Monetary autonomy and the hazards of zero interest rates

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Overview

Is there a world nominal long interest rate?

Which country is central in affecting the “world interest rate”?

What are the consequences for a small, open economy of having the “world interest rate”?

What are the options facing small, open economies?

Principal components for long nominal interest rates

Shocks	Eigenvalues	Percantage of variance explained	Cumulative percantage explained
Period: 1920-2016. 84 observations			
First principal component	12.71	74.75%	74.75%
Second principal component	1.95	11.47%	86.21%
Third principal component	0.79	4.62%	90.83%
Fourth principal component	0.58	3.39%	94.23%
Period: 1920-1936, 15 observations			
First principal component	10.04	59.08%	59.08%
Second principal component	2.51	14.77%	73.85%
Third principal component	1.72	10.11%	83.96%
Fourth principal component	1.24	7.31%	91.26%
Period: 1948-1998, 51 observations			
First principal component	12.43	73.09%	73.09%
Second principal component	1.91	11.23%	84.32%
Third principal component	1.20	7.03%	91.35%
Fourth principal component	0.61	3.56%	94.92%
Period: 1999-2016, 18 observations			
First principal component	14.16	83%	83%
Second principal component	2.16	13%	96%
Third principal component	0.30	2%	98%
Fourth principal component	0.17	1%	99%

Years: 1920-2016.

Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and US.

Source: Jorda, Schularick and Taylor (2017).

Eigenvectors for first two principal components

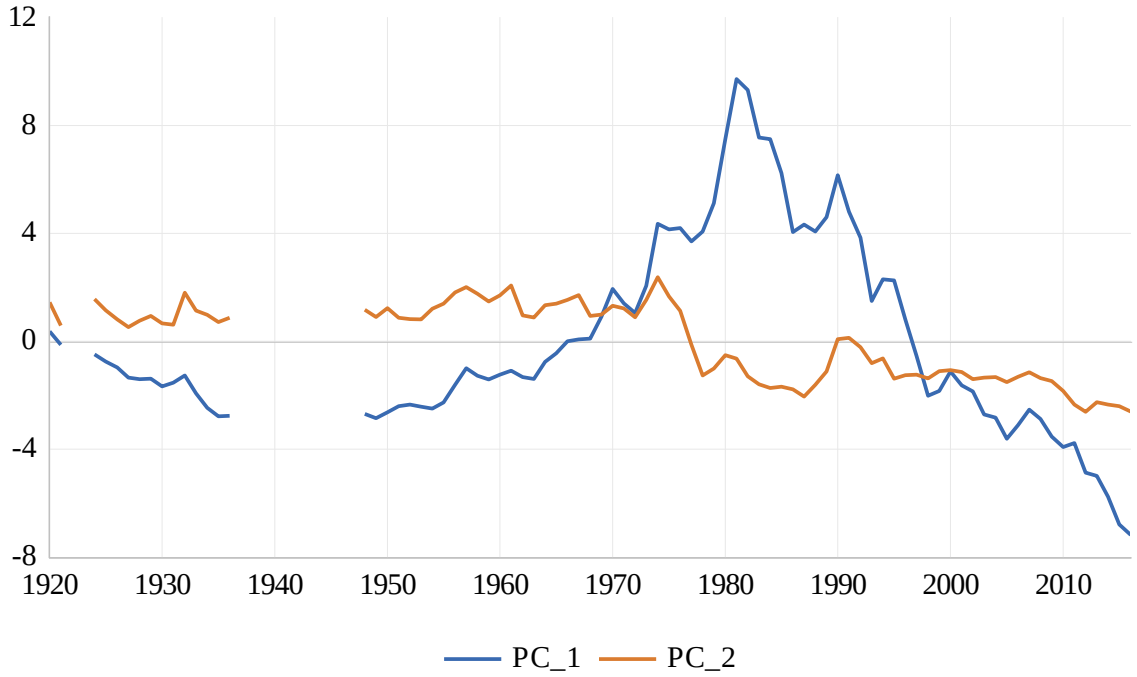
	1920-2016		1920 -1936		1945-1998		1999-2016	
Variable	PC 1	PC 2	PC 1	PC 2	PC 1	PC 2	PC 1	PC 2
Australia	0.26	-0.21	0.26	0.29	0.27	-0.19	0.26	-0.05
Belgium	0.28	0.01	0.16	-0.39	0.28	0.00	0.26	0.13
Canada	0.27	-0.12	0.28	0.16	0.28	-0.06	0.25	-0.13
Denmark	0.27	0.03	0.30	-0.07	0.26	0.13	0.26	-0.08
Finland	0.11	0.43	0.27	0.15	-0.08	0.02	0.26	-0.03
France	0.26	0.07	0.18	-0.46	0.26	0.03	0.26	0.04
Germany	0.20	0.41	0.09	0.13	0.21	0.41	0.26	-0.06
Italy	0.27	-0.08	0.08	0.47	0.27	-0.11	0.20	0.44
Japan	0.16	0.52	0.03	-0.01	0.11	0.55	0.24	0.01
Netherlands	0.27	0.05	0.30	-0.03	0.26	0.19	0.27	-0.02
Norway	0.26	-0.13	0.31	-0.08	0.26	-0.21	0.25	-0.09
Portugal	0.23	-0.25	0.30	-0.07	0.26	-0.27	0.01	0.67
Spain	0.24	-0.25	0.04	0.41	0.23	-0.35	0.18	0.48
Sweden	0.27	-0.10	0.31	0.01	0.27	-0.14	0.26	-0.08
Switzerland	0.20	0.35	0.25	-0.25	0.20	0.35	0.25	-0.12
U.K.	0.25	0.01	0.29	0.11	0.25	0.21	0.26	-0.06
U.S.	0.27	-0.17	0.30	0.05	0.28	-0.06	0.24	-0.20

