 Conclusions

Findings from country-specific questionnaires

- Focus on DE, FR, IT, AT and GR

The Primary Balance

- **Committed government spending** (COE, PEN, SocB) *usually* indexed to CPI inflation; marked cross – country differences
- Since 2009-10 indexation rules **suspended** in FR, IT, GR
- **Discretionary spending**, (INC, GIN) usually budgeted in nominal terms at the beginning of the budgetary process
- PIT **progressive** in all countries under consideration → nominal fiscal drag is small also in countries with no indexation of tax brackets
- CIT typically proportional
- Negative but small fiscal drag for **excise duties**, no effect on ad valorem taxes

Findings from country-specific questionnaires

The debt burden

- Unexpected increase in inflation reduces the debt-to-GDP ratio via the impact on the **outstanding stock of debt** and the **cost of servicing** this debt
- **Sensitivity** of the debt-to-GDP-ratio to the inflation rate is a function of:
 - the **pass-through** from low inflation to nominal interest rates
 - the **size and structure of debt**

Effects of a decrease of EA inflation from 1.3% to 0.3%

FULL FISHER EFFECT (k=1)	GERMANY	FRANCE	ITALY	AUSTRIA	GREECE
Debt-to-GDP ratio (%) (d_{tot})	78.4	93.5	132.6	74.0	175.1
share of long-term, non-maturing debt (d^*/d_{tot})	0.66	0.75	0.68	0.88	0.19
Inflation in 2015	1.3%	1.3%	1.3%	1.3%	1.3%
Elasticity	-0.008	-0.010	-0.009	-0.011	-0.002
Debt-to-GDP ratio with 1p.p. lower inflation	78.9	94.2	133.5	74.6	175.4
Change in debt	0.5	0.7	0.9	0.6	0.3
PARTIAL FISHER EFFECT (k=0.6)					
share of short-term, variable interest rate debt (d/d_{tot})	0.34	0.25	0.32	0.12	0.81
Elasticity	-0.010	-0.011	-0.010	-0.012	-0.007
Debt to GDP ratio	79.0	94.3	133.7	74.7	176.0
Change in debt	0.6	0.8	1.1	0.7	0.9

