



NBP

Narodowy Bank Polski

Andrzej Rzońca, Member of Monetary Policy Committee

In search for appropriate lower bound

Konstanz Seminar on Monetary Theory and Policy, Reichenau, May 21st, 2015



Presentation outline

- 1 Monetary policy contribution to Poland's economic success
- 2 Challenges ahead of monetary policy in Poland
- 3 Secular stagnation or policy driven stagnation?
- 4 Effects of positive lower bound

1

Monetary policy contribution to Poland's economic success

Poland has a good press nowadays and enjoys upgrades in international ratings

Good International Press

The Economist

- The second Jagiellonian age
- Special report on Poland
- Summary of Polish transformation and achievements

FORTUNE

- The new world of business
- Poland pointed out as one of the top seven places to invest and do business
- The government is expected to continue its bid to liberalize the economy, encourage foreign investment, and develop national infrastructure

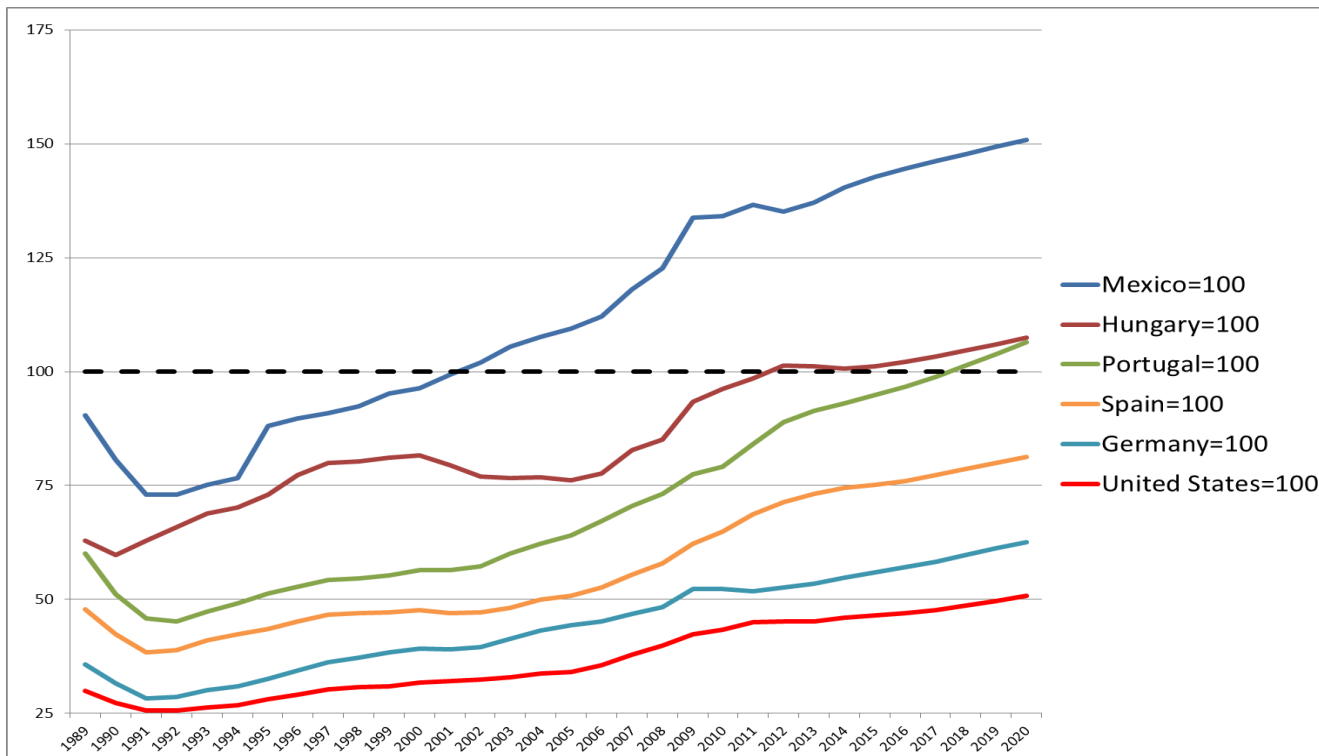
Upgrades in Ratings

STANDARD & POOR'S

- 6.02.2015: Standard & Poor's revised the outlook on Poland's A- credit rating to positive from stable
- Upgrade could come if incomes continue to approach those in wealthier EU countries

