



NÁRODNÁ BANKA SLOVENSKA
EUROSYSTÉM



Interest rates – what to expect once the dust settles?

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- What level of interest rates is considered “normal”, i.e. to be expected when an (advanced) economy is broadly in equilibrium ?
 - **2-2.5% real interest rate + 2% inflation = 4 - 4.5% short-term rate**
 - **Short-term interest rate + term premium of 1% = 5 – 5.5% long-term rate**
- Is it still reasonable to expect it to hold after the crisis, once the negative output gap is closed?

Agenda



- 1 Equilibrium (real) interest rate - definition
- 2 What does the market suggest ?
- 3 Model estimates
- 4 Conclusion

Several slides are based on Vítor Constâncio's speech entitled "The challenge of low real interest rates for monetary policy", 15 July 2016 .

Agenda



1 Equilibrium (real) interest rate - definition

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Equilibrium/neutral (real) rate – “ r^* ”



- R^* is defined as the (real) rate **prevailing when the economy is in equilibrium** (with “normal” levels of capacity utilisation and hence stable inflation, no excess desired savings or investments)
- **Central bank (CB) does not choose r^* - the rate depends on macro fundamentals**
- **R^* depends mainly on the motivation to save and invest.**
- The CB’s job is to gear policy rates towards the equilibrium rate. **Setting a policy rate lower than equilibrium should give investment an additional boost** (savings lower, i.e. consumption higher), **and start economic acceleration** (accompanied by rising inflation). This has not been particularly evident in recent years.

Equilibrium/neutral (real) rate – “ r^* ”



- **You cannot directly monitor r^* .** Two approaches:
 - A: see what the market thinks (consider longer-term rate, assuming the market gets the rate right on average in the longer-term)
 - B: model estimates (theory and econometrics)
- **There are many signs that r^* in the euro zone has fallen and could even be negative.**

Agenda



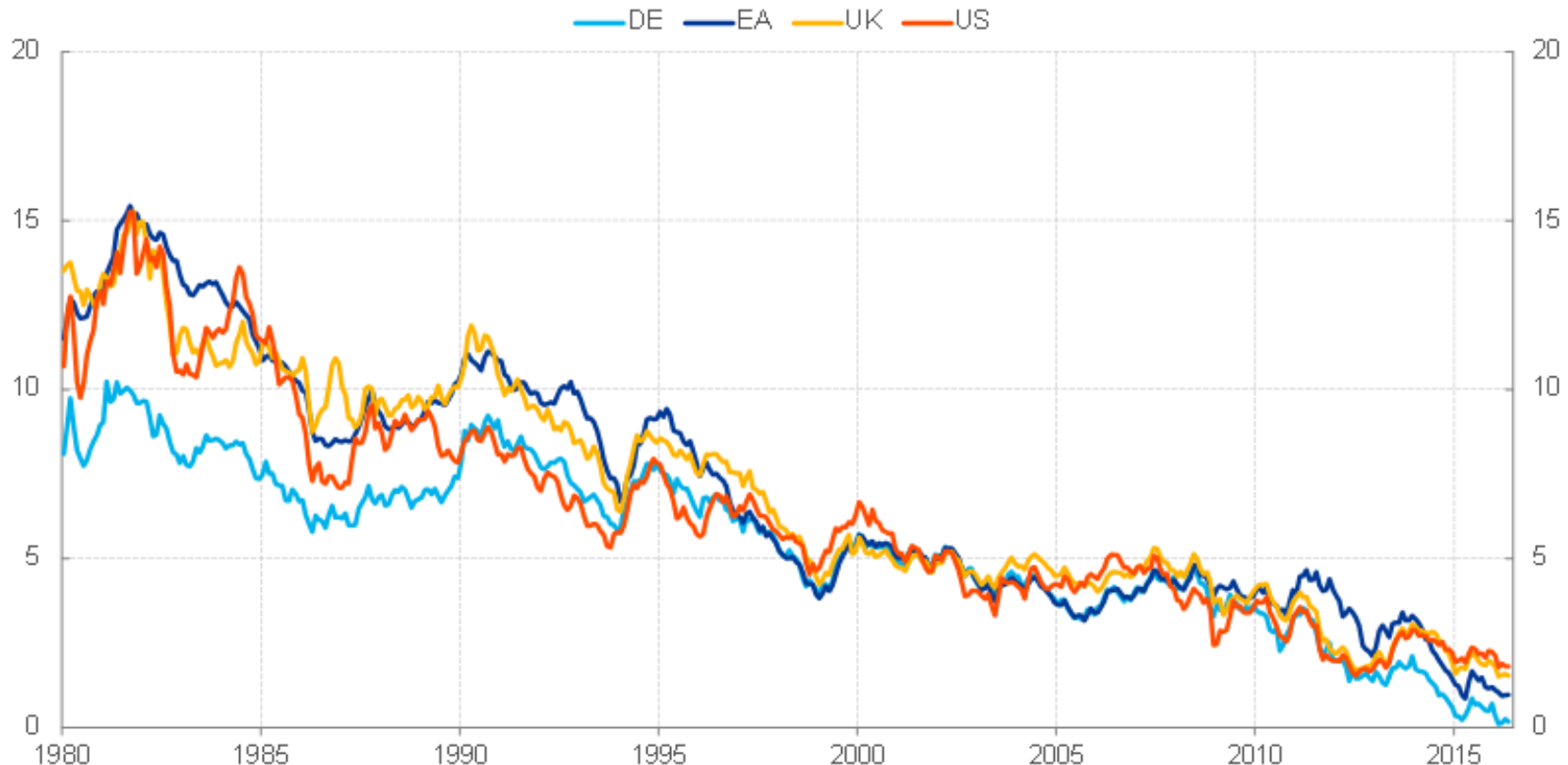
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Where is the crisis on the chart ?



