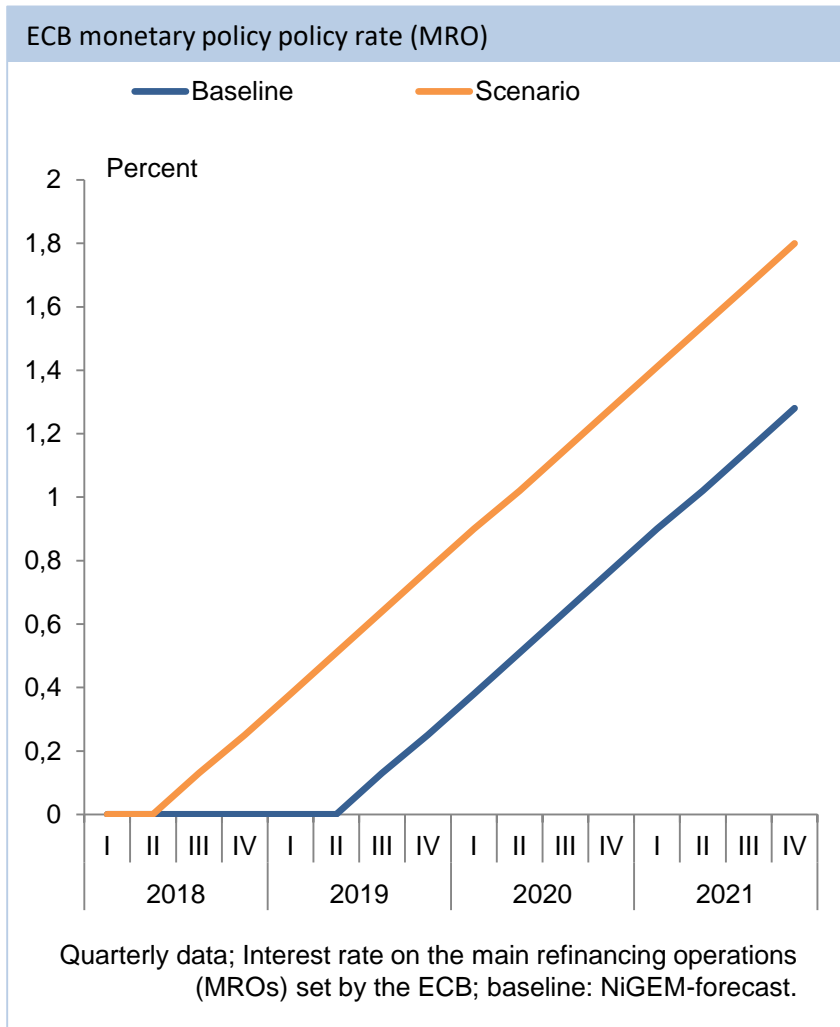


Forschungszentrum für Sparkassenentwicklung, Universität Magdeburg | Magdeburg, 22. Juni 2017
Magdeburger Finanzmarktdialog „Nullzinsen – Schicksal ohne Ausweg?“

Szenarien für den Weg zurück zur Normalität

Prof. Dr. Stefan Kooths
Prognosezentrum

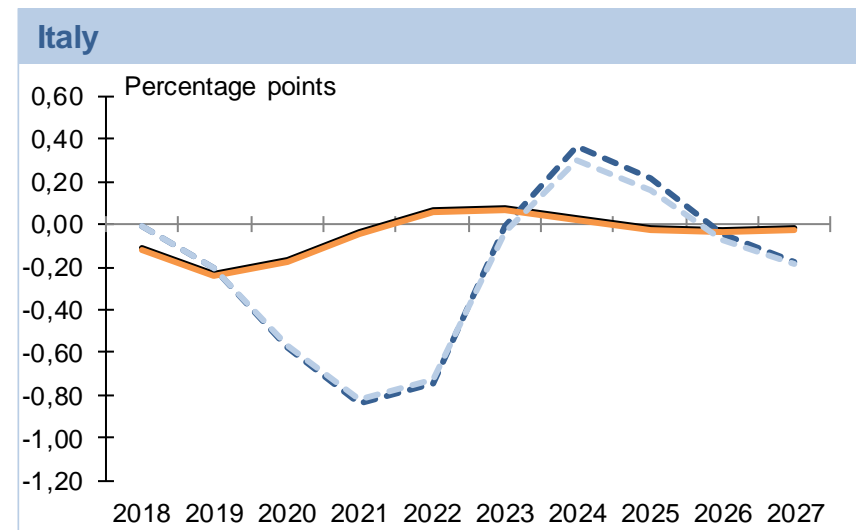
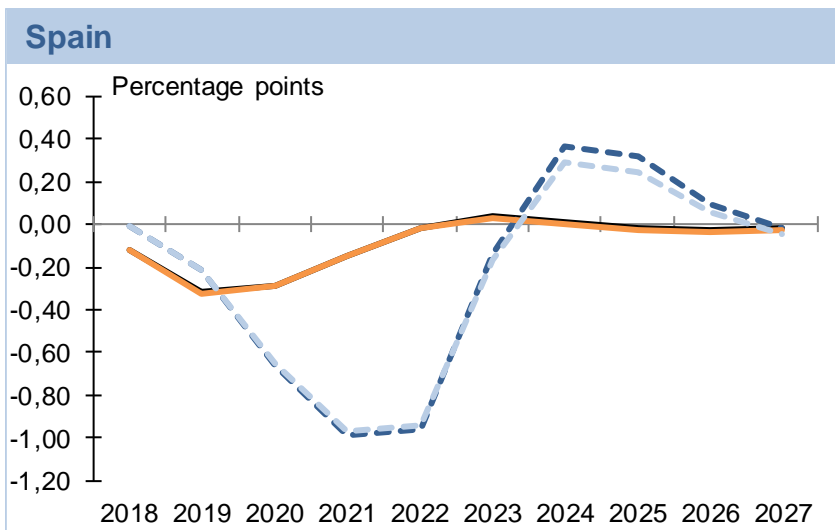
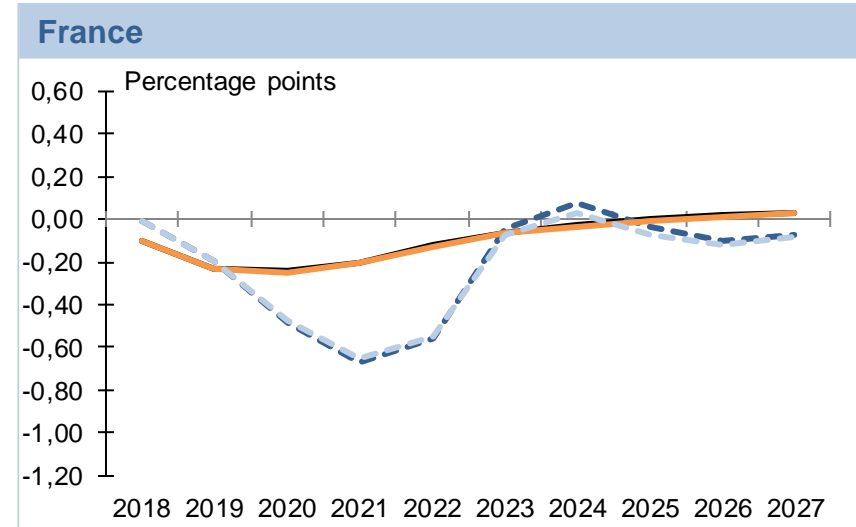
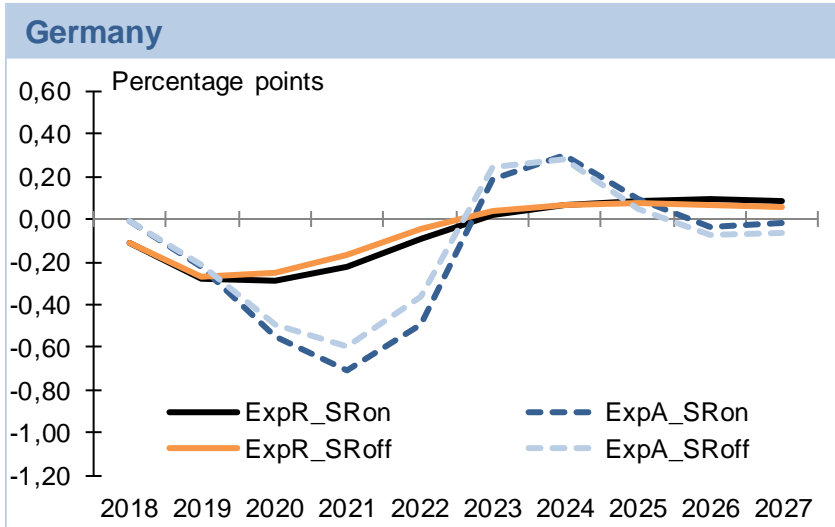




- Scenario
 - » End-2017: QE phases out
 - » Mid-2018: Interest rate normalization sets in
- Expectations
 - » Adaptive (ExpA)
 - » Rational (ExpR)
- Fiscal solvency rule
 - » On (SRon)
 - » Off (SROff)

NiGEM: Expectations drive results

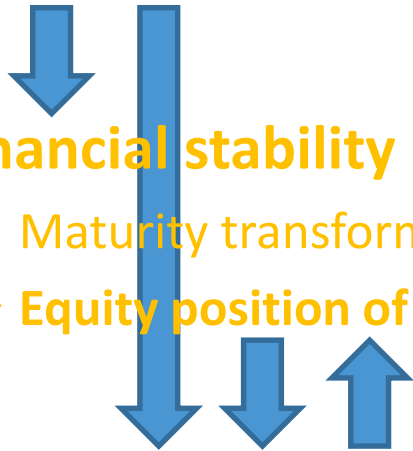
Deviation from baseline. GDP growth differentials in percentage points.



- **Production structures**

- » Capital stock distortion, zombification

- ⇒ **Potential output**



- **Financial stability**

- » Maturity transformation, revaluation of assets

- ⇒ **Equity position of banking sector**

- **Fiscal sustainability**

- » Public debt positions, risk premia

- ⇒ **Required structural primary budget balances (consolidation)**

Simulation complexity:

extreme

very high

high

- **Production structures**

- » Capital stock distortion, zombification

- ⇒ **Potential output**

- **Financial stability**

- » Maturity transformation, revaluation of assets

- ⇒ **Equity position of banking sector**

- **Fiscal sustainability**

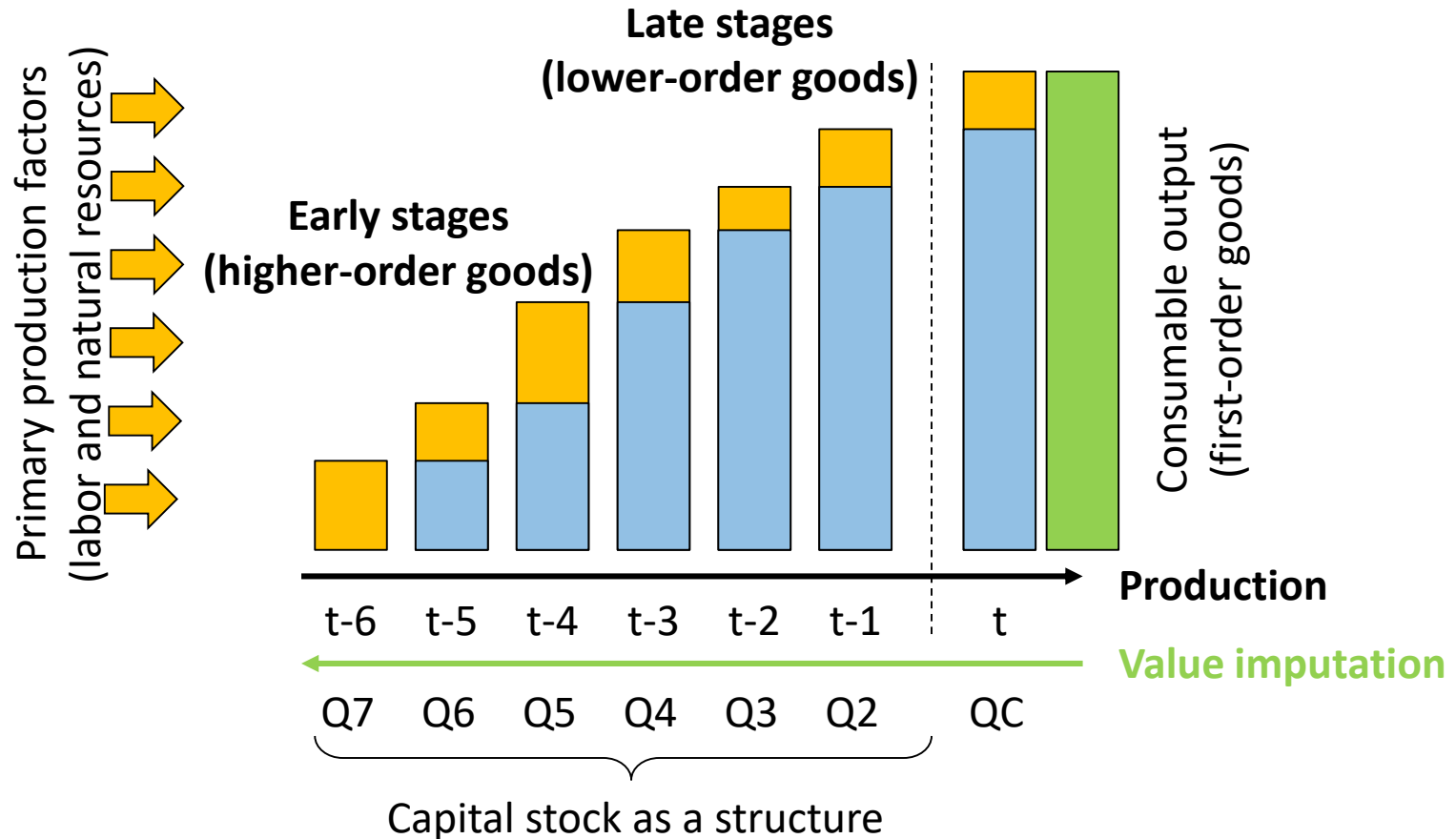
- » Public debt positions, risk premia

- ⇒ **Required structural primary budget balances (consolidation)**

Interest rates ...