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

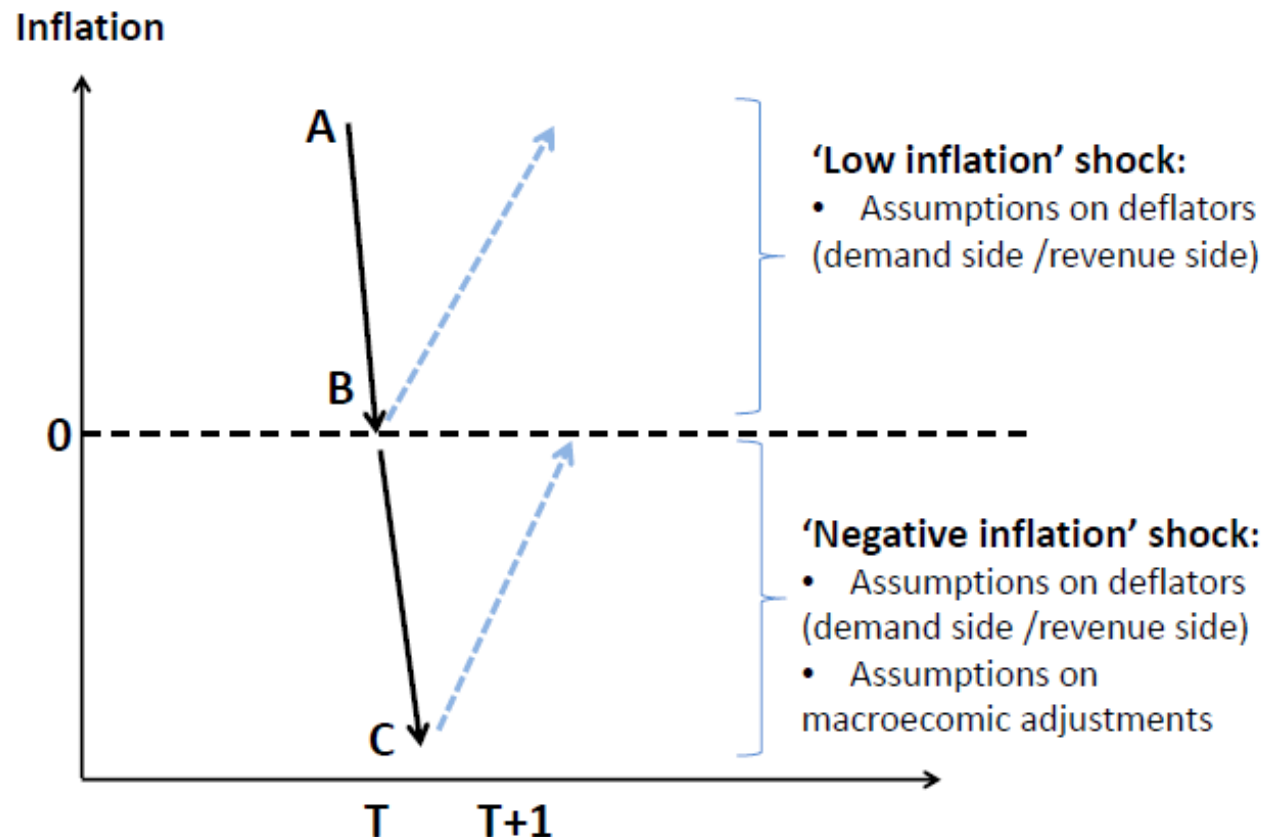
6 Conclusions

Evidence from country-specific simulations

- Effect on public finances **unexpected changes in inflation**
- Analysis is based on the fiscal forecast models used in the respective NCBs
- Aim: stylised assessment of **the transmission mechanisms from inflation to the main expenditure and revenue aggregates.**
- Results for:
 - a **'low inflation'** shock i.e. -1p.p. lower inflation rate compared to baseline)
 - a **'negative inflation'** rate (-1p.p. growth rate of GDP deflator)
- Total expenditure dynamics depend on degree of pass-through of inflation shock to nominal interest rates.
 - The shock could affect interest payments via two channels: nominal interest rates and inflation.
- **Caveat:** No direct interaction with macro-models, but use of specific information on sensitivity of macro variables to inflation (e.g. wages-prices loop)

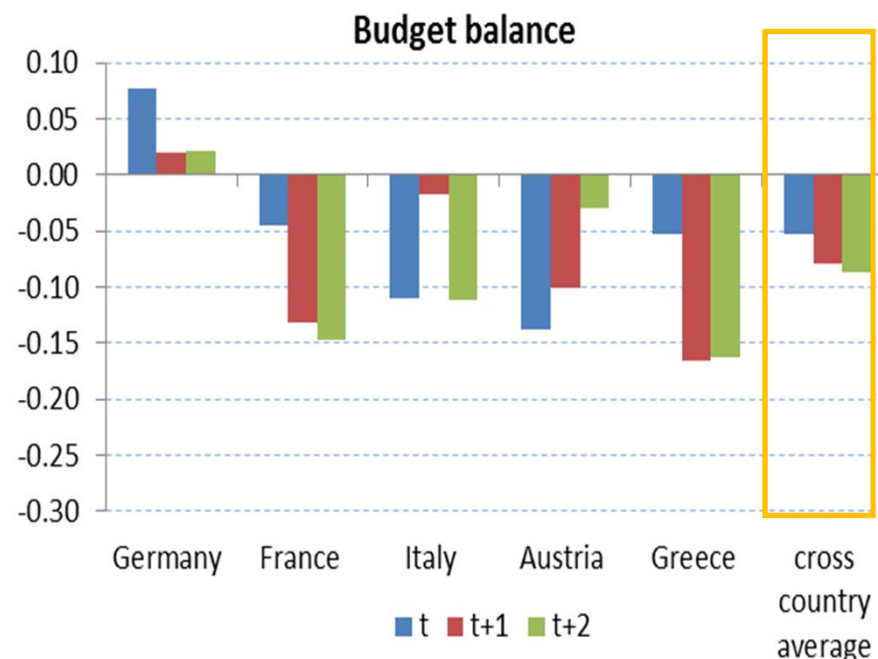
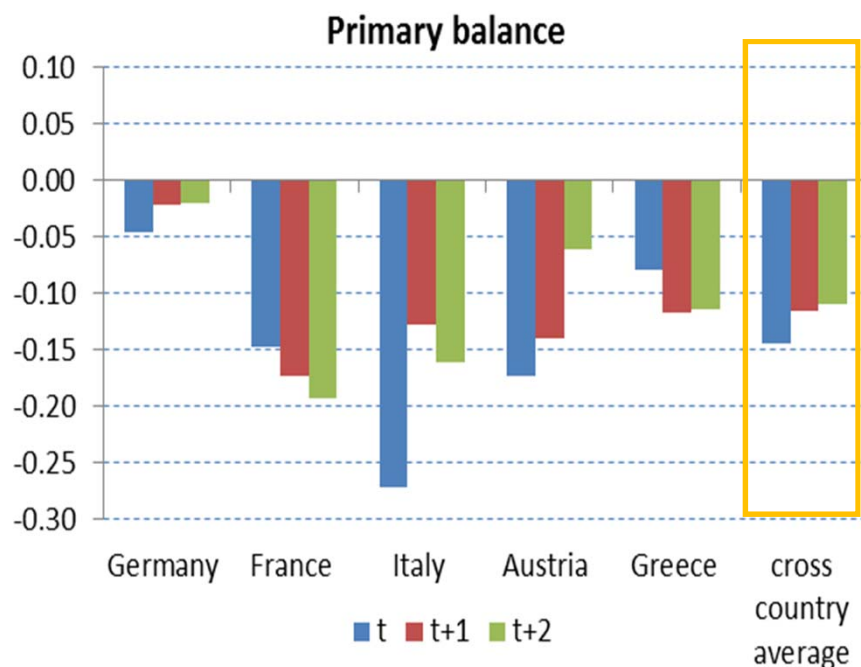
A disinflation and a negative inflation shock