- There is a clear longer-term trend of falling (nominal) interest rates
- **Interest rates are down 500 bp since 2000**
- 1/3 of advanced countries' public debt is facing negative rates

10Y government bonds



Fall of the longer-term (nominal) rate



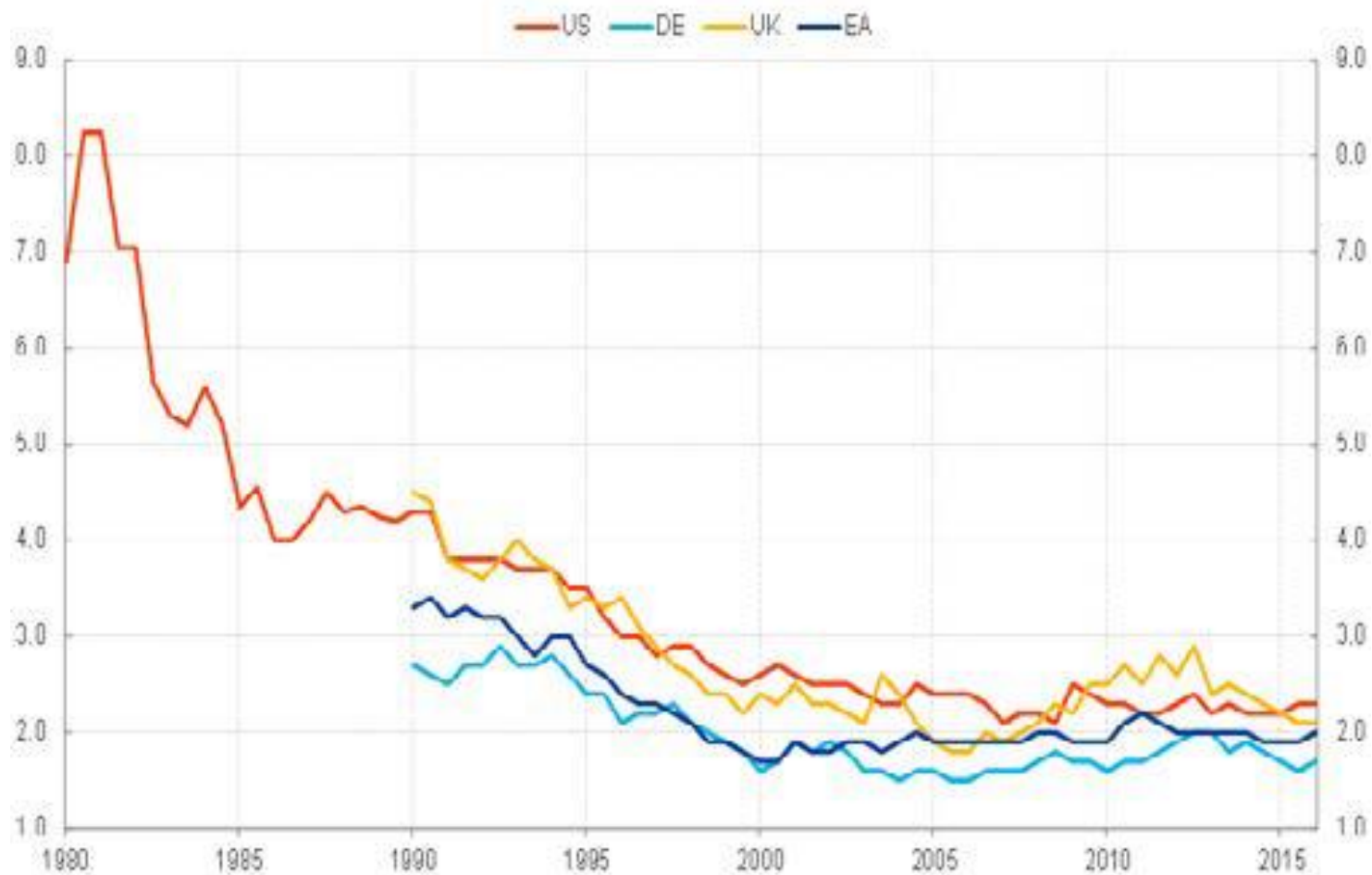
- The longer-term risk-free rate could fall due to:
 - **lower inflation expectations** (important mainly until 2000 since inflation expectations were subsequently much more stable)
 - **the nominal term premium**, consisting of:
 - the real term premium (in general, rolling over a short-term rate is preferable to committing to a specific long-term rate)
 - the inflation premium (if I have inflation fears, I will ask for extra compensation)
 - **expected movement in the real short-term rate** (underlying future growth prospects)

Inflation expectations stable since 2000



- So the fall in the longer-term rate since 2000 was due to something else.