First PC is an average of world interest rates.

Second PC separates the low-inflation from high-inflation countries in the 1970s and 1980s.

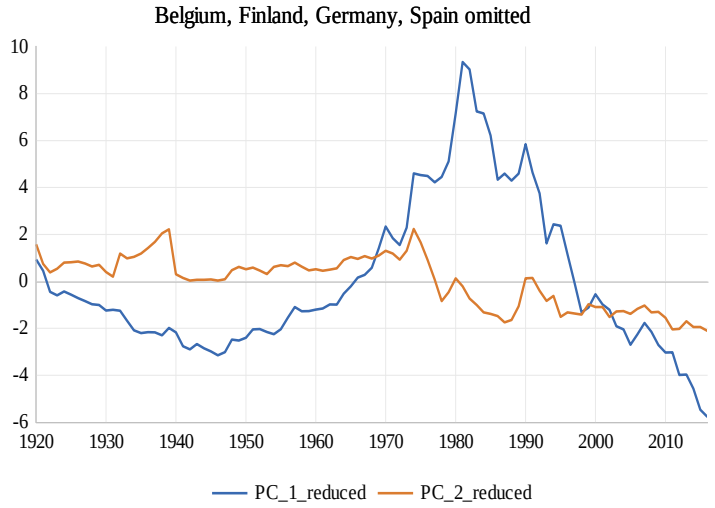
Second PC for 1999-2016 shows the effect of the euro crisis starting in 2011.

First and second principal component of long rates



PC_1 = “world interest rate”

High rates in early 1980s due to high inflation and also high real interest rates.



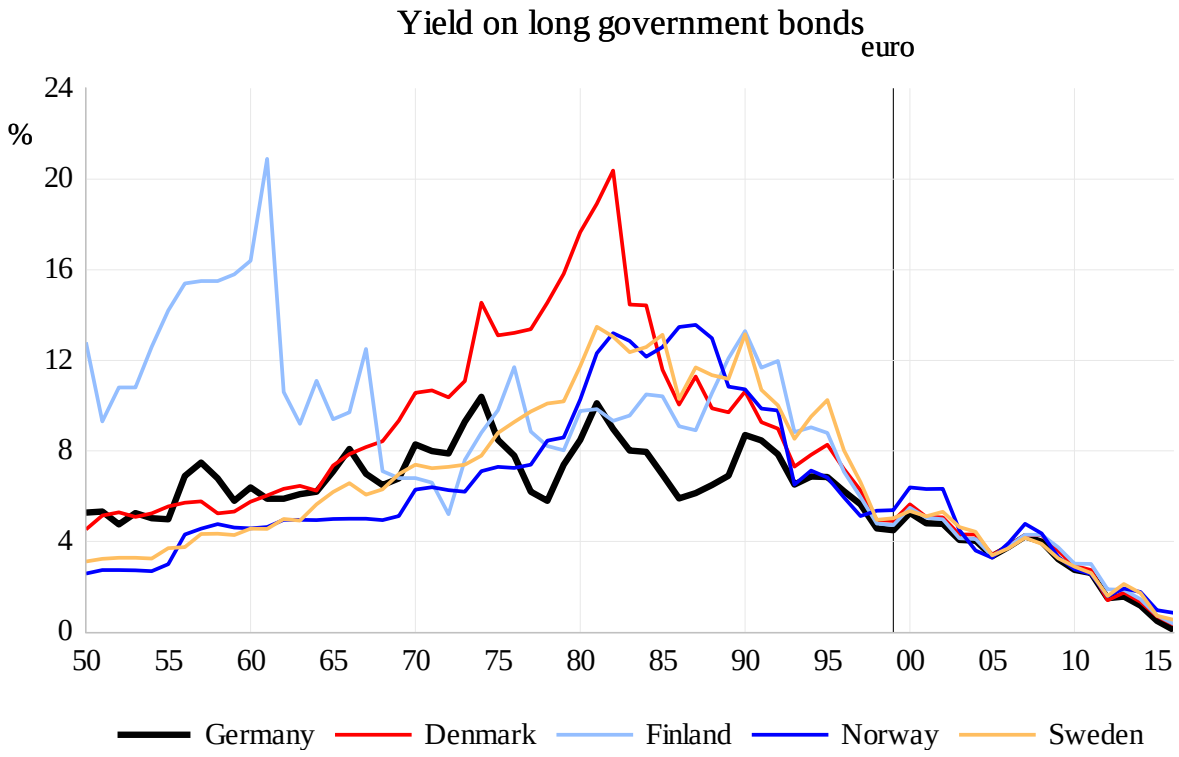
Which country influences the world interest rate the most?