- ... just another instrument for macro-management?
 - ... or the key price relation within the market system?
 - » Time preference
 - » Coordinating savings and investment
 - » Component of all prices for goods and services (relative prices)
 - » Impact on capital/production structure
- ⇒ „Capital gives money time to cause trouble.“ (Garrison)

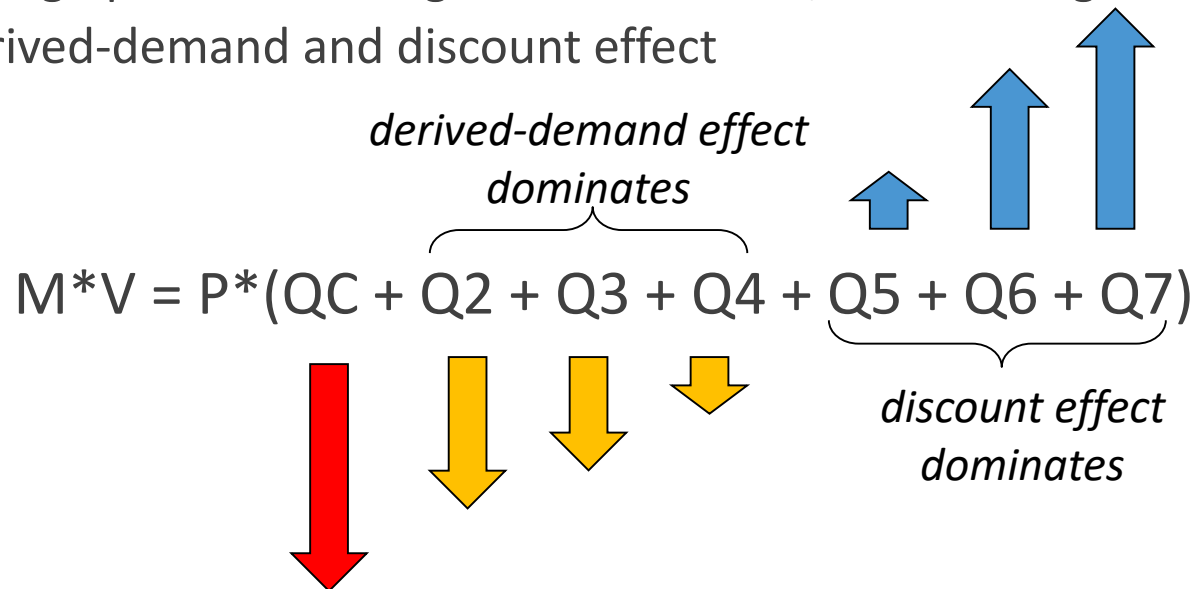
Production: A time consuming, multi-stage process



⇒ **Capital formation: intertemporal intermediate consumption**

- Saving

- » Saving up for something: Future demand, not a leakage
- » Derived-demand and discount effect



- Investment: Stage pattern matters (not volume alone)

⇒ Entrepreneurial challenge: bringing capital structure in line with pure time preference (intertemporal arbitrage)

- **Idiosyncratic: Entrepreneurial ventures**
 - » Wrong expectations of one market participant
 - » Happens every day, no systemic risk
 - » Liquidation, reallocation of resources

- **Pervasive: Expansionary monetary policy**
 - » Systematically wrong expectations of all market participants
 - » Financial crisis (debt crisis = flip-side of heavy capital stock distortion)
 - Fragile financial system
 - Excess debt positions destabilize monetary system

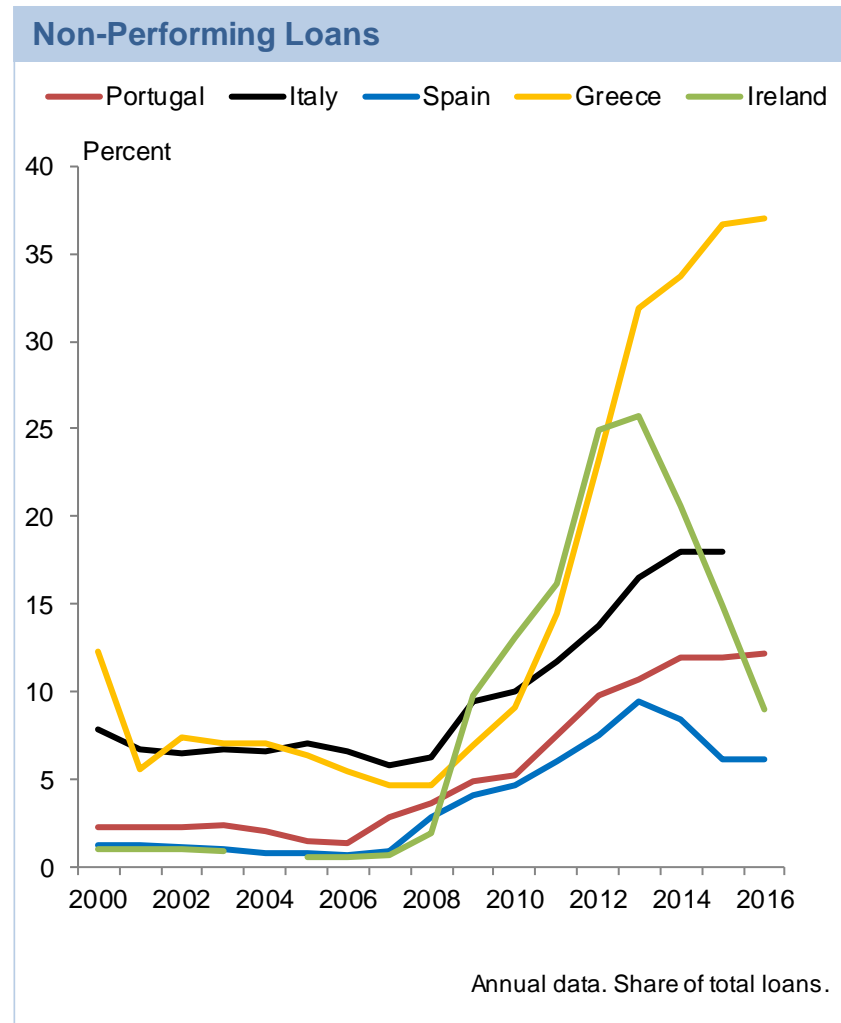
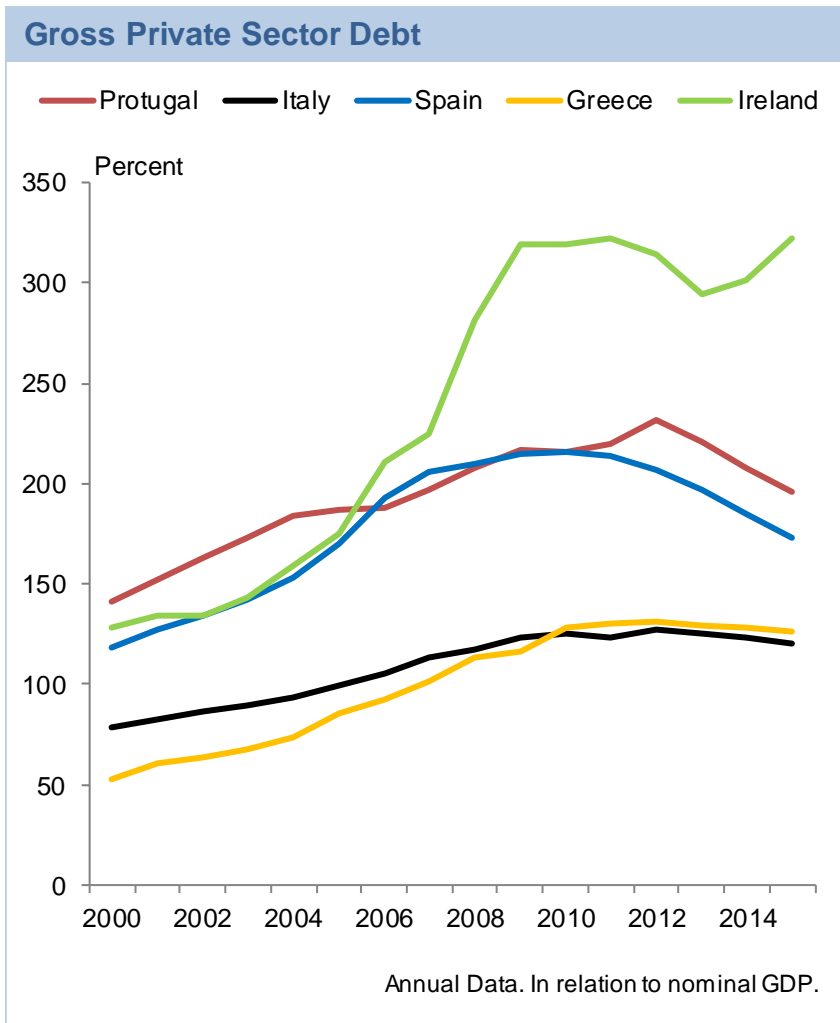
Three options of coping with debt-crises

- **Public bail-outs**
 - » Shifts private debt to public sector
 - » Private debt crisis \Rightarrow sovereign debt crisis
 - » No solution for fiscally distressed countries
- **Inflating the debt away**
 - » Takes a long time, promotes zombification
 - » Puts the currency at risk
 - » Not targeted towards non-performing loans
- **Liquidation**
 - » Tough (cold turkey) in the short-run ...
 - » ... but targeted (and root cause oriented)
 - » Puts capital at second (now first) best use

Anti-capitalist approach
(harms principle of accountability, creates moral hazard risks)

Capitalist approach
(in line with free market principles)

Flip-side of not liquidating (= “buying time”): High debt positions hamper credit channel



Data source: Bank for International Settlements, World Bank.

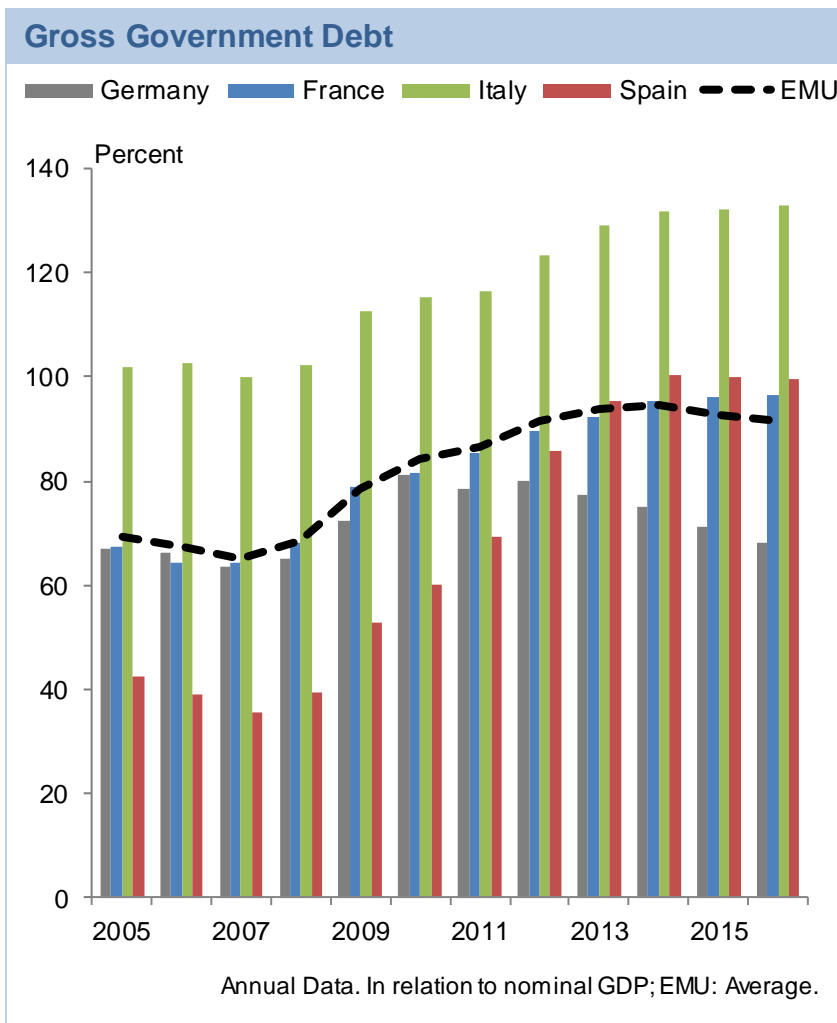
Non-cyclical hot spots

- **Production structures**
 - » Capital stock distortion, zombification
 - ⇒ **Potential output**

- **Financial stability**
 - » Maturity transformation, revaluation of assets
 - ⇒ **Equity position of banking sector**

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 - » Public debt positions, risk premia
 - ⇒ **Required structural primary budget balances (consolidation)**