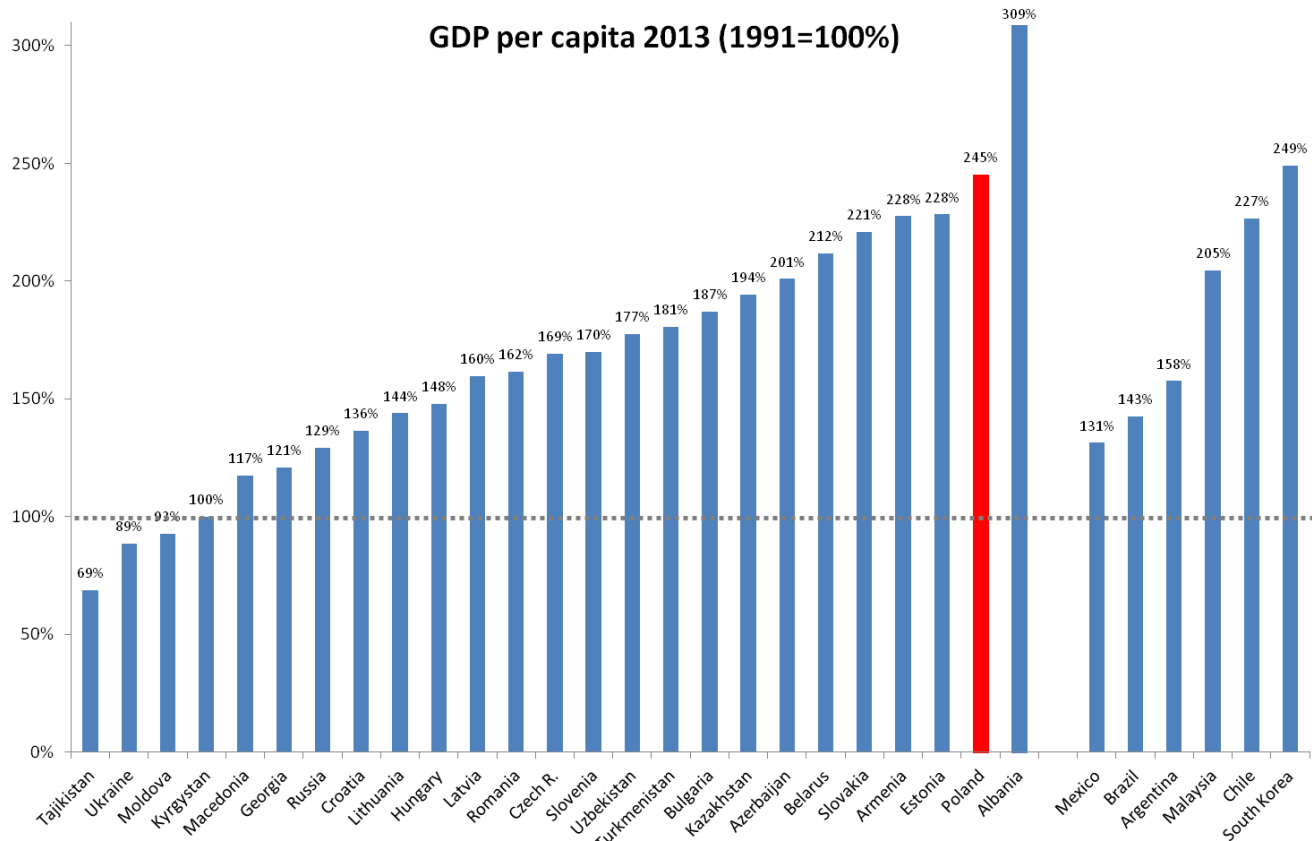
In the last two decades Poland experienced rapid economic convergence.

GDP per capita in Poland relative to other countries



Source: IMF WEO 2015

The convergence was among the fastest not only in the region, but in the whole World.



Source: The Conference Board Total Economy Database™, GDP per capita in 2013 US\$ (converted to 2013 price level with updated 2005 EKS PPPs)

The economic success was enjoyed by many which is manifested by social development indicators performing even better than the economic ones.

Human Development Indicator

- UNDP's Human Development Index places Poland in the 39th place in the world
- This is above its 47th place in terms of GDP per capita alone
- The index takes into consideration: GDP per capita, school achievements and life expectancy

Education

- In OECD PISA ranking Poland's performance is outstanding:
 - 13th in math
 - 9th in science
 - 10th in reading
- In all of those subjects, Poland is ahead of the EU and OECD averages and ahead of countries such as Germany, UK and USA