$$i = \alpha_0 + \alpha_1 i_{Ger} + \alpha_2 i_{UK} + \alpha_3 i_{US}$$

	1920-1939					1944-1998					1999-2016				
	C	GER	UK	US	R^2	C	GER	UK	US	R^2	C	GER	UK	US	R^2
Outside Europe															
Australia	-0.86 (1.27)	0.14 (1.76)	**0.96** **(3.35)**	0.32 (0.99)	0.85	2.63 (2.46)	-0.44 (2.05)	0.13 (1.02)	**1.14** **(9.49)**	0.86	0.82 (0.97)	0.21 (0.73)	**0.74** **(2.22)**	0.12 (0.75)	0.95
Canada	-0.32 (0.78)	**0.17** **(3.56)**	**0.42** **(2.48)**	**0.57** **(2.89)**	0.92	0.46 (1.31)	0.00 (0.06)	**0.09** **(2.21)**	**0.97** **(24.79)**	0.98	-0.08 (0.08)	0.25 (0.79)	0.43 (1.17)	**0.42** **(2.33)**	0.95
Japan	11.49 (5.26)	-0.25 (1.00)	0.13 (0.14)	-0.01 (0.87)	0.28	0.48 (0.44)	**0.83** **(3.74)**	0.18 (1.37)	-0.34 (1.91)	0.42	-0.25 (0.36)	0.12 (0.53)	0.16 (0.59)	0.10 (0.76)	0.81
Europe, non-euro															
Denmark	2.23 (5.76)	-0.03 (0.70)	**0.39** **(2.39)**	**0.38** **(2.04)**	0.82	-0.97 (0.92)	0.22 (1.05)	**0.47** **(3.80)**	**0.76** **(6.41)**	0.89	-0.16 (0.44)	**0.94** **(7.83)**	0.08 (0.57)	0.06 (0.89)	0.99
Norway	2.11 (7.87)	0.00 (0.12)	0.17 (1.51)	**0.70** **(5.46)**	0.93	2.03 (1.76)	-0.30 (1.30)	-0.05 (0.35)	**1.16** **(8.99)**	0.81	1.87 (1.33)	**1.54** **(3.32)**	-0.87 (1.60)	0.13 (0.47)	0.94
Sweden	-0.84 (2.23)	0.06 (1.44)	**0.34** **(2.13)**	**0.98** **(5.37)**	0.94	1.59 (1.88)	-0.21 (1.23)	0.15 (1.49)	**0.99** **(10.44)**	0.90	-0.26 (0.35)	**0.77** **(3.16)**	0.19 (0.67)	0.12 (0.85)	0.98
Switzerland	1.16 (2.49)	-0.17 (2.35)	-0.22 (0.83)	**1.52** **(4.99)**	0.81	-0.41 (0.93)	**0.54** **(6.07)**	**0.16** **(3.15)**	-0.07 (1.36)	0.78	-1.35 (1.33)	0.30 (0.89)	0.17 (0.42)	**0.44** **(2.28)**	0.93
Eurozone															
Belgium	2.75 (2.93)	0.08 (0.77)	0.58 (1.47)	-0.30 (0.66)	0.25	1.26 (2.79)	**0.25** **(2.68)**	-0.02 (0.36)	**0.73** **(14.42)**	0.94	2.36 (2.29)	**1.51** **(4.42)**	-0.35 (0.87)	-0.55 (2.80)	0.95
Finland	-0.50 (0.59)	0.15 (1.56)	0.28 (0.75)	**1.52** **(3.38)**	0.87	10.29 (4.55)	0.68 (1.48)	-0.44 (1.65)	-0.16 (0.62)	0.16	0.61 (1.71)	**1.10** **(9.33)**	-0.05 (0.36)	-0.13 (1.96)	0.99
France	2.41 (2.07)	0.01 (0.10)	0.09 (0.19)	0.50 (0.89)	0.25	2.24 (2.44)	0.34 (1.82)	-0.12 (1.12)	**0.73** **(7.13)**	0.78	1.56 (3.06)	**1.25** **(7.38)**	-0.23 (1.16)	-0.30 (3.03)	0.99
Italy	4.94 (8.87)	-0.04 (0.60)	0.28 (1.19)	0.07 (0.25)	0.30	2.18 (1.63)	-0.13 (0.49)	0.09 (0.54)	**1.20** **(8.04)**	0.83	6.50 (3.23)	**2.08** **(3.12)**	-1.10 (1.41)	-1.16 (3.01)	0.69
Netherlands	0.91 (2.65)	-0.02 (0.53)	0.13 (0.88)	**0.80** **(4.88)**	0.89	-0.74 (2.01)	**0.44** **(5.87)**	**0.30** **(6.92)**	**0.26** **(6.31)**	0.95	0.57 (1.80)	**1.08** **(10.27)**	-0.01 (0.10)	-0.15 (2.47)	0.99
Portugal	-9.18 (6.48)	-0.10 (0.62)	**2.37** **(4.00)**	**2.31** **(3.39)**	0.93	3.78 (2.14)	-1.23 (3.42)	0.01 (0.03)	**2.10** **(10.60)**	0.85	16.37 (3.09)	**4.22** **(2.40)**	-3.38 (1.64)	-2.87 (2.83)	0.37
Spain	3.82 (6.31)	0.09 (1.55)	0.06 (0.27)	-0.04 (0.13)	0.20	3.63 (2.19)	-0.41 (1.21)	-0.68 (3.46)	**1.94** **(10.47)**	0.77	6.99 (2.92)	**2.18** **(2.75)**	-1.25 (1.34)	-1.23 (2.70)	0.60
U.K.	1.18 (2.20)	-0.03 (0.46)		**0.94** **(5.54)**	0.71	-1.60 (1.33)	**0.82** **(3.75)**		**0.64** **(6.28)**	0.76	3.45 (12.39)	**0.77** **(8.07)**		-0.21 (1.81)	0.95
Germany	2.80 (1.58)			**1.18** **(2.24)**	0.24	4.94 (14.2)			**0.31** **(6.16)**	0.44	-1.03 (2.27)			**1.12** **(9.68)**	0.85