- Two different settings for the analysis of 'price shock':
- -1 pp. on all the deflators.



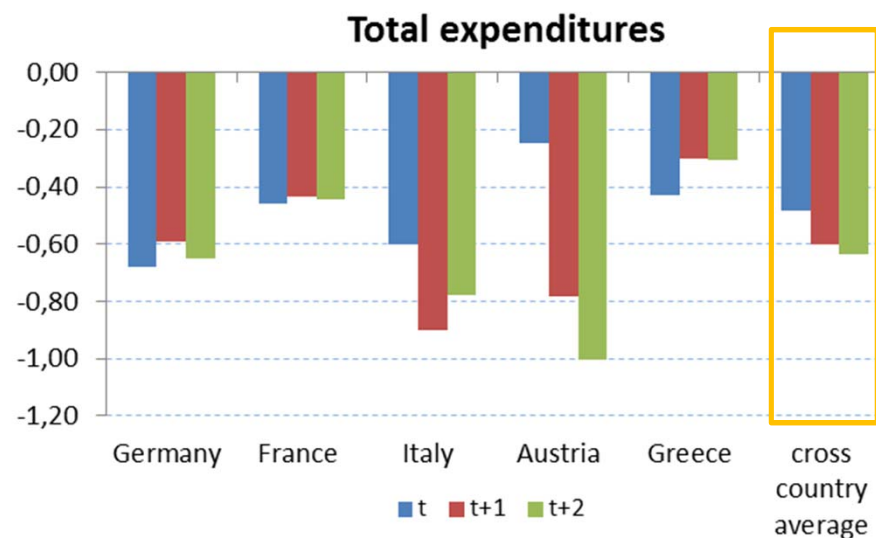
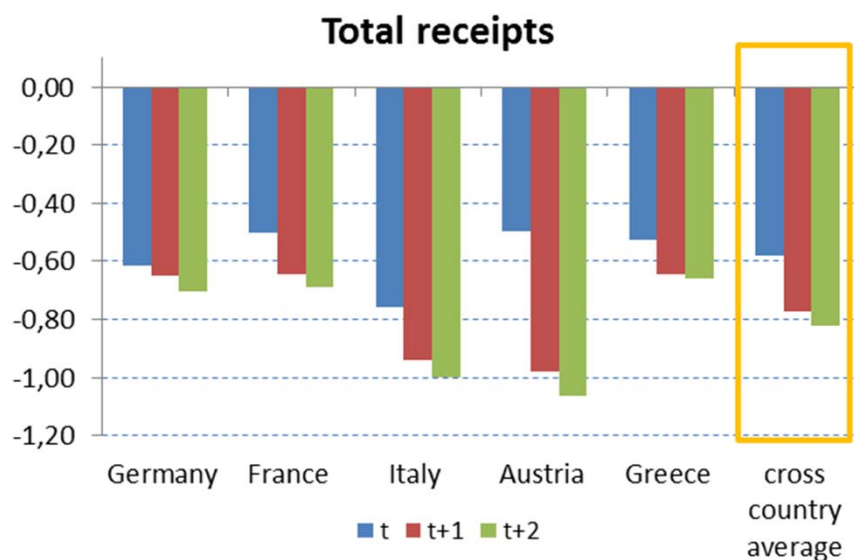
Country-specific simulations: disinflation shock/1

- The main transmission channels are country specific and depend on:
 - the assumptions on the transmission of the shock to **wages and salaries**
 - the timing of **indexation**
 - the possibility that in some cases existing indexation mechanisms are temporarily **frozen** (rigidity for downward adjustment of some spending)
- Total revenues decline in nominal terms, more than nominal primary expenditures → deterioration of primary balance.