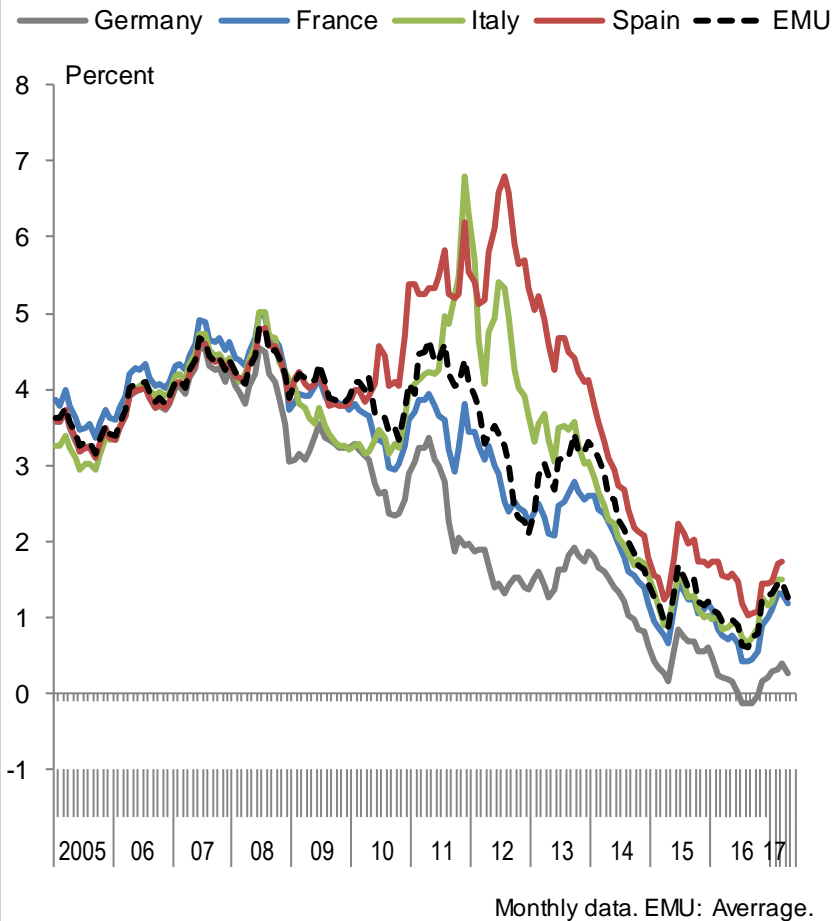
Legacy: High gross public sector debt



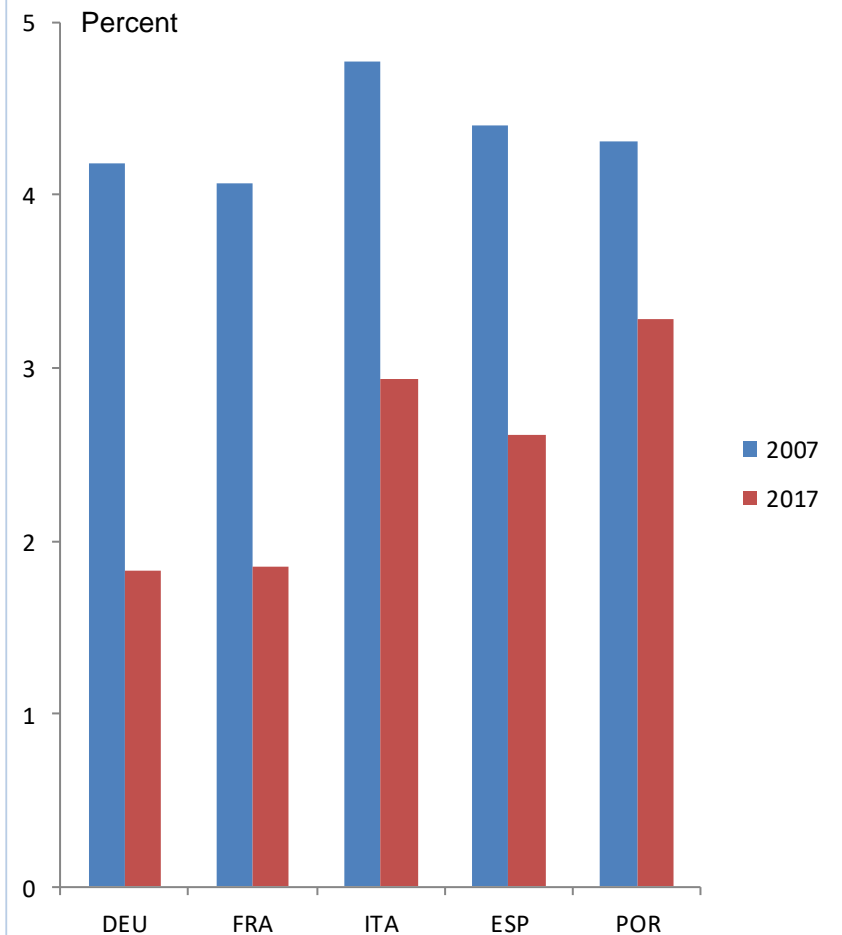
- EMU
 - » Crisis-induced elevated levels
 - » Increase by 25 percentage point
- Critical
 - » France, Spain: ≈ 100 percent
 - » Italy, Portugal: ≈ 130 percent

Status quo: Low refinancing cost due to ECB policy

Government Bond Yields (10-year)

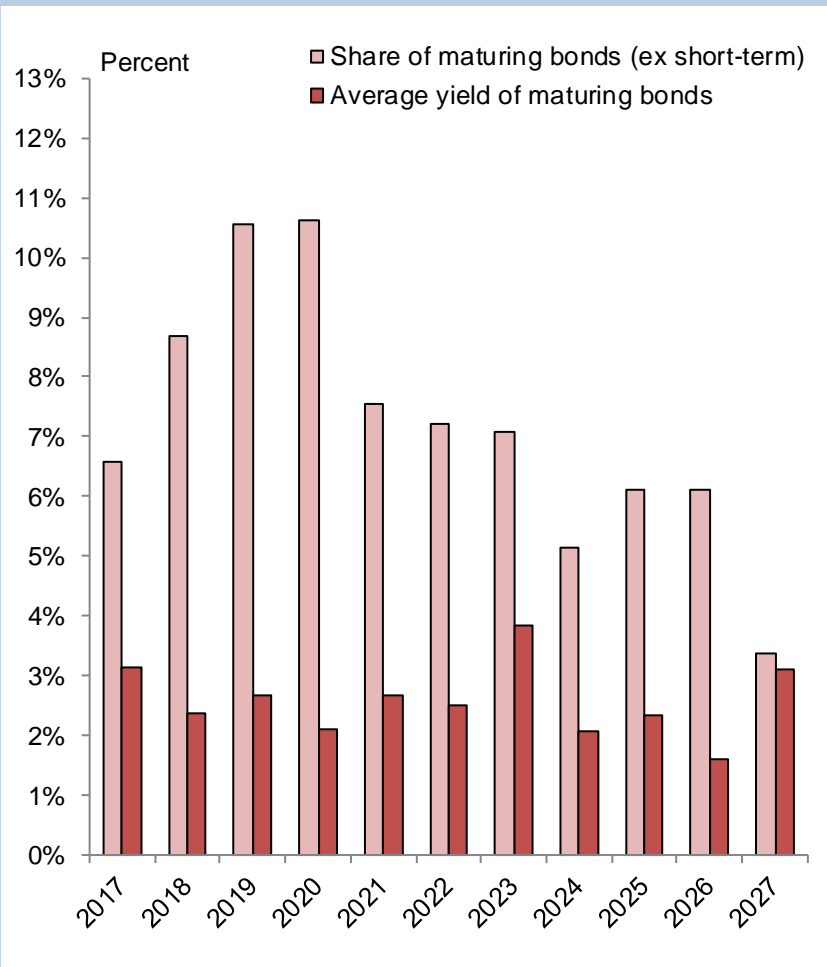


Effective refinancing cost on outstanding debt



Government debt: France

Outstanding government bonds: France



Short-term share: 10.5%

Bond structure (ex short-term)

Ø term: 14.5 years

Ø maturity: 7.5 years

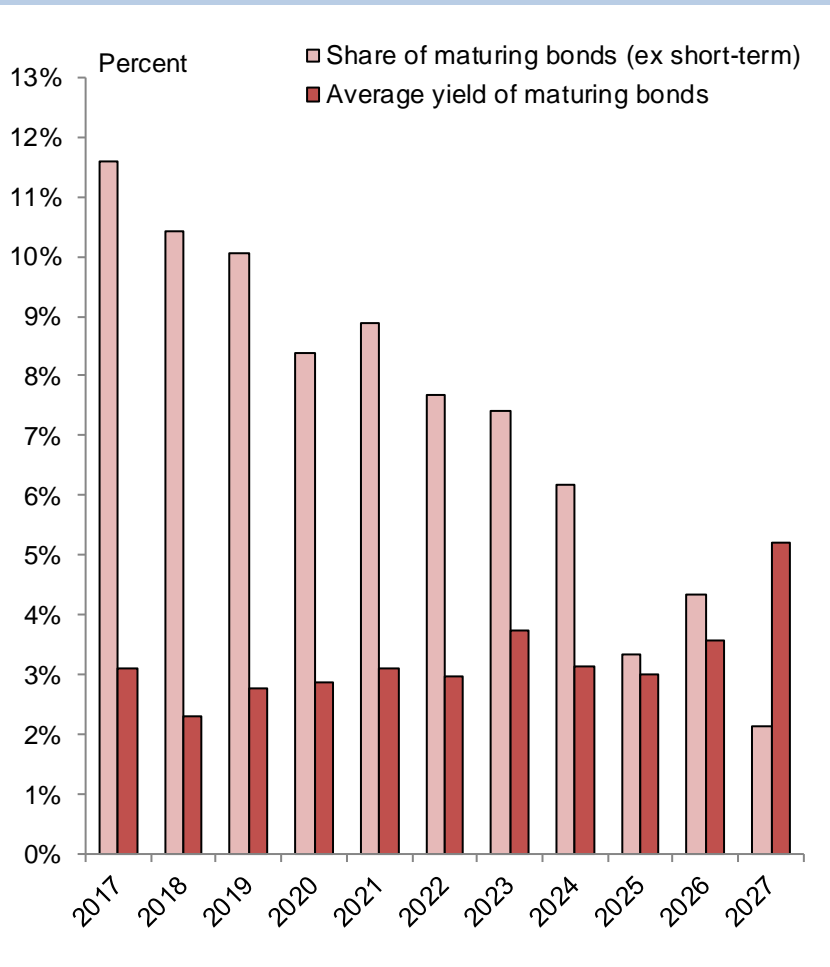
Gross debt to GDP: 96%

Interest burden to GDP: 1.9%

Ø yield: 1.95%

Government debt: Italy

Outstanding government bonds: Italy



Short-term share: 8.2%

Bond structure (ex short-term)

Ø term: 12.1 years

Ø maturity: 6.4 years

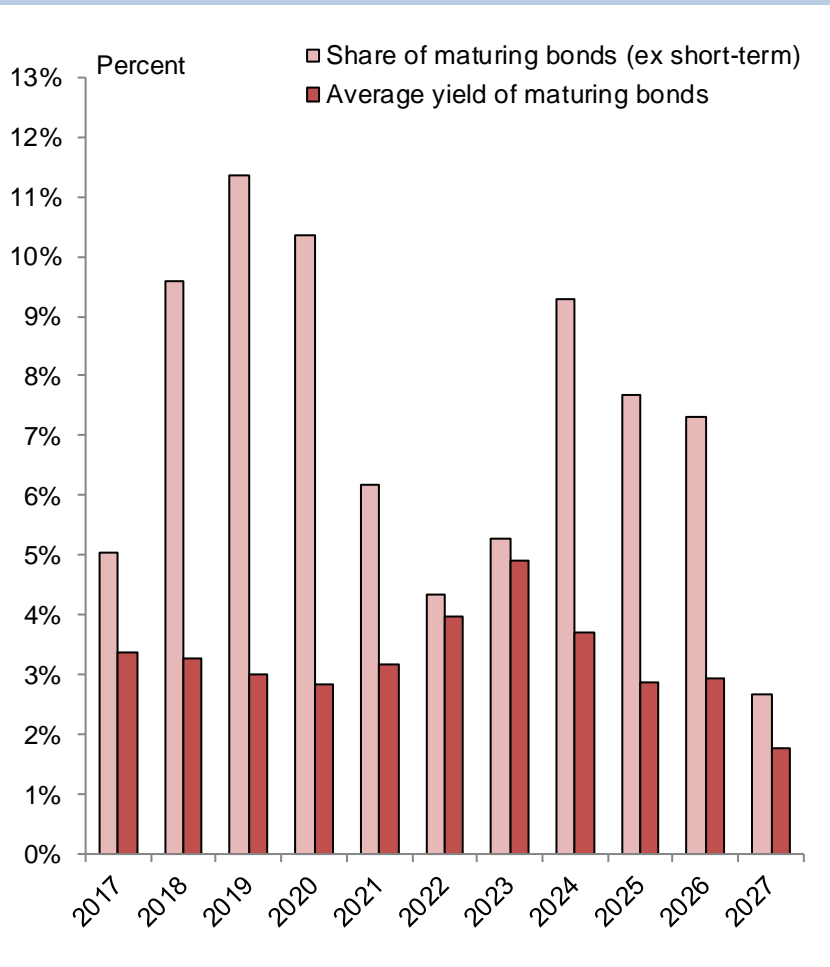
Gross debt to GDP: 131%

Interest burden to GDP: 3.9%

Ø yield: 2.9%

Government debt: Spain

Outstanding government bonds: Spain



Short-term share: 8.7%

Bond structure (ex short-term) :