Effect of U.S. on U.K. and Germany

Interest rates in Europe converge to German interest rates after 1999

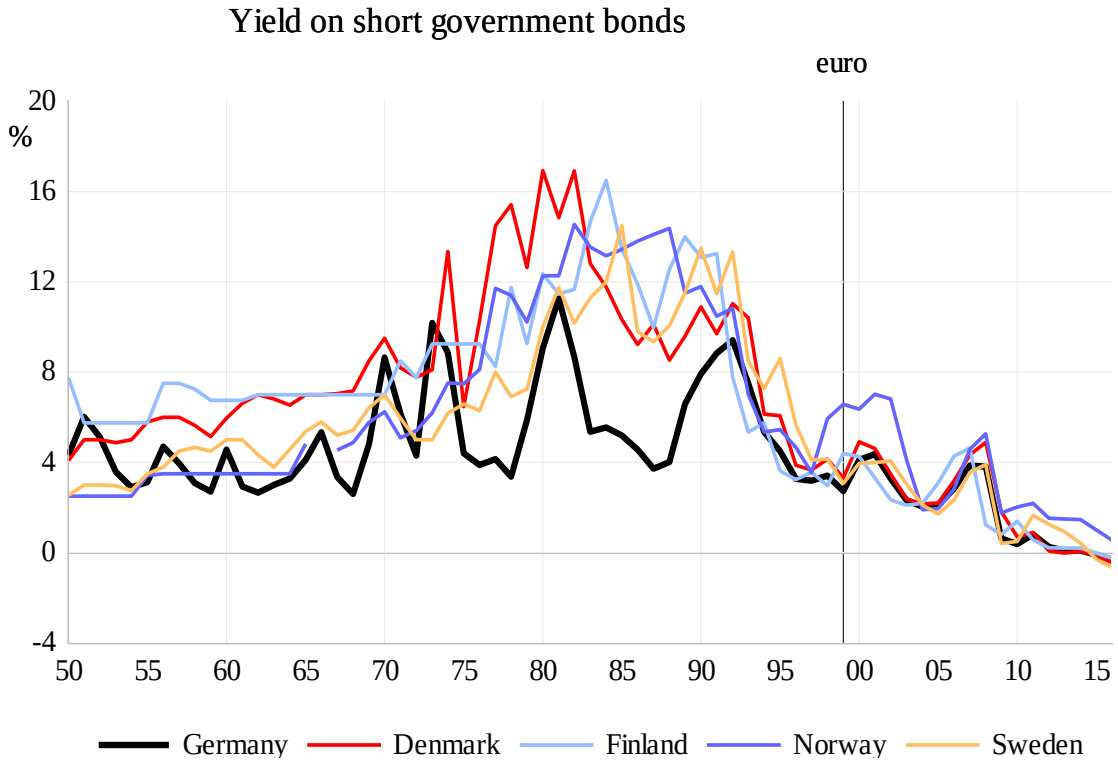


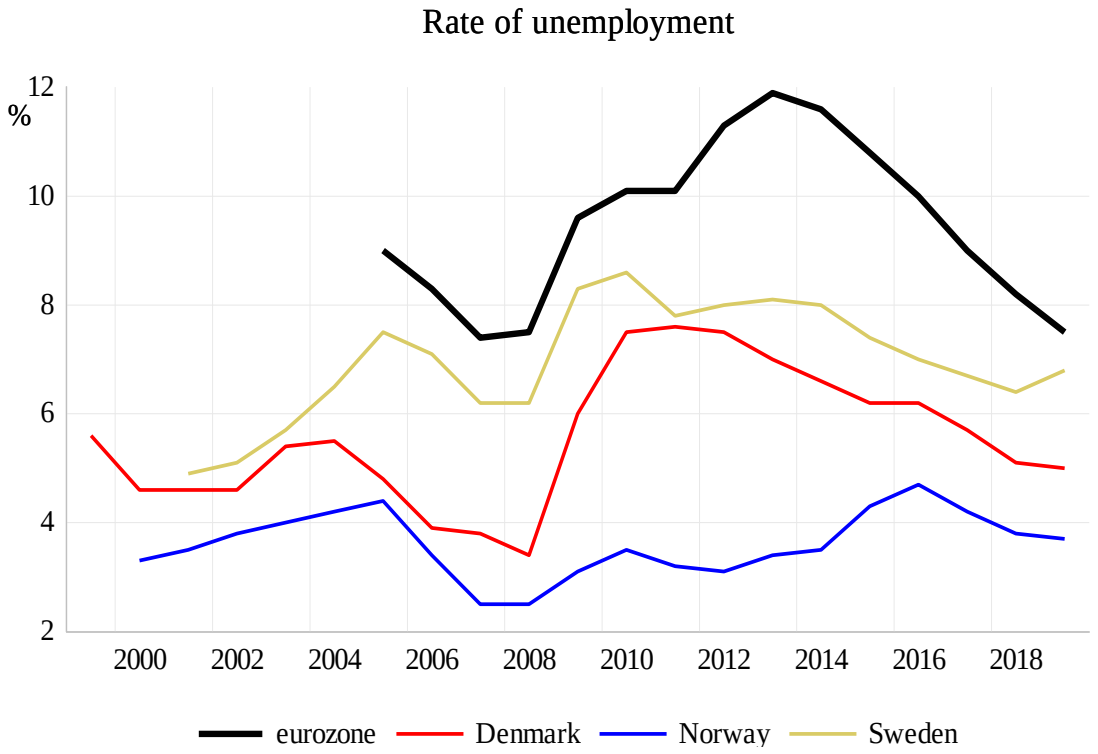