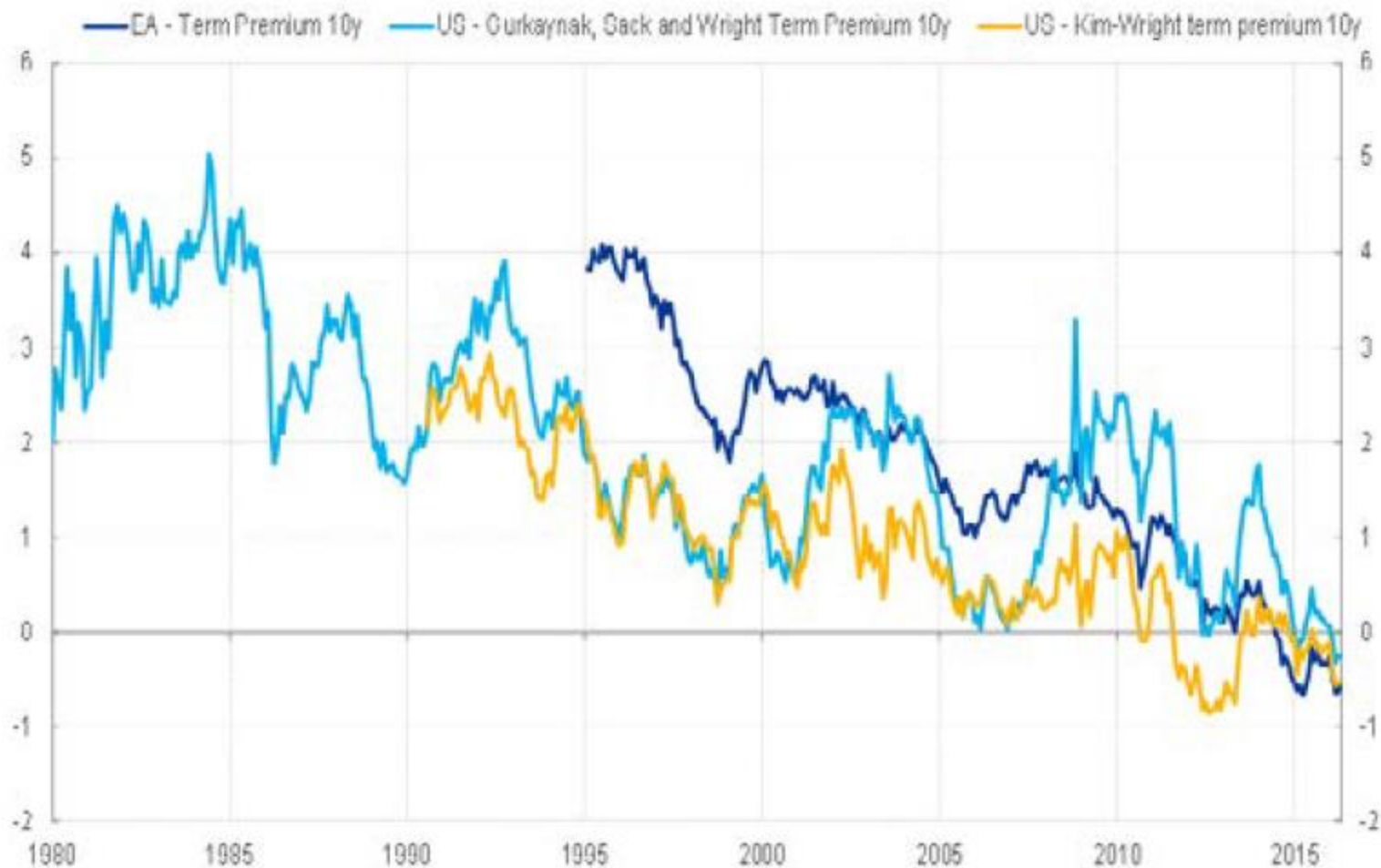
Longer-term inflation expectations



Nominal term premium



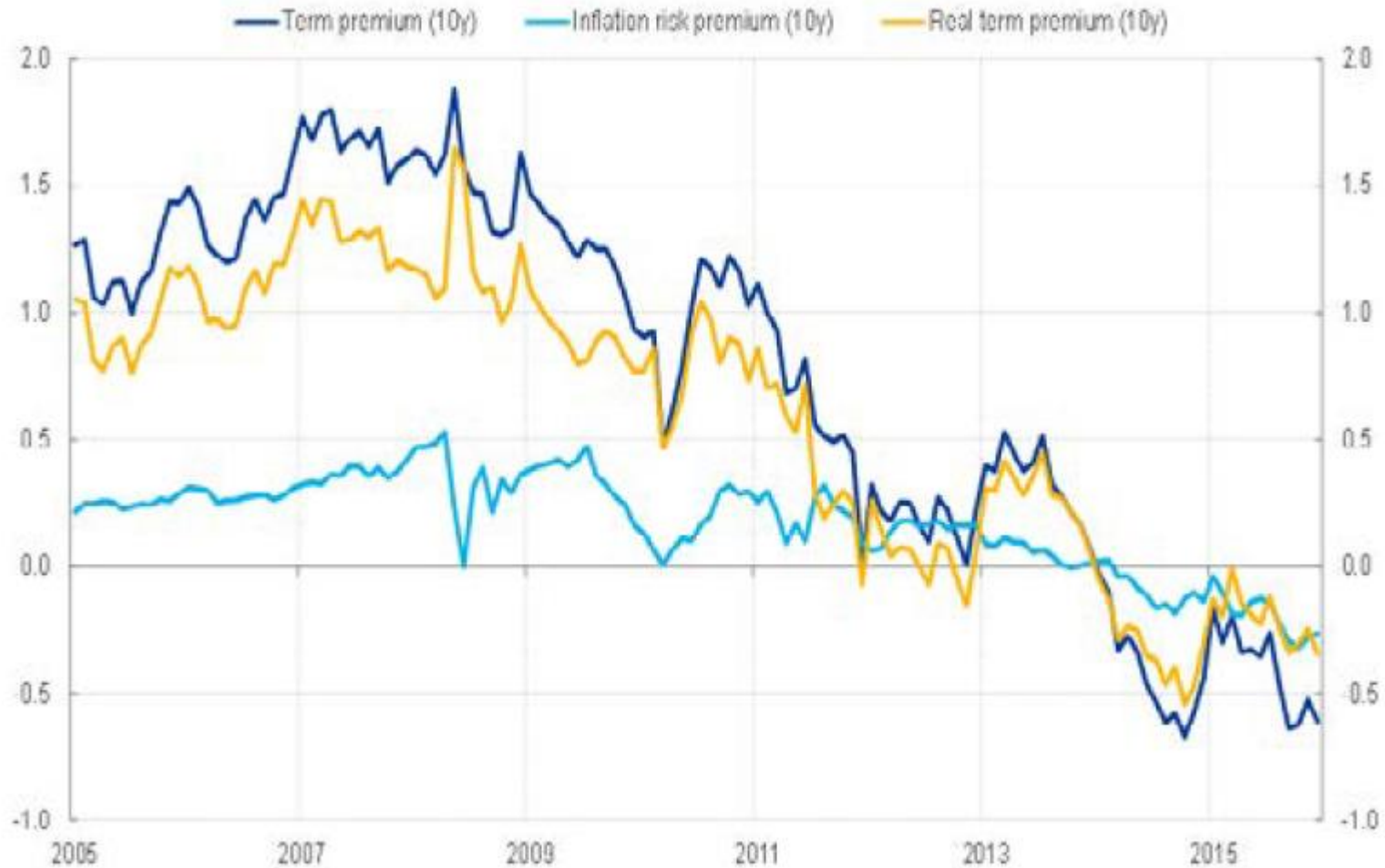
- Longer-term falling trend
- **Fall of 300 bp** since 2000!



Decomposing the EA nominal term premium



- **Both parts fell, but the real term premium fell more**



Decomposing the EA nominal term premium



- Negative real term premium:
 - If you expect risks to be skewed to one side (fearing further lowering of interest rates due to negative growth prospects), you will prefer to fix the longer-term rate than to roll over the short-term rate – as the longer-duration bond provides “insurance” against weak growth (bond prices rise)

- Negative inflation term premium:
 - As a fixed income investor, you are afraid not of inflation, but of deflation – so the longer-duration bond provides “insurance” against deflation

Decline in real term premium



- Possible reasons:
 - In the period from the 1997 Asian Crisis, CB demand for risk-free bonds rises dramatically (to increase foreign exchange reserves) – part of the “savings glut”
 - China enters world economy with a population of 1 billion and a savings rate of 40% ...
 - This demand is partially and temporarily saturated by asset-backed securities. These securities lose their risk-free status during the financial crisis.
 - Subsequently, some EA governments also lose their risk-free status.
 - In addition, banking regulation tightens, requiring greater holdings of risk-free assets
 - And the ECB starts QE in March 2015

According to one estimate, the global supply of risk-free assets has almost halved, from \$20 trn in 2007 to \$12 trn

Expected short-term (real) rate



- **EA growth prospects have fallen by 100 bp**
- This has pushed down expectations of short-term interest rate into the future