Ø term: 9.6 Jahre

Ø maturity: 5.8 Jahre

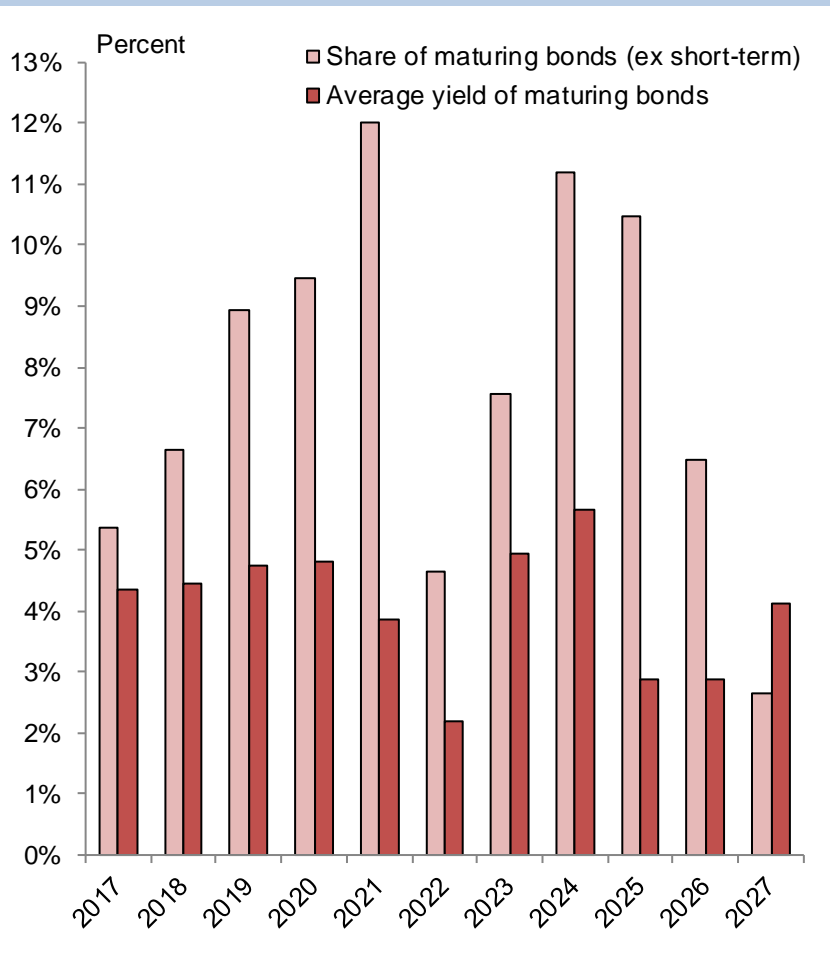
Gross debt to GDP: 99.4%

Interest burden to GDP: 2.8%

Ø yield: 2.8%

Government debt: Portugal

Outstanding government bonds: Portugal



Short-term share: 12.4%

Bond structure (ex short-term) :

Ø term: 11.9 Jahre

Ø maturity: 7.2 Jahre

(incl. rescue loans): 9.6 Jahre

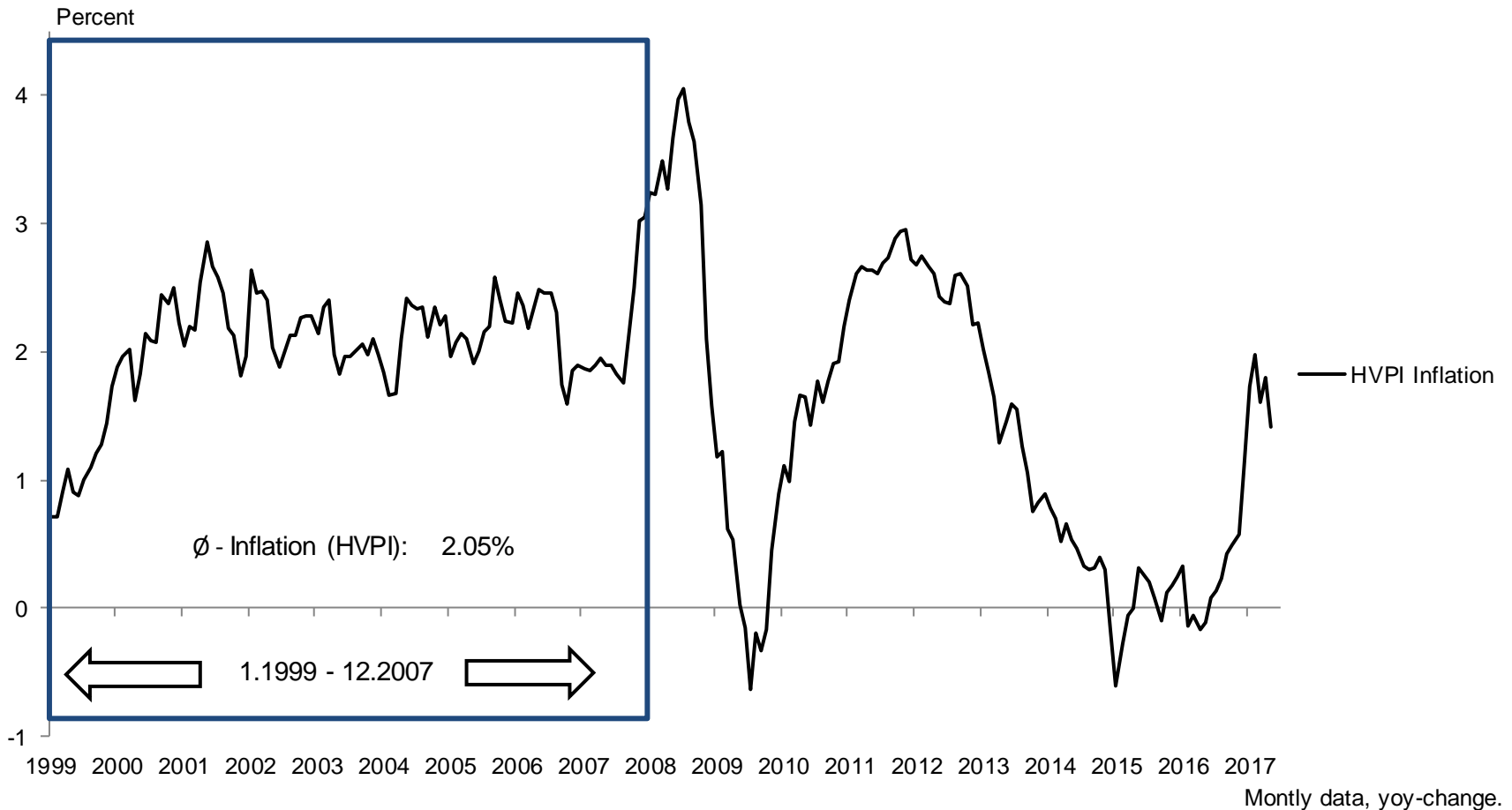
Gross debt to GDP: 130%

Interest burden: 4.2%

Ø yield: 3.2%

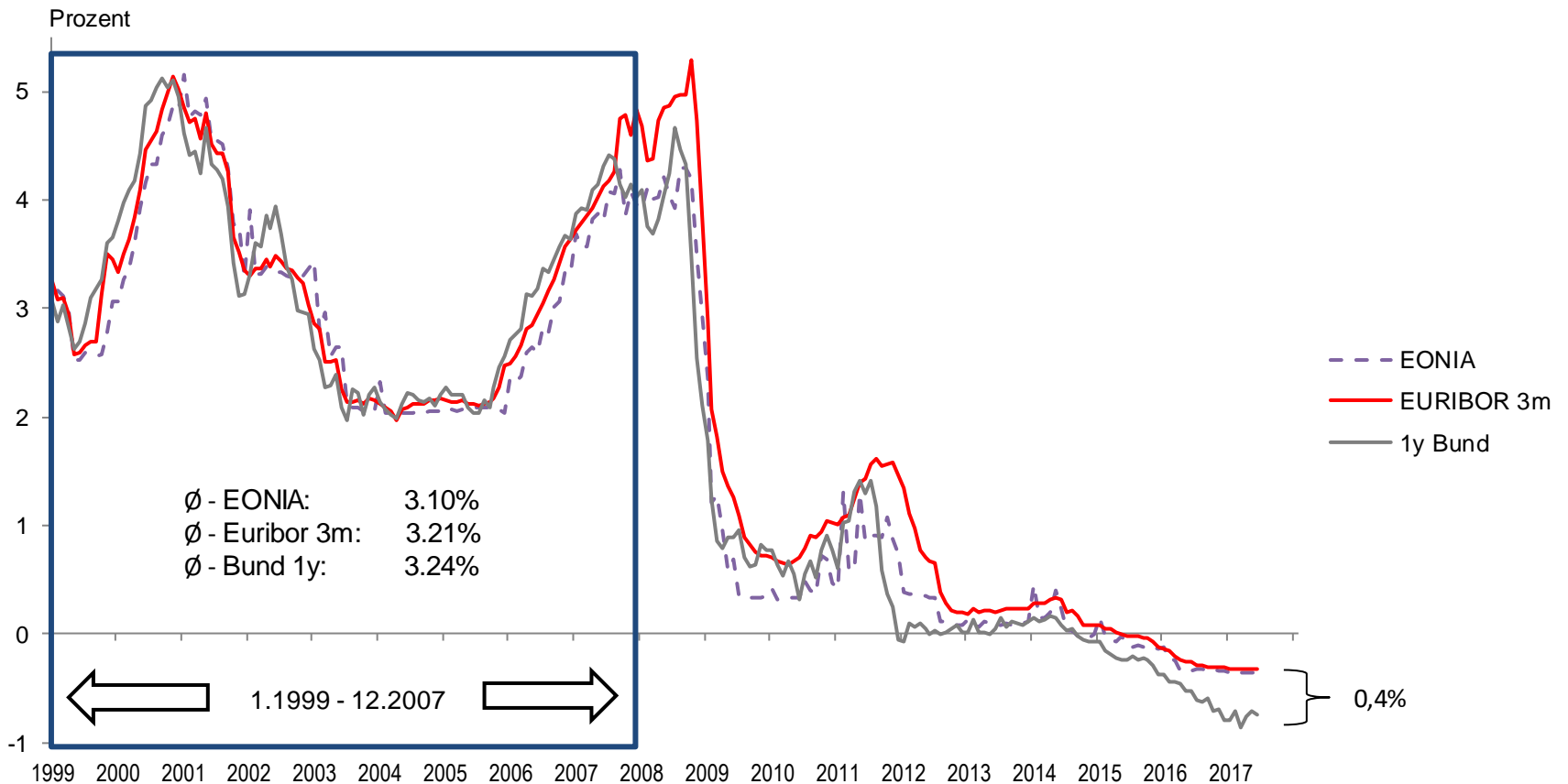
The monetary “normal”: Inflation

HVPI: Euro area



The monetary "normal": Short-term interest rates

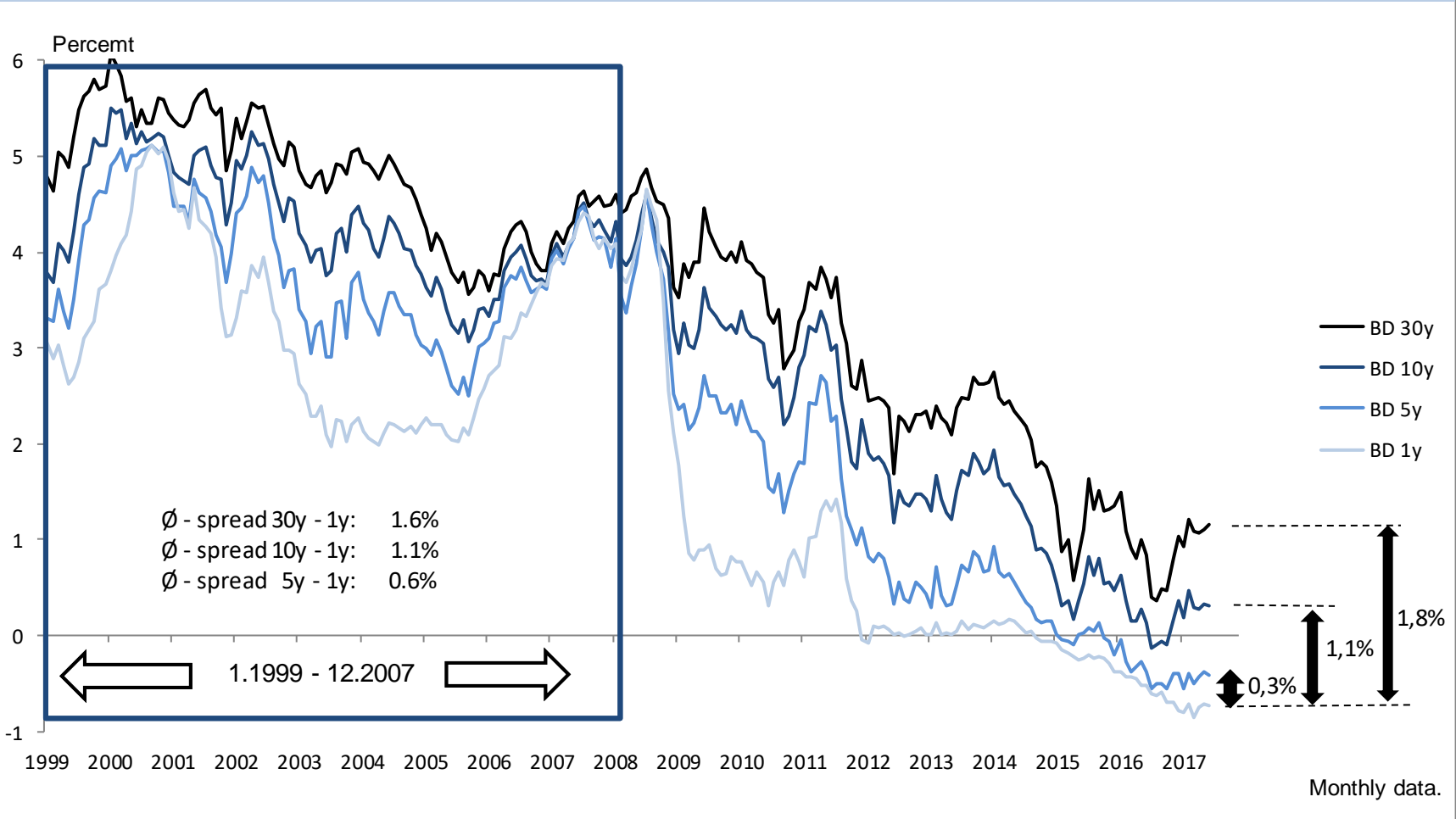
Short-term interest rates: Euro area



Monthly data.