Sweden and Norway: floating exchange rates and inflation targeting,

Denmark: fixed exchange rates, and

Finland: part of Eurozone.

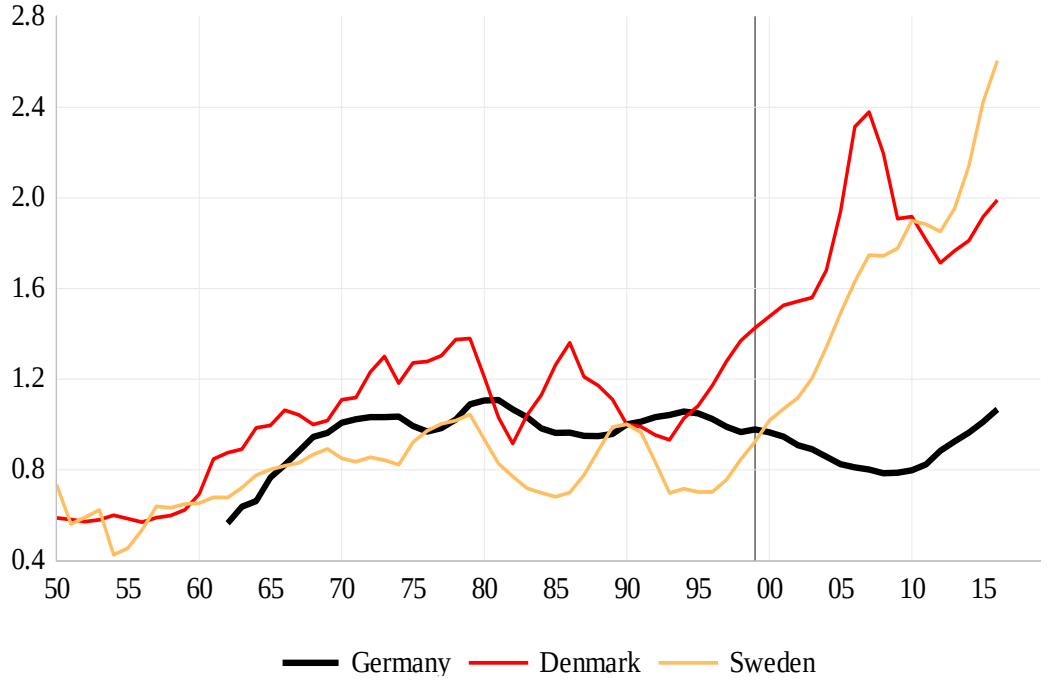
Monetary policy and the unemployment rate