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Modelling the equilibrium/neutral (real) rate



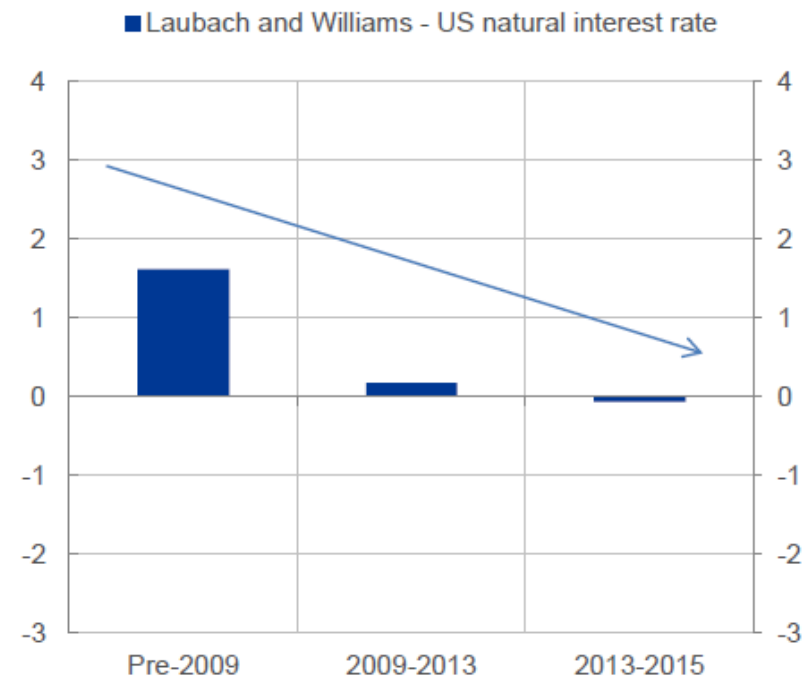
- **R* falls if :**
 - **The motivation to invest falls**, owing, for example, to:
 - falling productivity
 - falling population (i.e. market size)
 - a re-orientation of the economy towards services (services do not require large physical investments)
 - a decline in the relative price of investment goods (per unit of consumption) – global industrial competition
 - **The motivation to save rises**, owing, for example, to:
 - pensions being drawn over a longer period
 - baby boomers saving more as they reach middle-age
 - Income inequality – rising incomes of higher income groups (they save more)Desired savings/investment decisions could explain 300bp fall
 - **Weaker growth prospects** (100bp fall)

Different estimates of the equilibrium (real) rate



ECB: **Real equilibrium rate now negative** (so nominal rate should not go much above 2%)