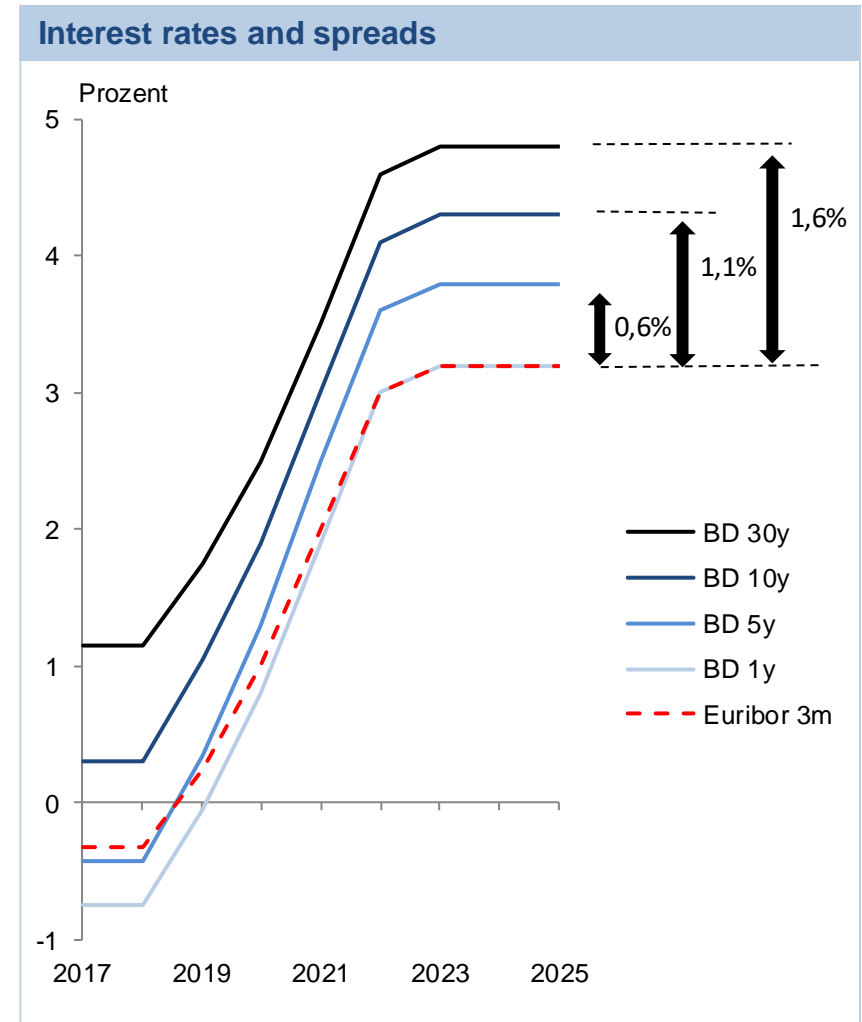
The monetary “normal”: Term spreads

Yield curve: Germany

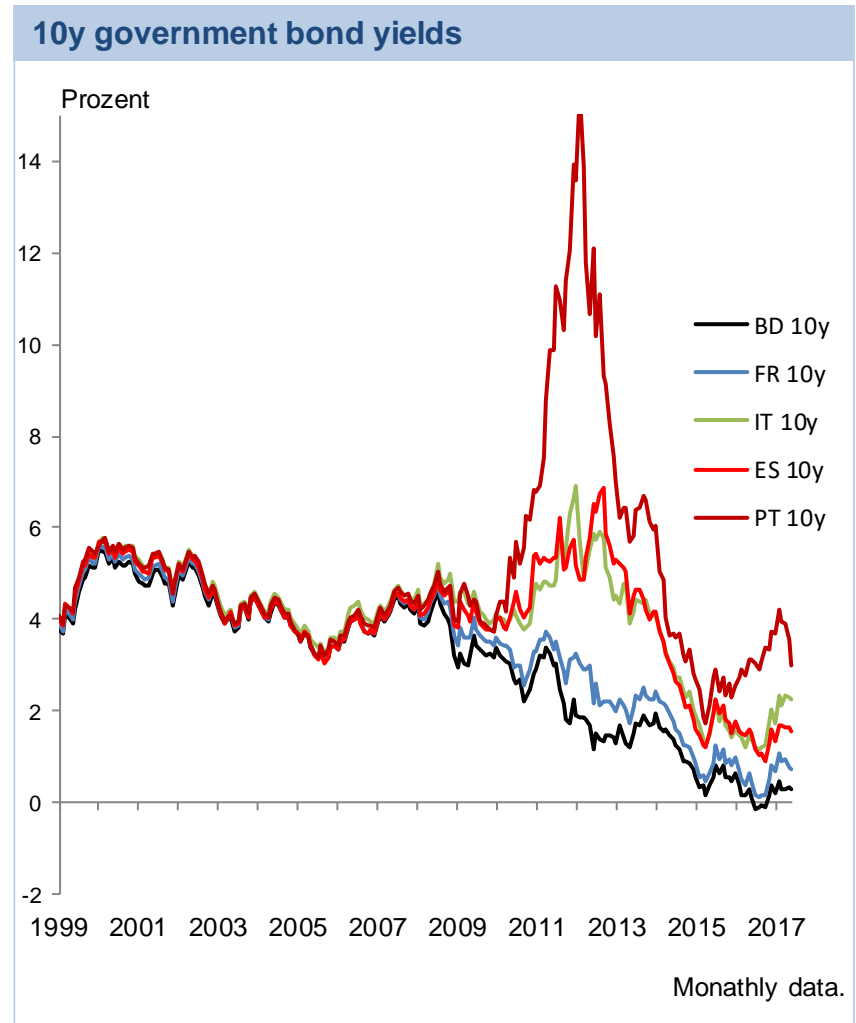


Exit scenario: Risk-free interest rates

- Inflation
 - » Back to 2% target until 2020
- Euribor
 - » Converging from -0.35% back to pre-crisis average of 3.2% until 2023
 - » Bund-1y spread wanes
- Yield curve
 - » Back to pre-crisis average

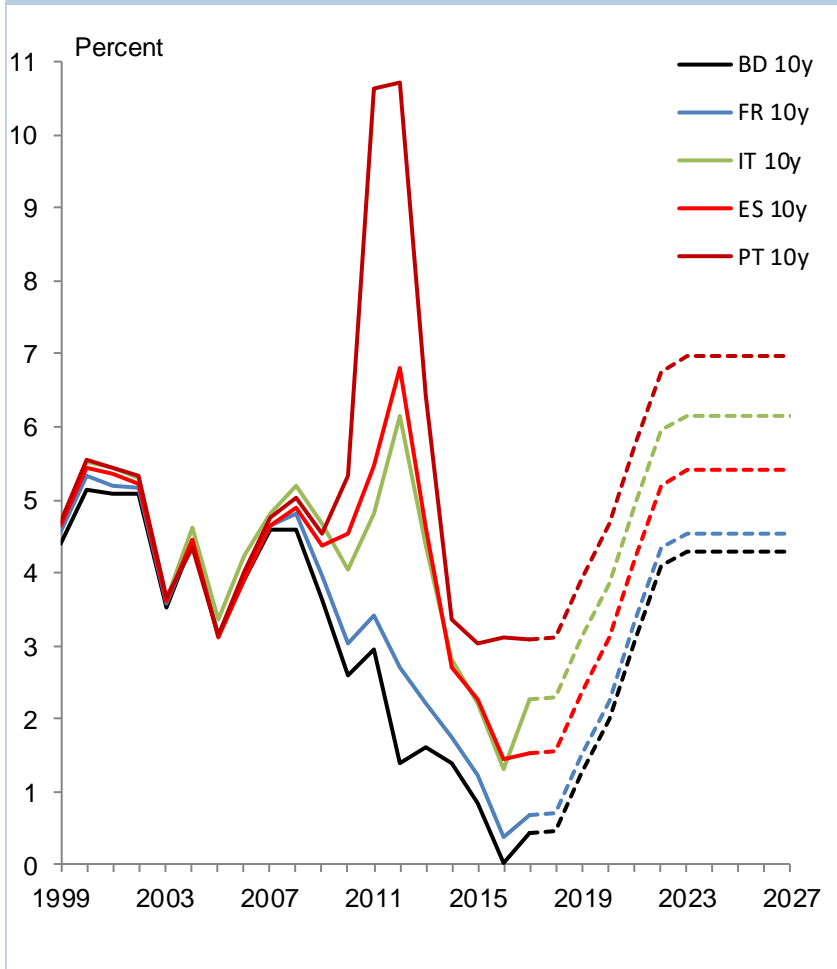


- Back to pre-crisis levels is unlikely
- Difficult to estimate
 - » Structural breaks (ESM, OMT, QE, ...)
 - » Political events (e.g. elections)