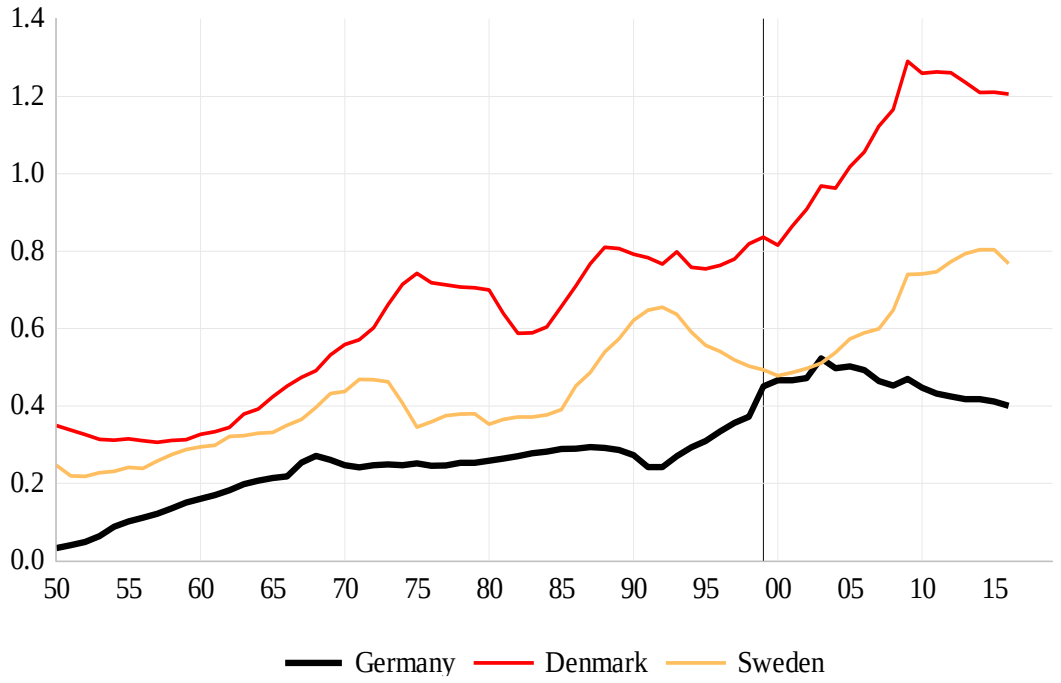


Consequences of low interest rates in Nordic countries: Rising mortgage debt and house prices