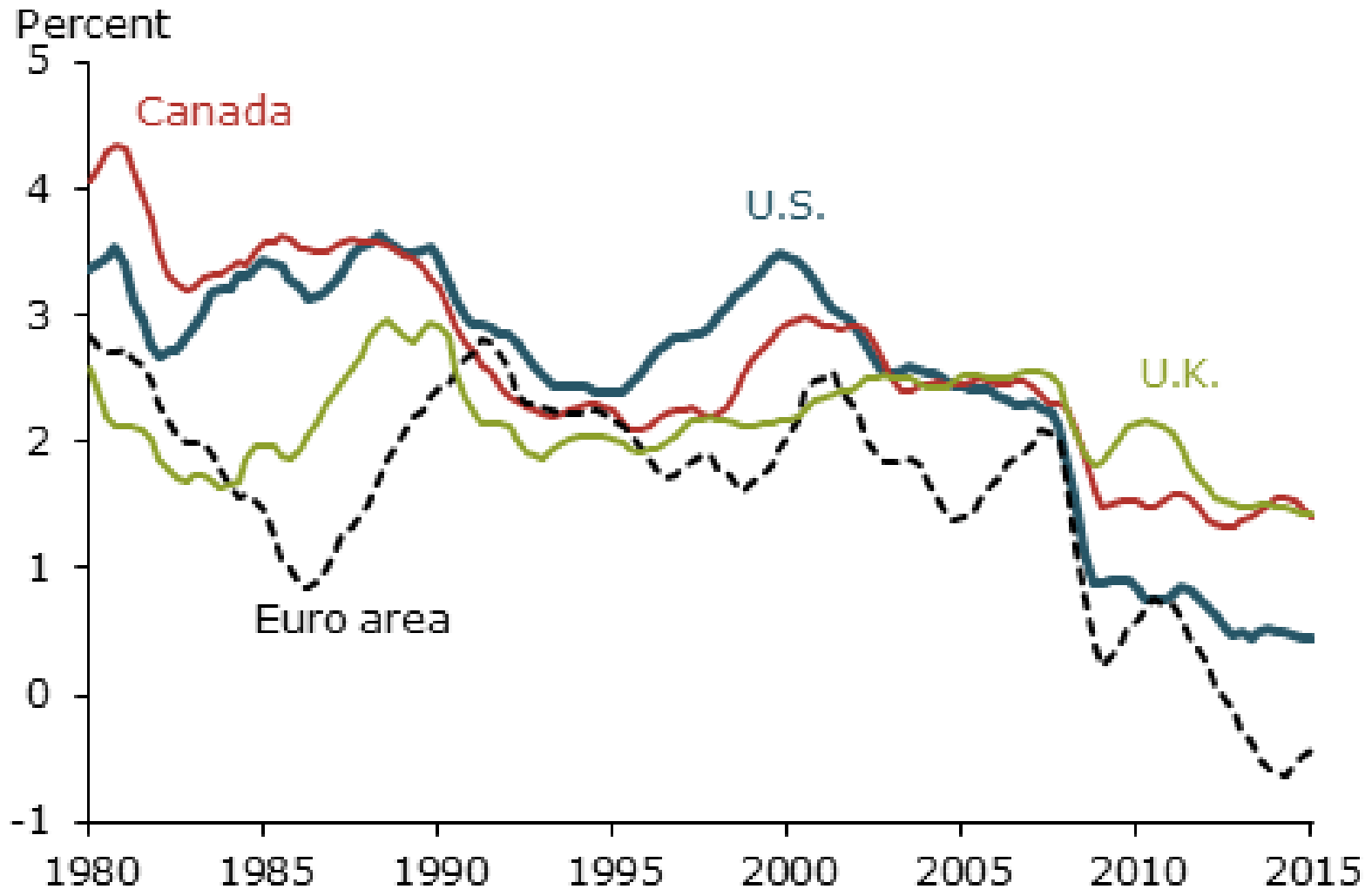
Interval estimate for EA is wide: from -2% to 0%



Other international estimates (Fed)



In the US, r^* at circa +0.5 %; **in the EA at circa -0.5 %** (Williams).
UK and Canada fare better



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Assumption: US r^* rises to 1 % (Yellen, Jackson Hole 2016); so assume r^* between 0.5 – 1.5%

- Thus over the medium term, the **US** short-term rate should rise towards $(0.5 - 1.5) + 2\%$ inflation target = **2.5-3.5%**

Assumption: EA r^* moves to the range -0.5 – 0.5% due to slightly better prospects (structural reforms, employment and migration) :

- Thus over the medium term, the **EA** short-term rate should rise towards $(-0.5 - 0.5) + 1.9\%$ inflation target = **1.4-2.4%**



Assumption: the equilibrium rate and term premium has fallen permanently below pre-crisis levels, assume r^* at 1% in the US; the equity risk premium is 3.5% (including a very small term premium)

- Thus over the medium term, the **asset valuation should be higher than** the “pre-crisis” **historical average**

For example, **stocks**:

Historically, US earnings yield 7.2%, implying a **P/E ratio of 13.9 (hist.avg)**

US r^* of 1% + 3.5% = earnings yield of 4.5%

P/E ratio = 1/ earnings yield, implying:

“equilibrium” P/E ratio of 22.2 in US