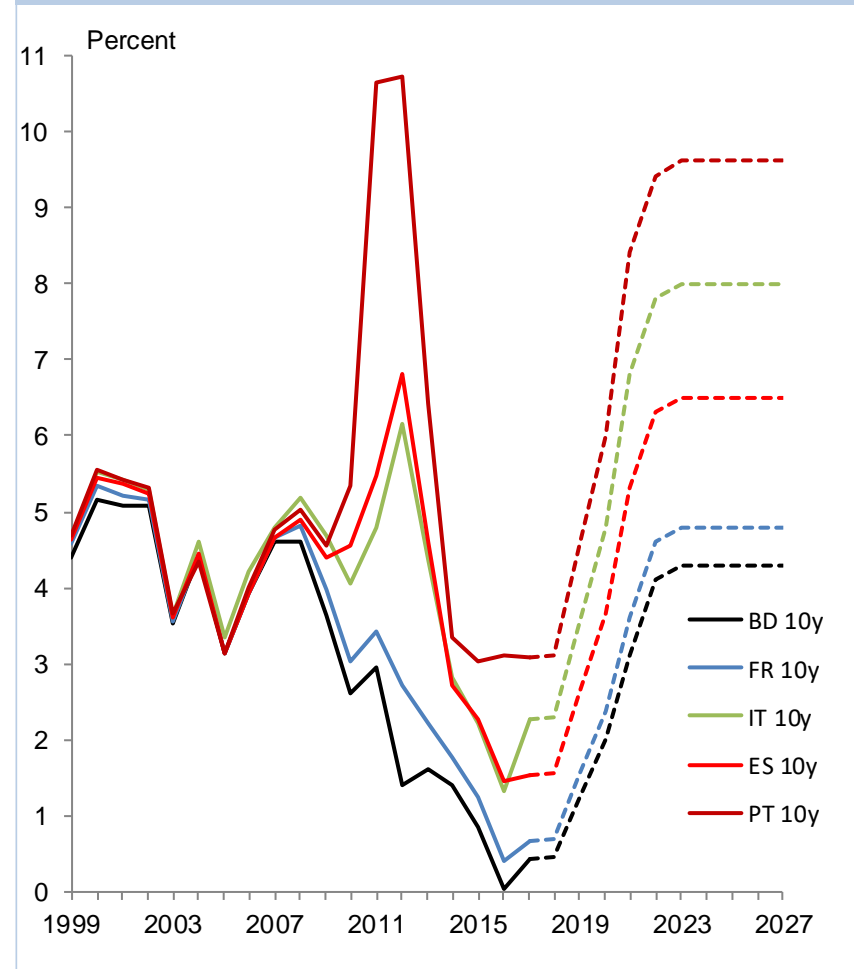


Exit scenarios: Risk premia

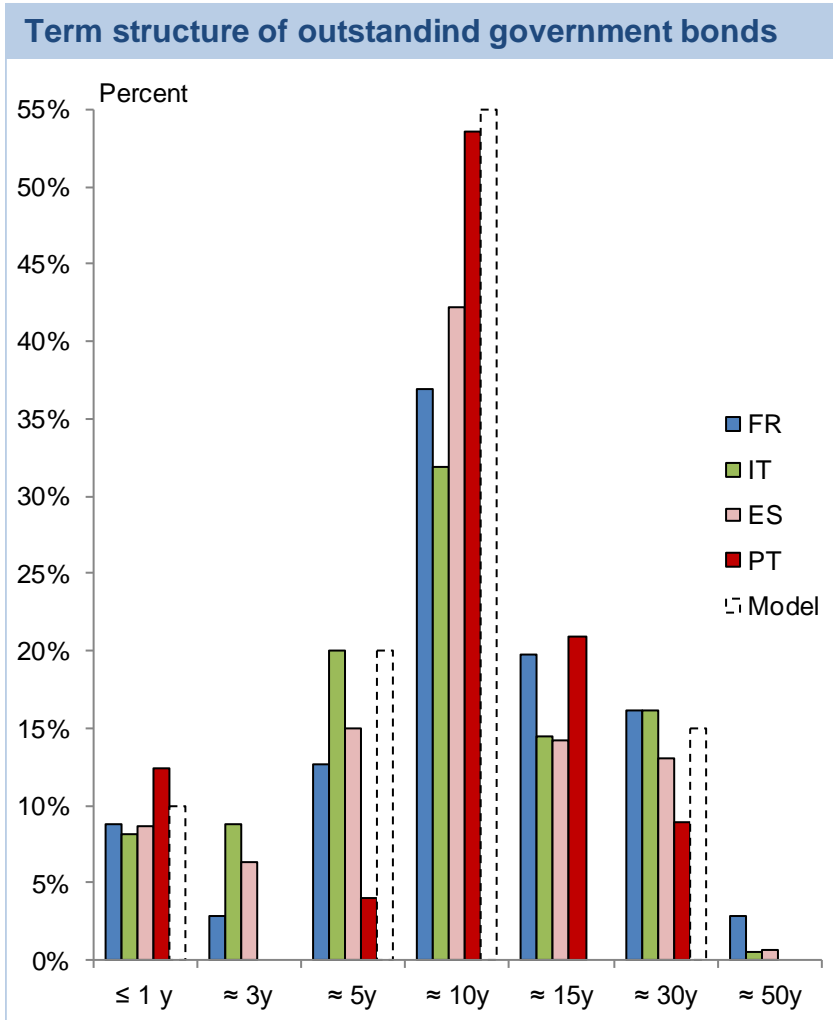
Scenario 1: Constant spreads



Scenario 2: Doubled spreads



Scenario: Term structure



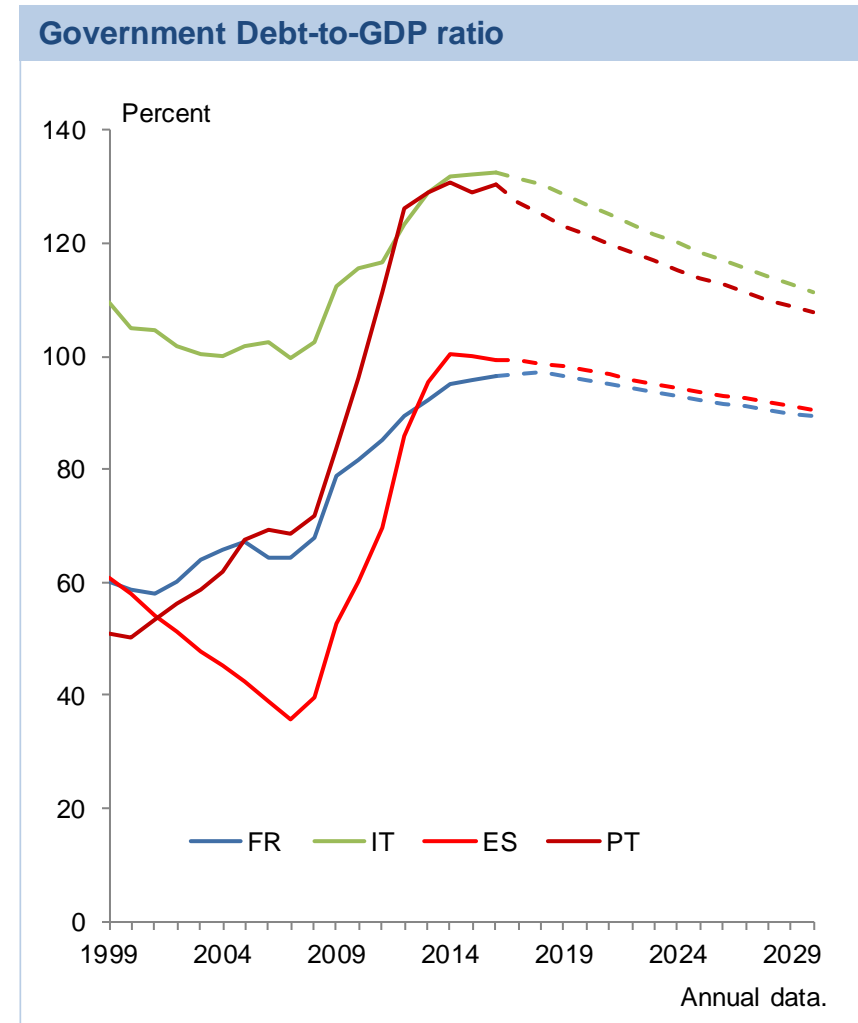
- 10% of gross debt
 - » Short-term (1y)
 - ⇒ **Budget impact within one year**

- Rest (refinancing and deficits)
 - » 40% → 5y
 - » 55% → 10y
 - » 5% → 30y
 - ⇒ **Lagged budget impact**

Exit scenario: Other assumptions

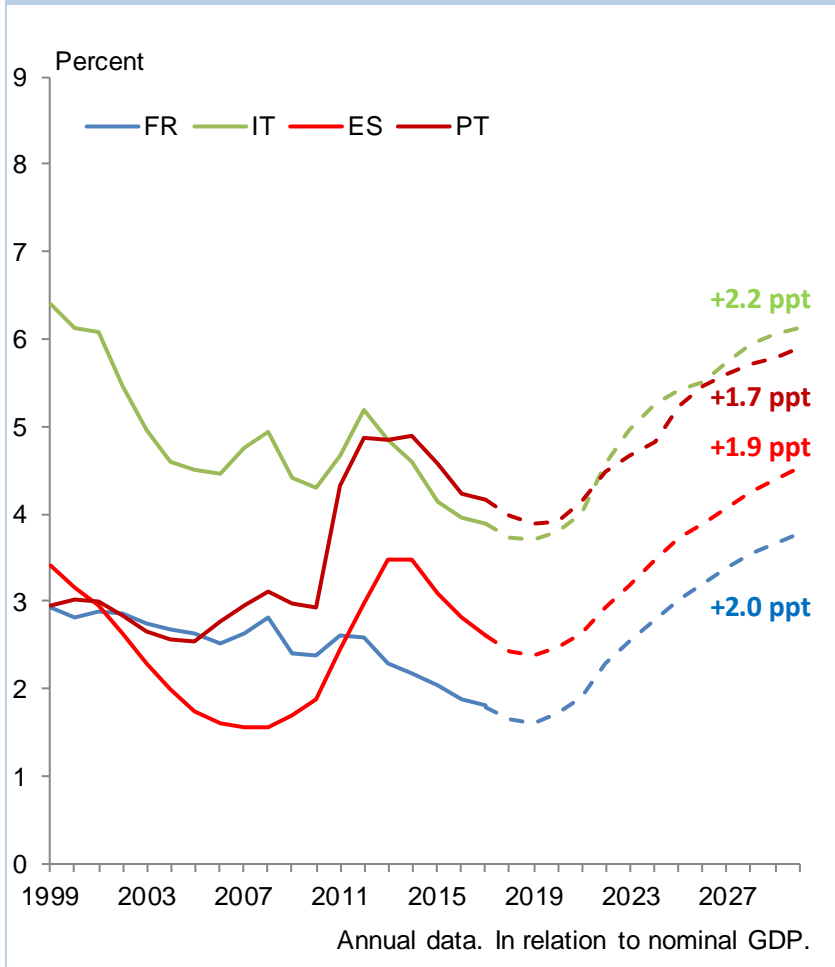
- 2017/2018: IfW country forecast
- 2019 ff (for all countries)
 - » GDP-Deflator: 2%
 - » GDP growth: 1.5%
 - » Fiscal deficit: 2.5% (of nominal GDP)

⇒ **Gradually decreasing debt-to-GDP ratios (without impact on spreads)**

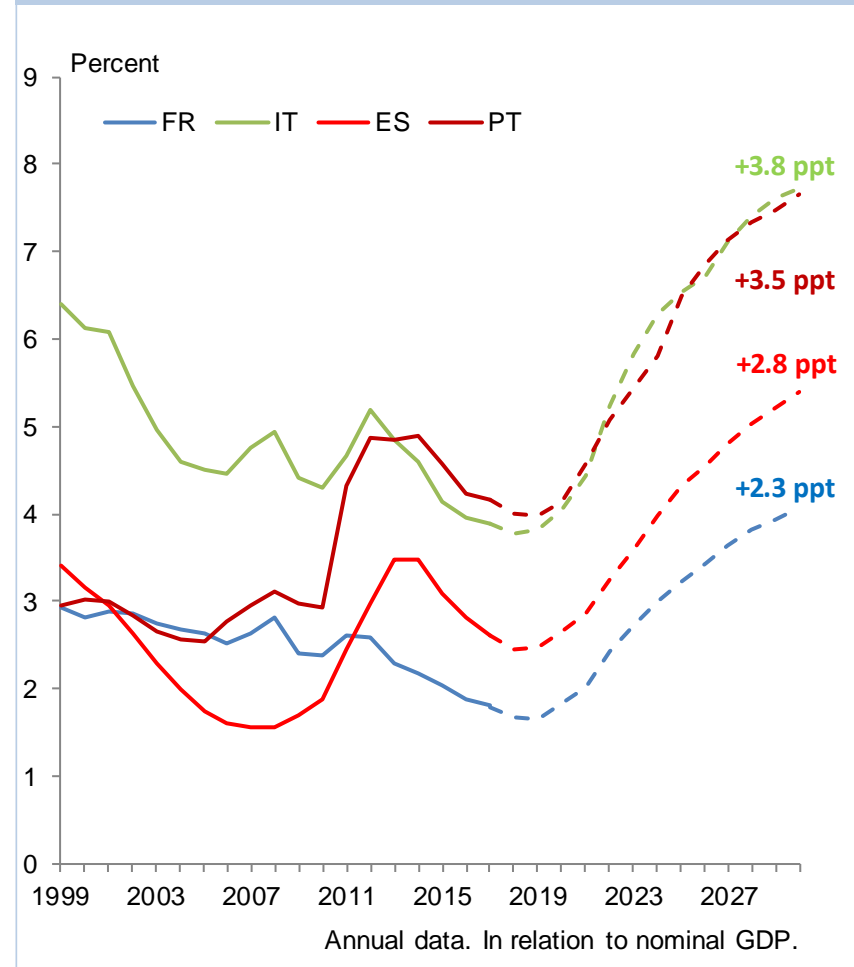


Results: Fiscal interest burden (impact of legacy debt, term spreads, risk premia)

Interest burden: Scenario 1



Interest burden: Scenario 2



Results: Debt-stabilizing primary fiscal surplus

	Debt-to-GDP ratio 2017	Effective yield 2017	Primary surplus 2017	Debt-to-GDP ratio 2030
France	96,0	1,9	-1,2	89,3
Italy	132,0	2,9	1,7	111,5
Spain	99,5	2,8	-0,6	90,6
Portugal	128,0	3,2	3,0	107,6

	Scenario 1: Constant spreads		Scenario 2: Doubled spreads	
	Effective yield 2030	Required primary surplus 2030	Effective yield 2030	Required primary surplus 2030
France	4,2	0,6	4,6	1,0
Italy	5,5	2,2	6,9	3,8
Spain	5,0	1,4	5,9	2,2
Portugal	5,5	2,2	7,2	4,0

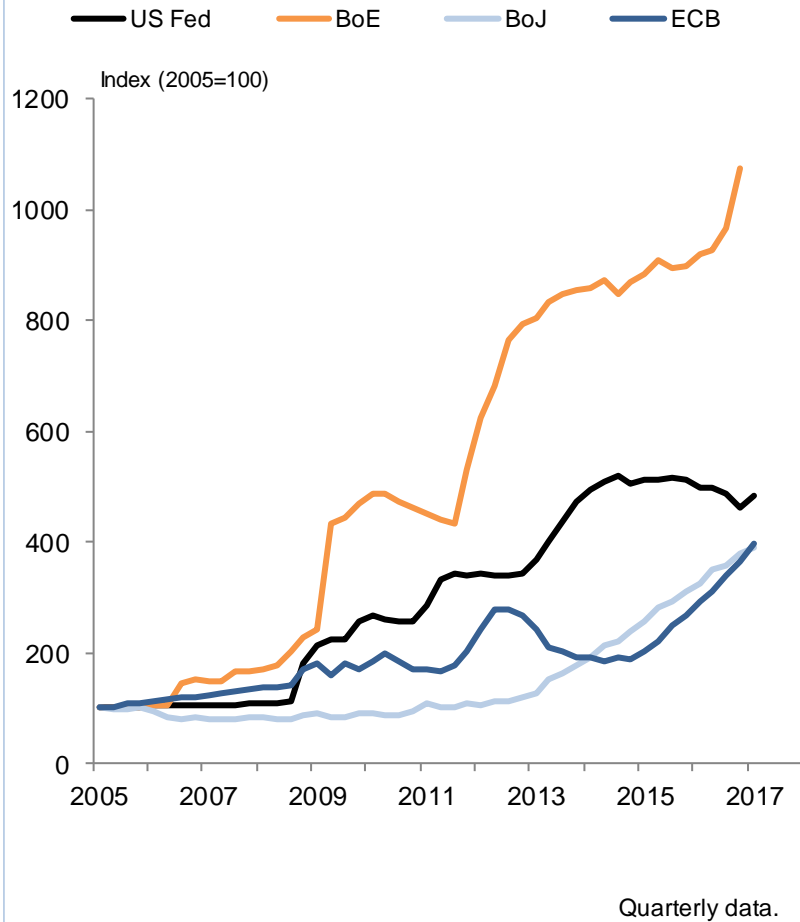
Non-cyclical hot spots

- **Production structures**
 - » Capital stock distortion, zombification
 - ⇒ **Potential output**

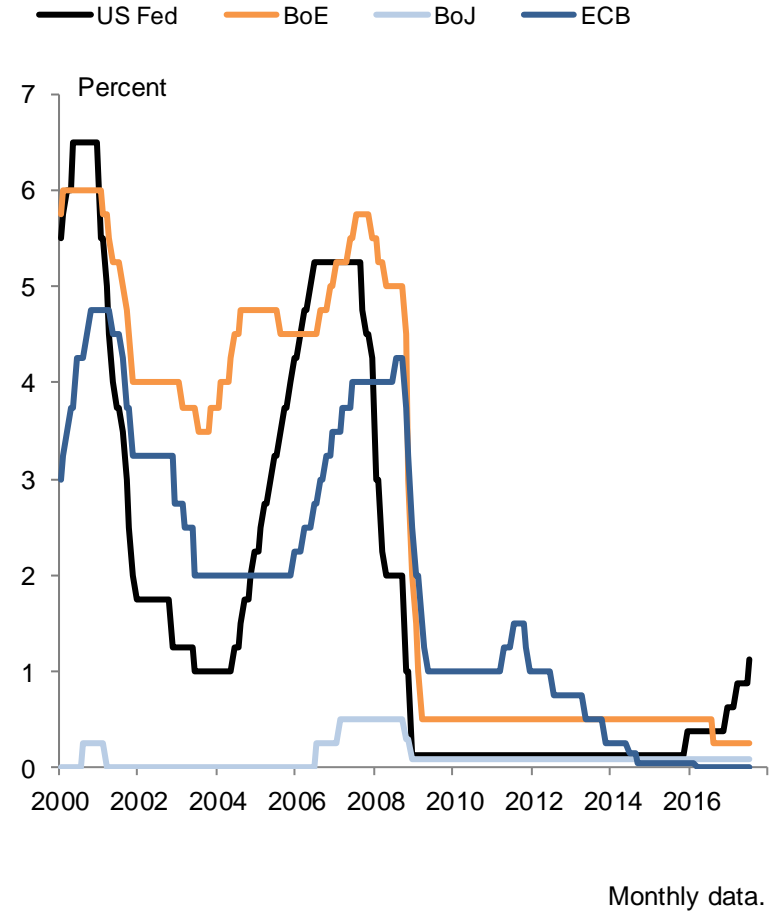
- **Financial stability**
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Monetary Base