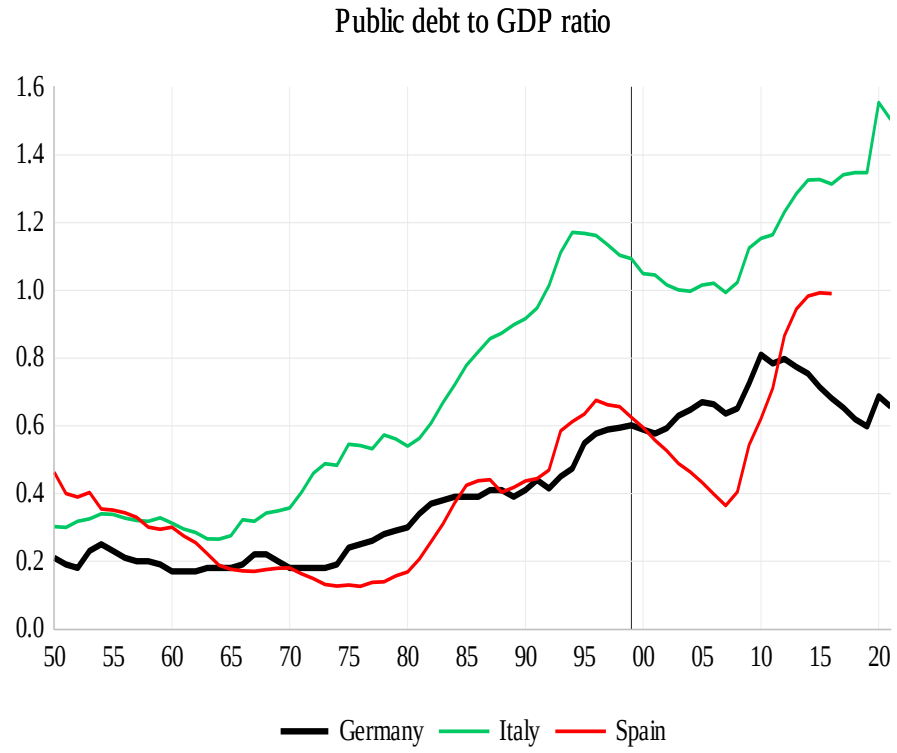
Real house prices

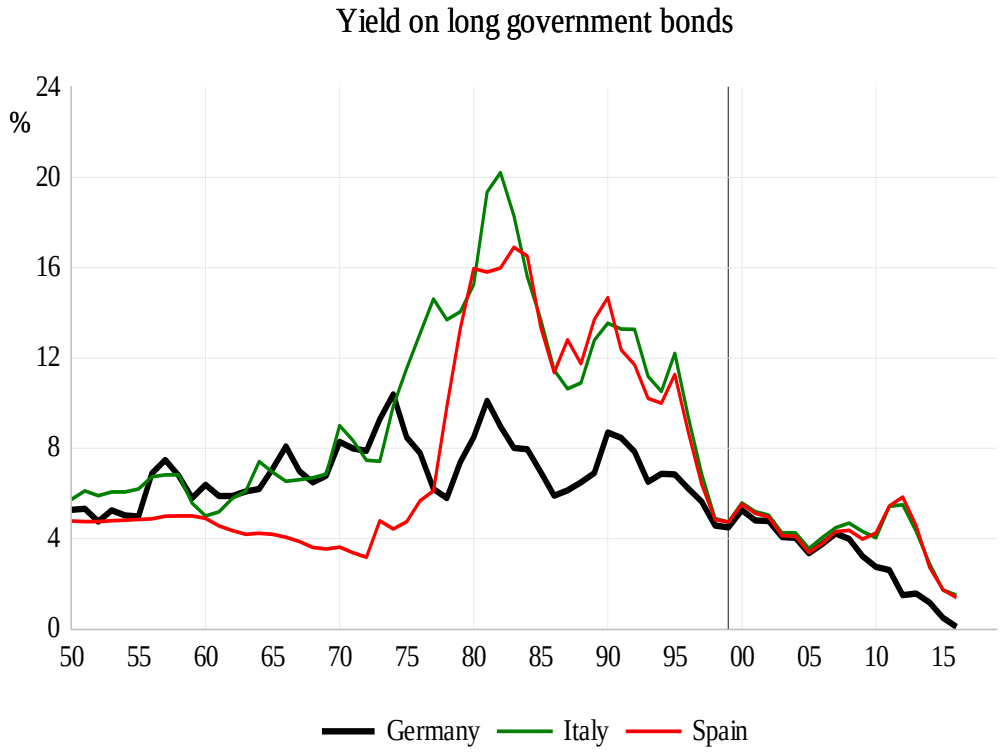


Mortgage debt (share of GDP)