Country-specific simulations: disinflation shock/2

- The reduction in primary spending in the first year is influenced by assumptions regarding the pass-through of inflation developments to public and private wages.
 - **Austria**: both private and public sector wages **adjust with a lag** to lower inflation, as wages are usually agreed in year t-1
 - **FR, IT, GR**, public wages **do not adjust to lower inflation** as existing indexation mechanisms are currently suspended



A negative inflation shock: the case of France/1

- Challenging exercise: uncertainty surrounding the macroeconomic effects of negative inflation
- Possibility that threshold effects operate → NCBs fiscal forecast and macro-models not well equipped to this purpose

Main assumptions:

- private sector wages are downward rigid
- negative inflation does not pass-through to nominal interest rates
- real private consumption falls in response to negative inflation as because consumers postpone their consumption choices to the future
- the rigidity of input prices, the fall in private consumption and the contraction in economic activity leads to a decline in firms' gross operating surplus
- the main tax bases start to contract with negative consequences for tax revenues

The negative inflation shock: the case of France/2

- Revenues fall as result of **lower tax bases** due to fall in prices but also to the **contraction of economic activity**.
- Private consumption falls by -0.2% → GDP falls by -0.1%.
- Decrease in **direct taxes** reflects essentially the decrease of corporates' taxes, due to the fall of their profits.
- The decrease of **social contributions** is limited due to the assumed downward rigidity of wages.
- Public balance is more deteriorated than in the case of 'low inflation' as **interest payments** are not affected by the decrease of interest rates
- A negative growth rate of the GDP deflator induces an **additional deterioration** of the fiscal balances of about 0.2p.p. of GDP

A negative inflation shock: the case of France

Effect of -1 pp lower inflation:

	Percentage deviations from		
	T	T+1	T+2
Public balance (% of GDP) *	-0,04	-0,13	-0,15
Primary balance (% of GDP)	-0,15	-0,17	-0,19
Total expenditures (% of GDP)*	0,31	0,32	0,31
Primary expenditures (% of GDP)	0,41	0,36	0,36
Total receipts (% of GDP)*	0,26	0,19	0,16
Total receipts	-0,50%	-0,64%	-0,69%
Of which: Direct taxes	-0,27%	-0,80%	-0,90%
Indirect taxes	-0,98%	-0,97%	-0,97%
Social contributions	-0,30%	-0,36%	-0,42%
Total expenditures	-0,46%	-0,43%	-0,44%
Primary expenditures	-0,25%	-0,33%	-0,33%
Of which: Compensation of employees	-0,01%	-0,01%	-0,01%
Intermediate consumption	-0,50%	-1,00%	-1,00%
Social transfers in kind	0,00%	0,00%	0,00%
Social benefits	-0,11%	-0,11%	-0,11%
Interest payments	-5,53%	-2,87%	-3,11%
Public Investment	-0,50%	-1,03%	-1,06%
Nominal GDP growth	-1,00%	0,00%	0,00%
Nominal GDP	-1,00%	-1,00%	-1,00%

Additional impact on the budget balance when GDP deflator is -1%

	Percentage deviations from		
	T	T+1	T+2
Public balance (% of GDP) *	-0,17	-0,24	-0,25
Primary balance (% of GDP)	-0,15	-0,21	-0,22
Total expenditures (% of GDP)*	0,53	0,50	0,50
Primary expenditures (% of GDP)	0,51	0,48	0,47
Total receipts (% of GDP)*	0,36	0,26	0,25
Total receipts	-0,52%	-0,70%	-0,72%
Of which: Direct taxes	-0,29%	-0,94%	-1,00%
Indirect taxes	-1,17%	-1,16%	-1,15%
Social contributions	-0,15%	-0,25%	-0,25%
Total expenditures	-0,26%	-0,30%	-0,30%
Primary expenditures	-0,27%	-0,32%	-0,32%
Of which: Compensation of employees	-0,01%	0,00%	0,00%
Intermediate consumption	-0,50%	-1,00%	-1,00%
Social transfers in kind	0,00%	0,00%	0,00%
Social benefits	-0,11%	-0,02%	-0,02%
Interest payments	0,00%	0,14%	0,35%
Public Investment	-0,50%	-1,03%	-1,06%
Nominal GDP growth	-1,20%	0,00%	0,00%
Nominal GDP	-1,20%	-1,20%	-1,20%