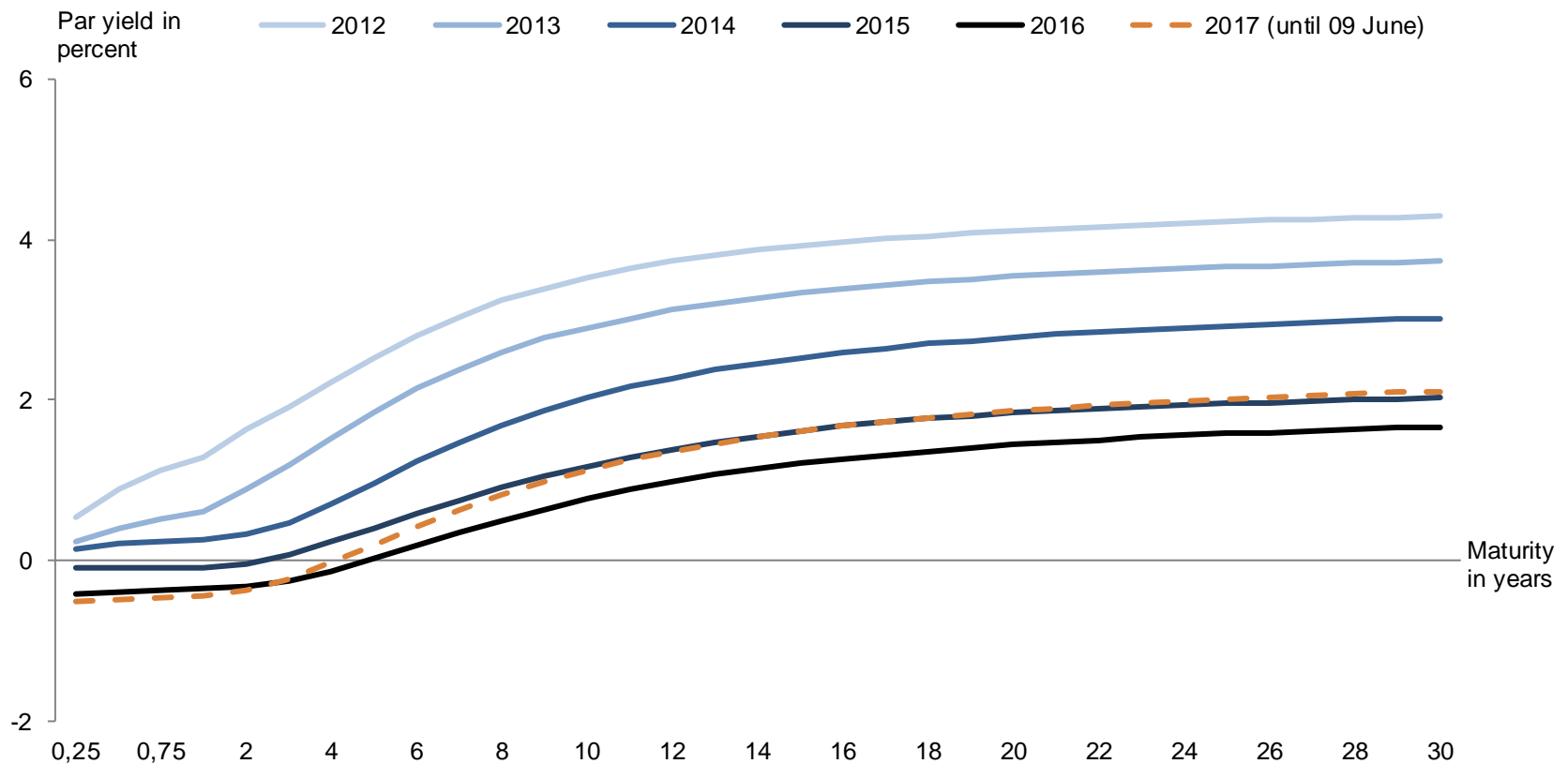


Monetary policy rates



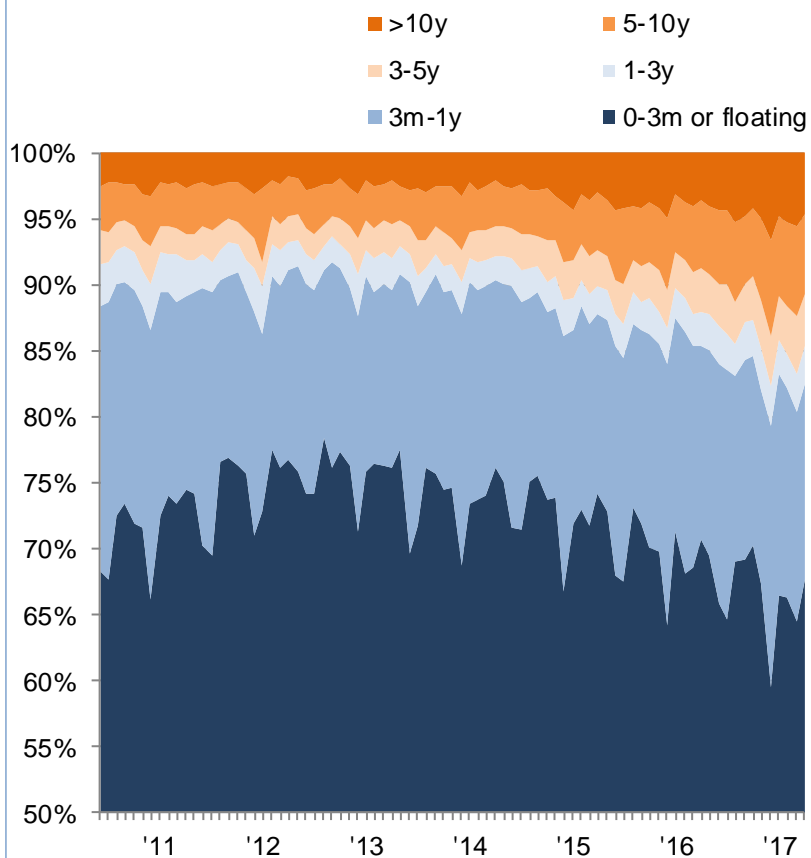
ZIRP/QE: Compressed yield curve

Euro area government yield curve



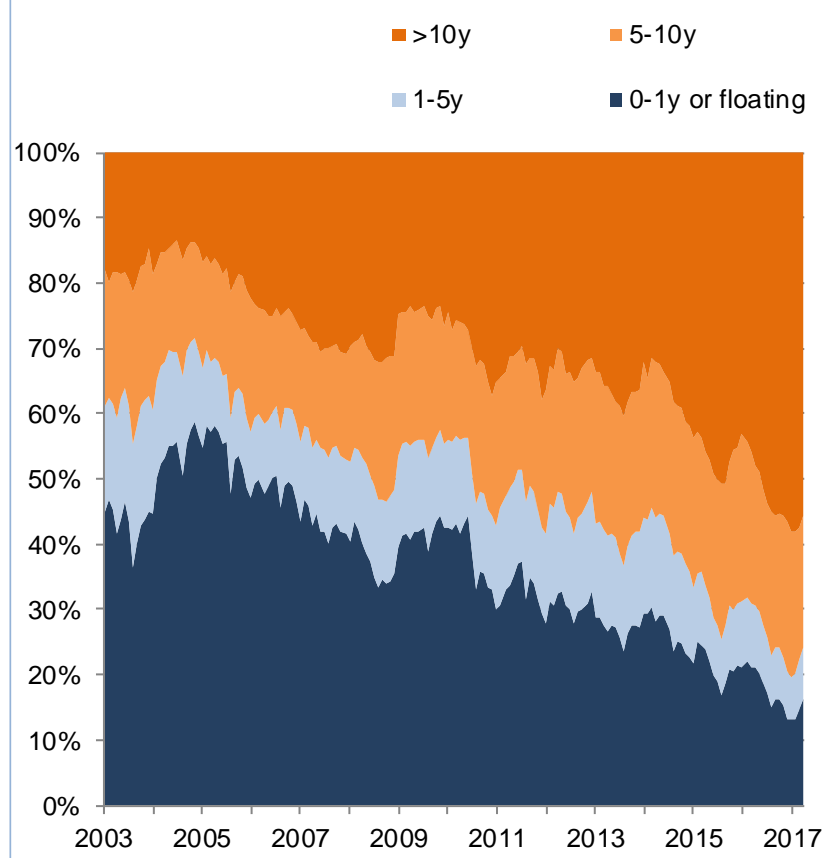
More aggressive maturity transformation (1/2)

New loans by maturity, NFC



Monthly data, shares of new loans by maturity.

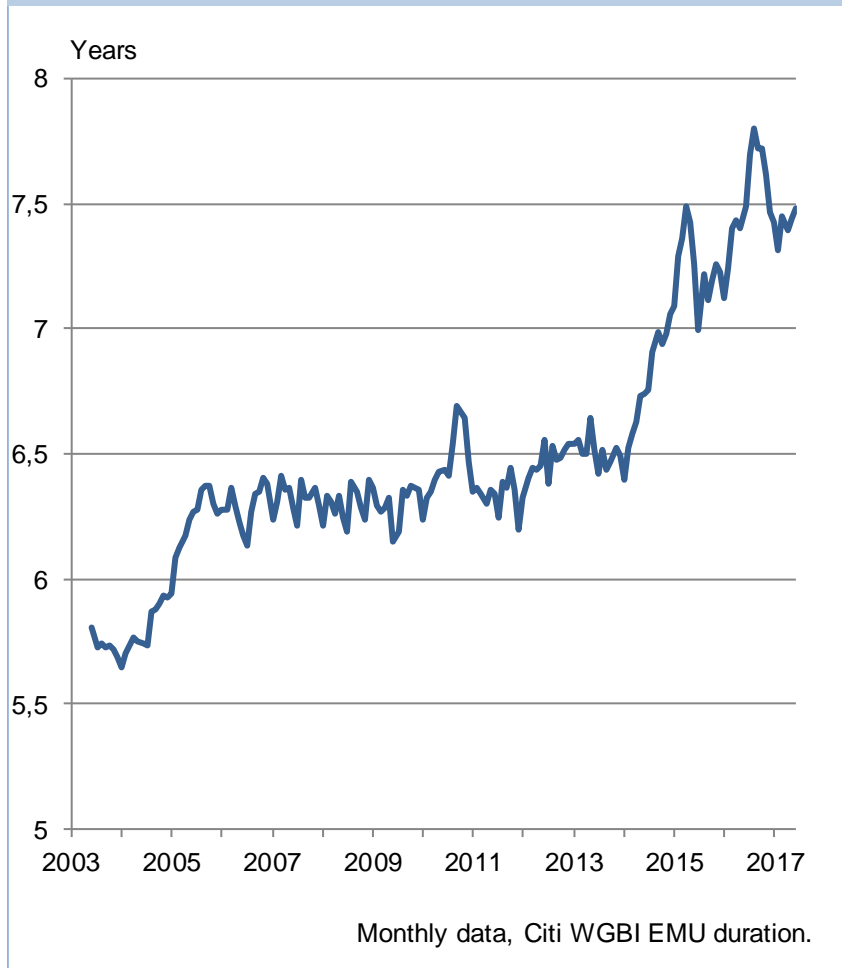
New loans by maturity, house purchases



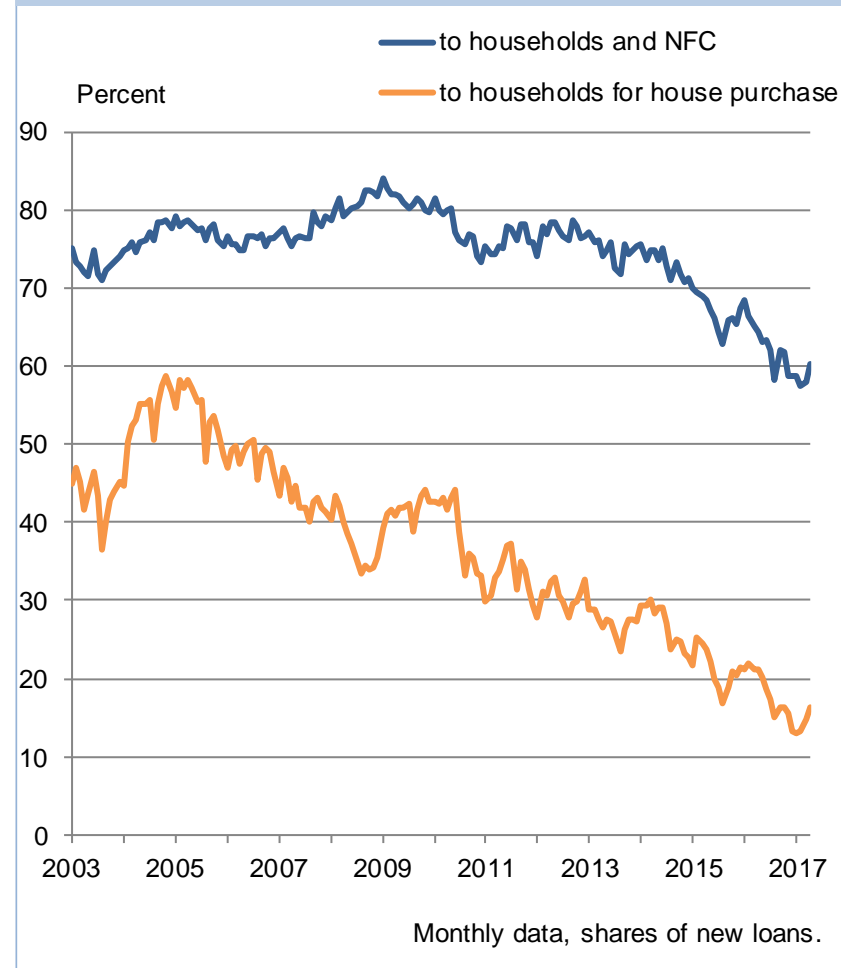
Monthly data, shares of new loans by maturity.