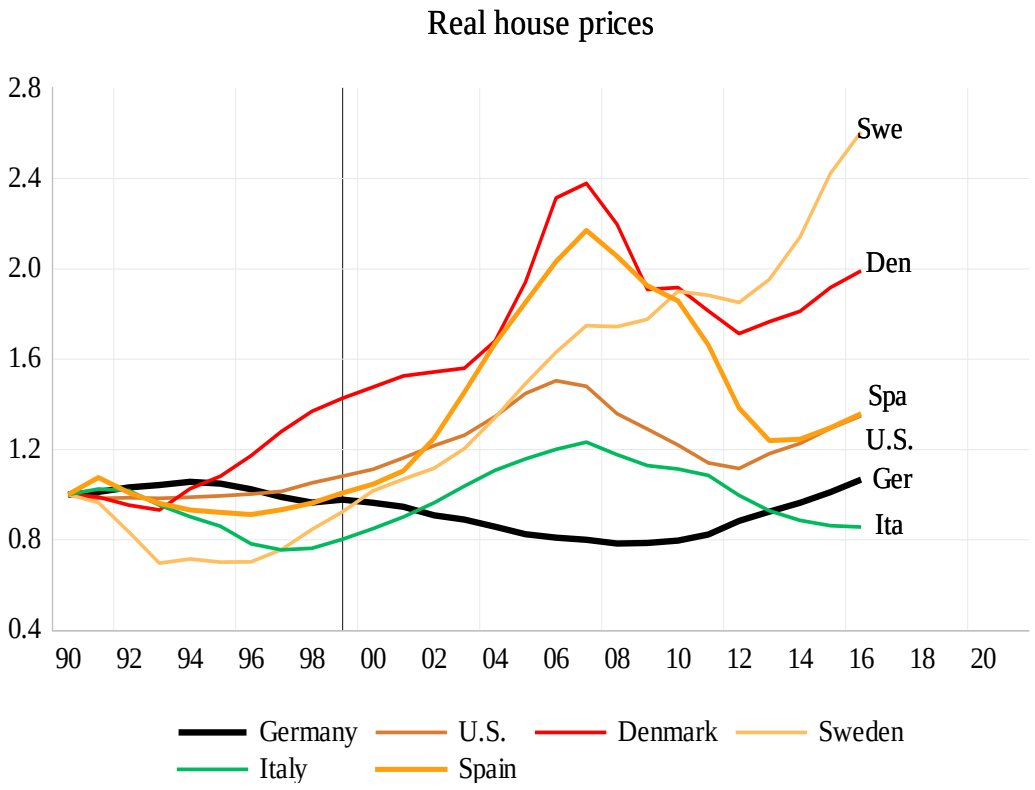


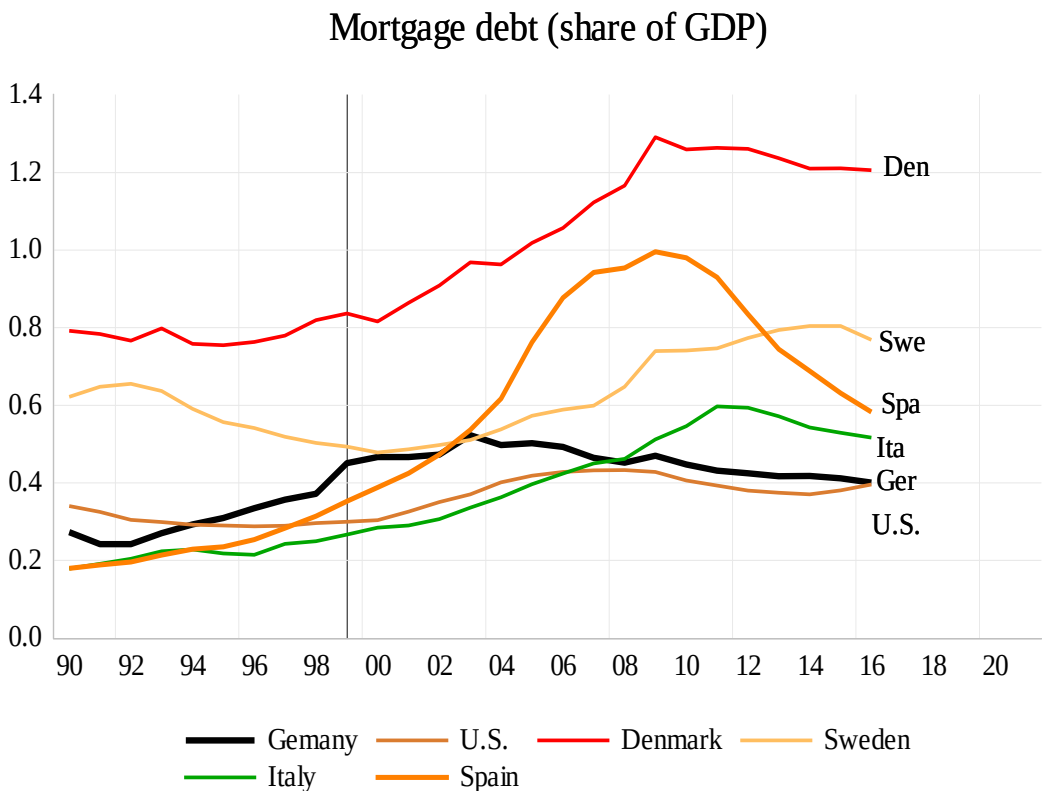
Consequences of low interest rates in periphery: Spain: House price bubble that burst in 2008, Italy: rising risk premium due to high level of debt





House prices and mortgage debt





Summary

- Most of the variation in long government interest rates over time and across countries can be explained by a “world rate of interest”.
- The U.S. is central in the post WWII era but after the advent of the euro there is convergence in long rates across Europe independent of exchange rate system.
- Low central bank interest rates and financial integration with the Eurozone in Denmark (fixed) and Sweden (floating) coincide with rising real house prices and mortgage debt.
- Within the Eurozone, low interest rates fueled a house price bubble in Spain (and Ireland).
- Independent monetary policy in small, open economies requires some form of capital controls.
- Choice between capital controls and macroprudential regulations?