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

6 Conclusions

Debt Sustainability Analysis

Debt impact of three types of inflation shocks:

- A permanent shock of 1 p.p. lower GDP deflator
- A temporary shock of 1 p.p. lower GDP deflator growth for 3 years (2015-2017), followed by gradual linear convergence over 5 years (2018-2022).
- A deflationary shock: country-specific shocks calibrated to obtain a negative GDP deflator growth of -1% for 3 years (2015-2017), thereafter convergence to the benchmark path in 5 years.

Debt Sustainability Analysis: Channels

Permanent shock scenario:

- SPB: -0.1 p.p. per year for three years.
- Marginal Interest rates: An increasing pass-through from 0.6 p.p. to 1 over 5 years + risk premia effect.

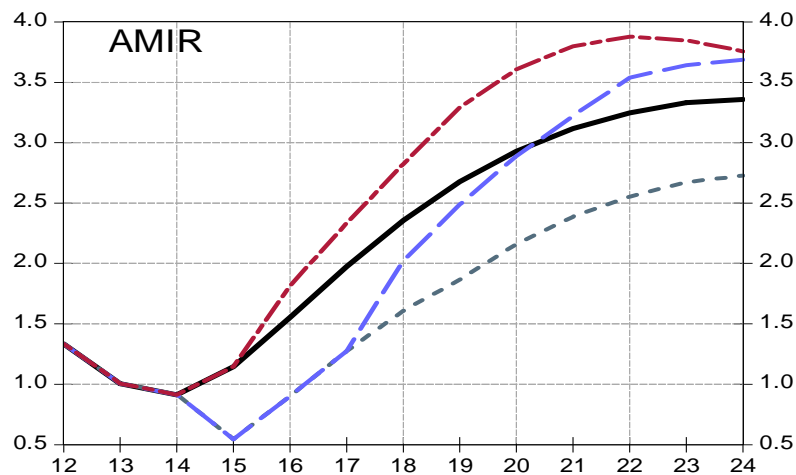
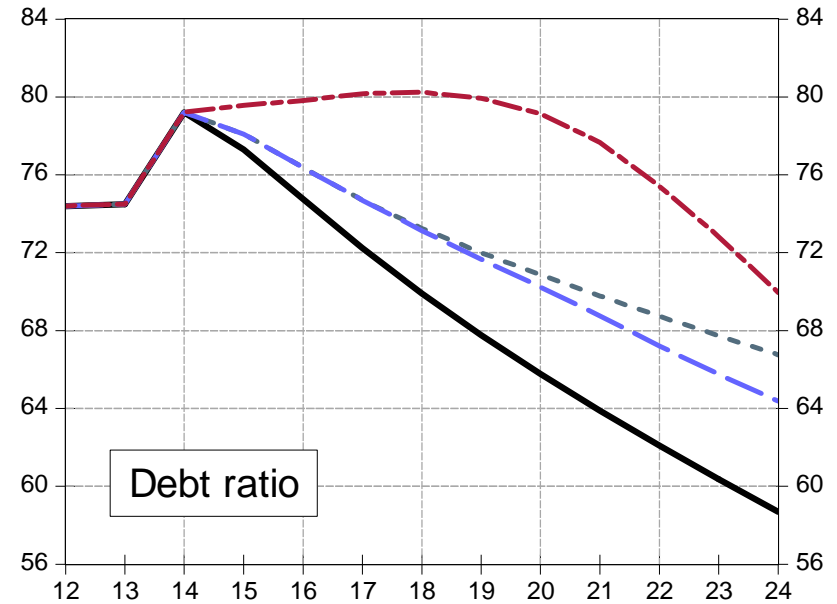
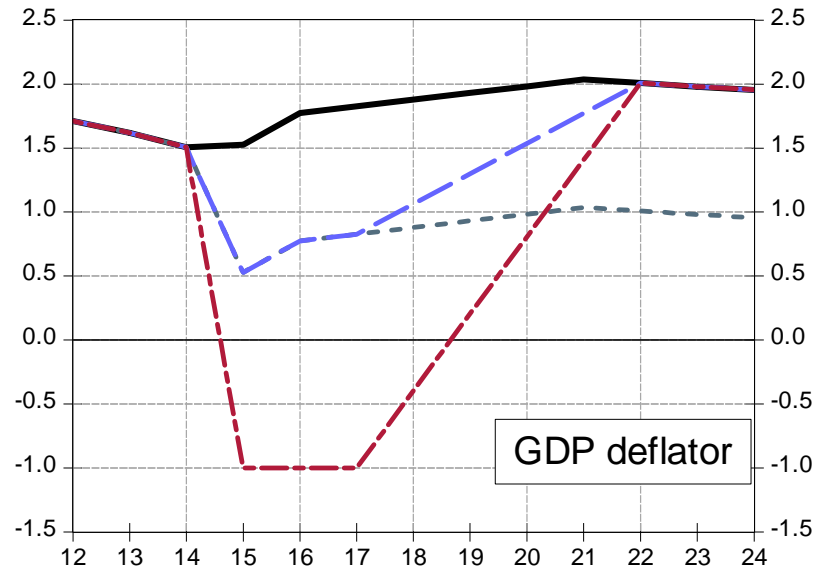
Temporary shock scenario:

- SPB: -0.1 p.p. per year for three years (2015-2017). Thereafter, an improvement over 3 years
- Marginal Interest rates: same channel

Deflationary shock :

- SPB: changes proportional to the specific share of indexed expenditure (wage bill and social transfers) and the unexpected inflation .
- Marginal Interest rates: same channel unless the marginal interest rates hit the zero lower bound.

Debt Sustainability Analysis: Results for AT



- Benchmark
- - - Inflation_permanent
- - - Inflation_temporary
- - - Inflation_deflation

Debt Sustainability Analysis:

The effects on the debt-to-GDP ratio to the 2024 horizon are sizeable especially for the countries that start with a high debt-to-GDP ratio.

	Low inflation shock				Country-specific negative inflation shock*	
	Permanent shock		Temporary shock			
	Debt effect (2024)	Average impact on budget balance (2014-24)	Debt effect (2024)	Average impact on budget balance (2014-24)	Debt effect (2024)	Average impact on budget balance (2014-24)
Austria	8.1%	-0.2% [0.0]	5.7%	-0.3%	11.3%	-0.3%
Germany	6.6%	-0.1% [-0.1]	4.9%	-0.2%	11.4%	-0.2%
France	8.7%	-0.1% [-0.2]	5.8%	-0.2%	13.4%	-0.4%
Greece	18.6%	-0.5% [0.3]	11.8%	-0.6%	15.5%	-0.3%
Italy	11.5%	-0.1% [-0.1]	7.9%	-0.3%	23.2%	-0.9%
Average	10.7%	-0.2% [0.0]	7.2%	-0.3%	15.0%	-0.4%

Sources: authors' elaboration. * The size of the shock is country specific and as a result, the resulting effects on the debt stock are not directly comparable across countries. For the permanent shock scenario, the value in square brackets illustrates the average deviation of effective interest rates compared to the baseline.

Overview

1 Background and motivation

2 Main findings

3 The effects of low inflation on public finances: case studies

3.1 Findings from a questionnaire

3.2 Evidence from country-specific simulations: a disinflation and a negative inflation shock

4 Debt Sustainability Analysis

5 Policy implications

6 Conclusions

Policy implications

Based on findings of this note:

- A disinflation or even negative inflation shock is **not a major hindrance** to compliance with SGP requirements.
- There is no specific definition in the SGP of a severe economic downturn.
- In case tail risks and deflation materialise, an application of the **general escape clause** foreseen in the Pact might need to be considered.
- However, if **negative inflation** materialises in the absence of a severe economic downturn, then the general escape clause will likely not apply.

Conclusions and issues for discussion

- Findings in line with prediction from literature and other empirical works
- But shed light on country-specific circumstances
- No full iteration with macro models
- Uncertainty surrounding macroeconomic effects of negative inflation
- Is our interpretation of policy implications under the SGP correct?

Ways forward:

- Possible new set of simulations based on alternative assumptions regarding price developments ("distinguish" between internal and external inflationary shocks)
- Possible integration in the analysis of macroeconomic implications of low/negative inflation