More aggressive maturity transformation (2/2)

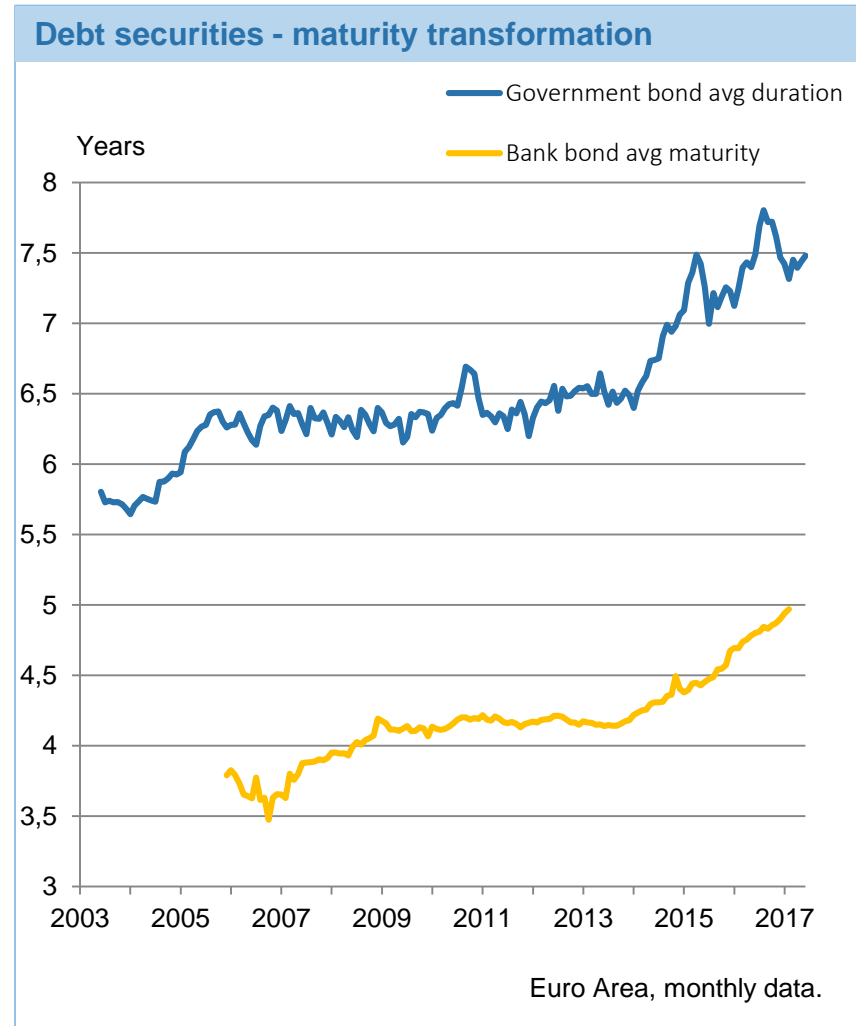
Government bond duration



Variable rate loan shares



- Devaluation of fixed income assets
 - » Trading book (marked to market)
 - » Banking book (marked to historic cost)
- Lower net interest income due to maturity transformation
 - » Loans vs. deposits (+ bonds)
 - » Depends on degree of MT and spread (squeezed by ZLB?)
 - » 57 percent of all net income of euro area banks (F: 47%, ES: 67%)



Euro area MFI balance sheet

Net interest income analysis

Euro Area MFI ex Eurosystem Aggregated Balance Sheet
in bn Euro outstanding, April 2017

Assets			Liabilities		
Loans to EA residents	Total	18177,2	Capital & reserves	Total	2498,2
	General gov	1063,8	Deposits of EA residents	Central gov	140,4
	Other EA residents	10859,5		Other gen gov & MFIs	11915,7
	MFIs	6253,8	MMF shares		576,9
Holdings of debt securities issued by EA residents	Total	4008,9	Debt securities		3648,8
	General gov	1658,2	External liabilities		4093,1
	Other EA residents	1212,3	Remaining		3317,7
	MFIs	1138,4			
MMF shares		56			
Holdings of equity		1196,3			
External assets		4573,8			
Fixed assets		193,1			
Remaining Assets		3405,5			
Total		31610,7	Total		31610,7

**(Equity < 90%)
Revaluation analysis**

Revaluation: Worst case scenario

- All bonds held by commercial banks marked-to-market
- Maturity
 - » Government bonds: 7.5 years
 - » Corporate bonds: 15 years

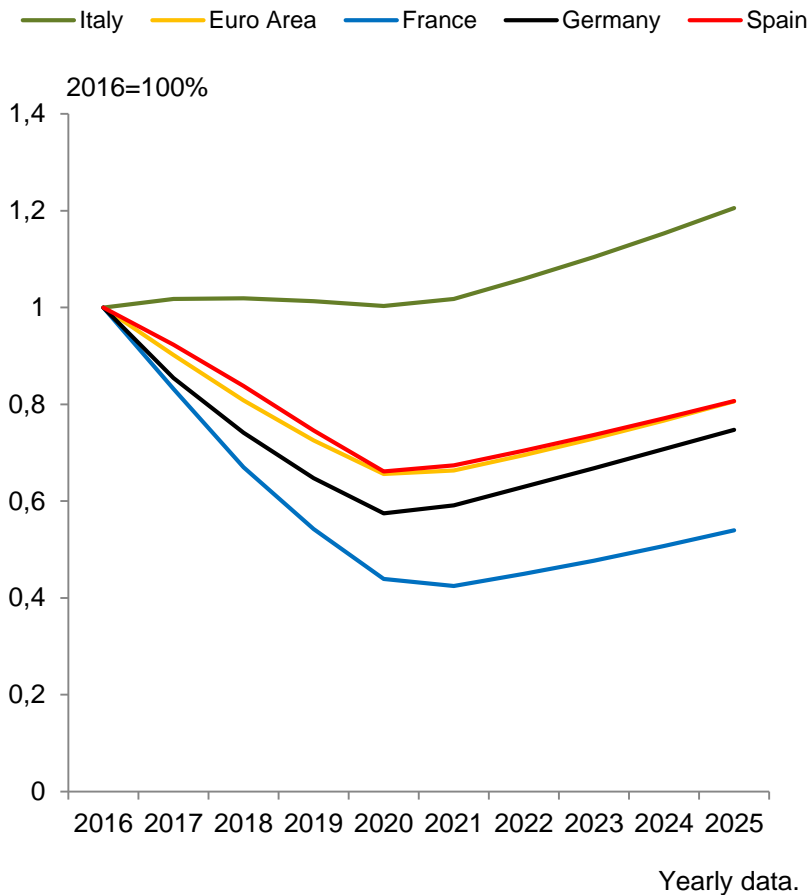
Yield-curve shift	Devaluation loss (bonds)	Equity erosion
1% ppt	8%	10%
2% ppt	16%	18%

- Risk assessment approach
 - » Following ESRB (2016) + own assumptions
 - » ECB: Interest Rate Risk in the Banking Book (announced for 2017-H2)
- Scenarios
 - » Back-to-Normal (BtN): Interest rate reversal to levels of 2000-2006
 - » Low-for-Long (LfL): Interest rate remain ad subdued levels

		Long-term interest rate	Short-term interest rate	Term spread
2020	LfL	1,4%	0,0%	1,4
	BtN	3,2%	1,7%	1,5
2025	LfL	1,2%	0,0%	1,2
	BtN	5,1%	3,2%	1,9

NNI: Back-to-Normal scenario

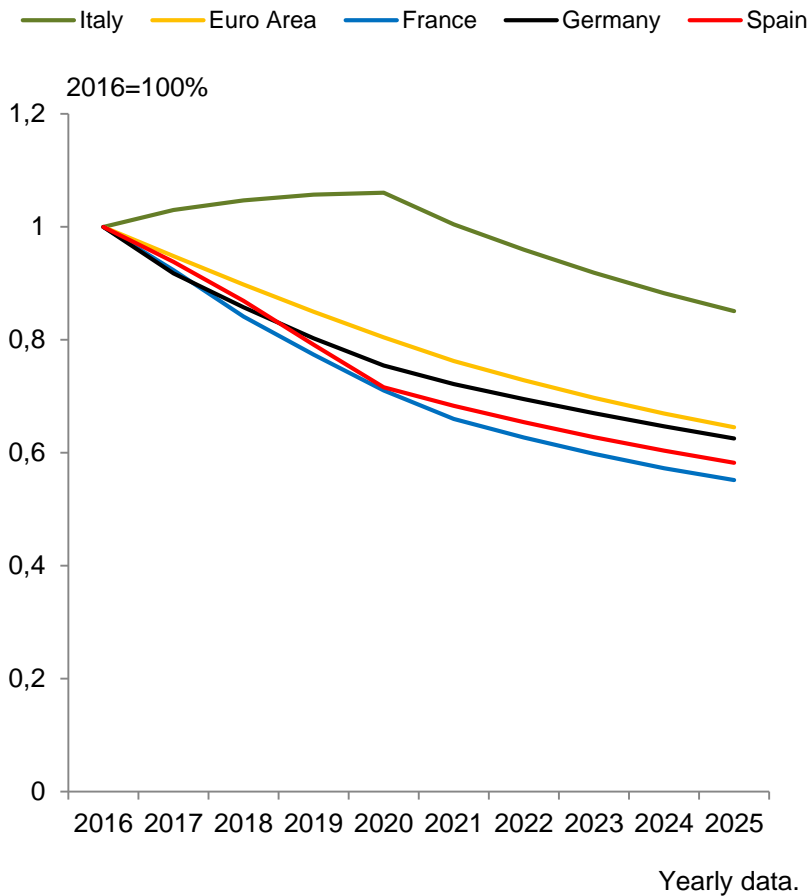
Net Interest Income - Back to Normal



- Medium-term
 - » Maturity transformation dominates
 - » Euro area banks lose one third of their NNI until 2020
- Long-term
 - » Benefits from higher term spreads
- Country-specific results
 - » Italy: high share of loans with variable interest rates, euro area wide interest rate smoothing

NNI: Low-for-Long scenario

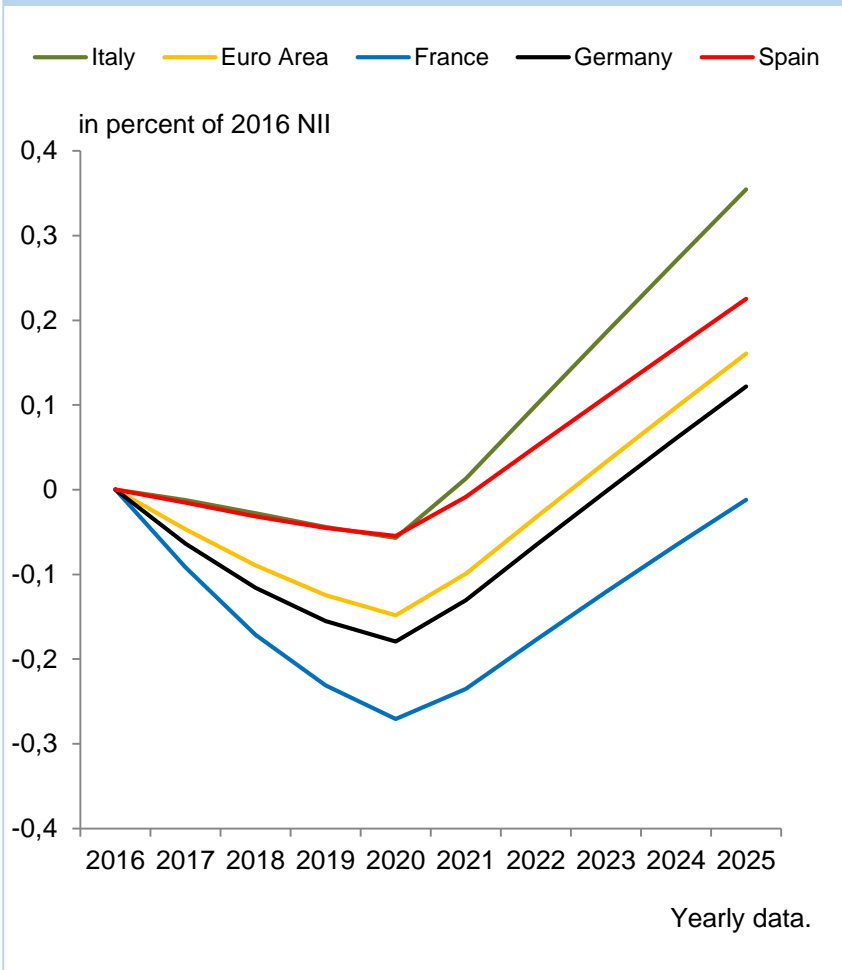
Net Interest Income - Low for Long



- Interest margins keep falling
- NII (euro area)
 - » Minus 20 percent until 2020
 - » Minus 33 percent until 2025

NNI: Scenario comparison

Net Interest Income - BtN minus LfL



- Medium-term
 - » BtN hurts more
 - » Differential NII effect: Minus 15 percent
- Longer-term
 - » LfL hurts more
 - » BtN-NNI 16 percent higher by 2025 (relative to LfL)

Radical monetary strategy: Regime change instead of policy renormalization

- Buying risks upfront instead of lowering risk free yields
 - » More private sector securities
 - » Distortion of risk premia and related cost of capital
 - Targeting non-performing assets
 - » Monetary bail-out
 - » Turning the Eurosystem into a bad bank
 - Helicopter money
 - » Bypassing the credit channel to inflate the debt-overhang away
 - » Transforms the Eurosystem into a pure fiat money system
- ⇒ **Hardly in line with ECB's mandate, radical consequences**
- ⇒ **Chicago plan 2.0 requires credible post-resolution design**

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