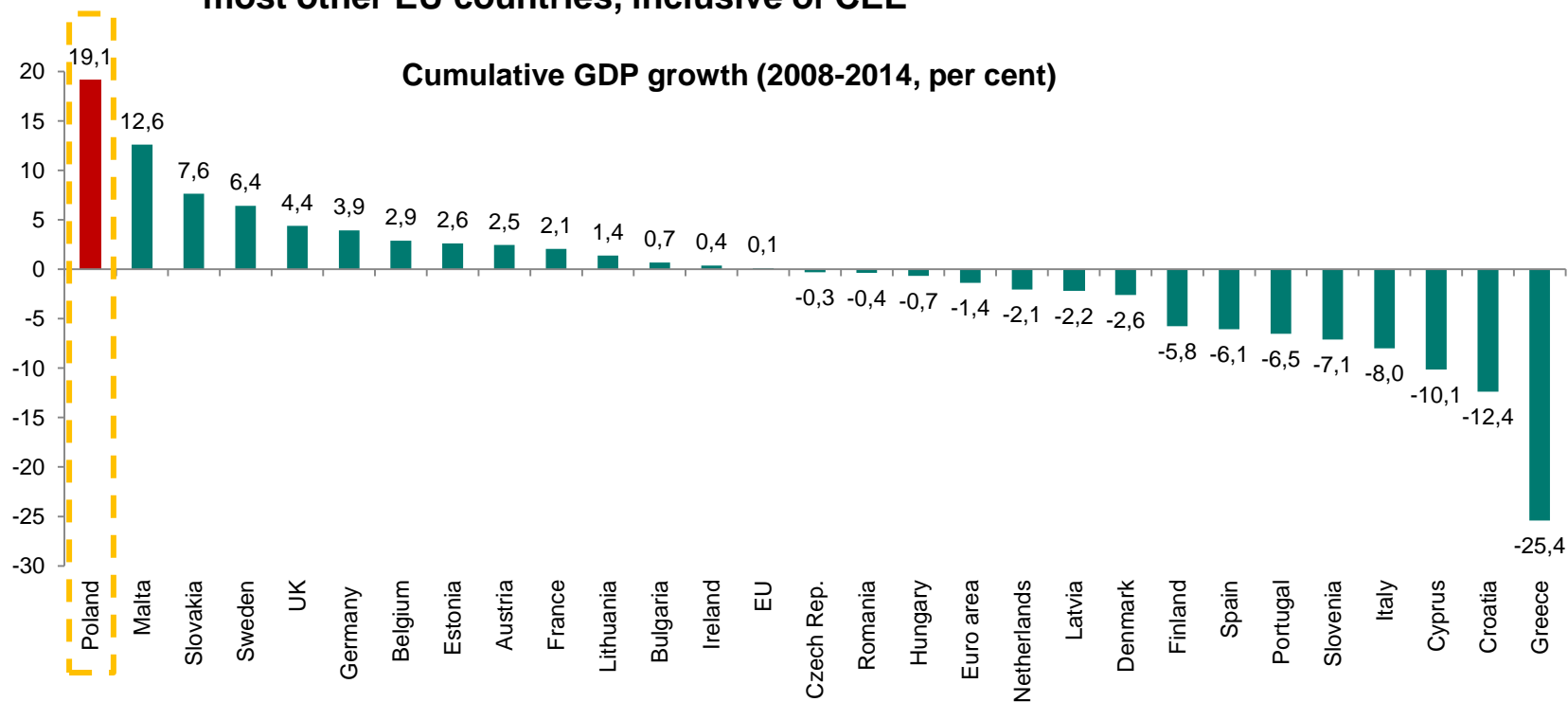
Moderate Inequality

- The shock therapy was believed to boost not only economic growth but also income inequalities
- The data show that since 1996 the Gini Index has stood at the same level (around 33% over the last 15 years)
- This is lower than the OECD and EU averages

Improving general happiness

- In the OECD Better Life Index Poland scored 24th among the 34 OECD countries
- This is better than the 29th place in terms of GDP per capita alone within the reference group
- The index takes into consideration: income, community, education, health, environment, civic engagement, and work life balance

Poland weathered relatively smoothly through the crisis in stark contrast with most other EU countries, inclusive of CEE

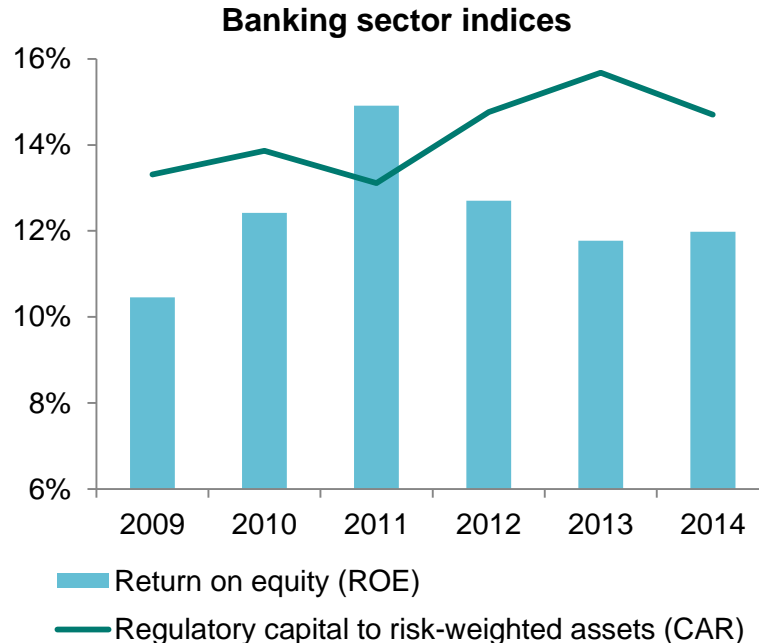


Source: Eurostat.

The global financial crisis notwithstanding, the financial sector has remained stable in Poland

- The banking sector has remained **well capitalized, liquid, and profitable**
- **Major risk** to financial stability in the form of rapid expansion of FX lending **has been eliminated**

It is worth noting that currently profits from Polish subsidiaries constitute an important share of consolidated profits for some European banking groups

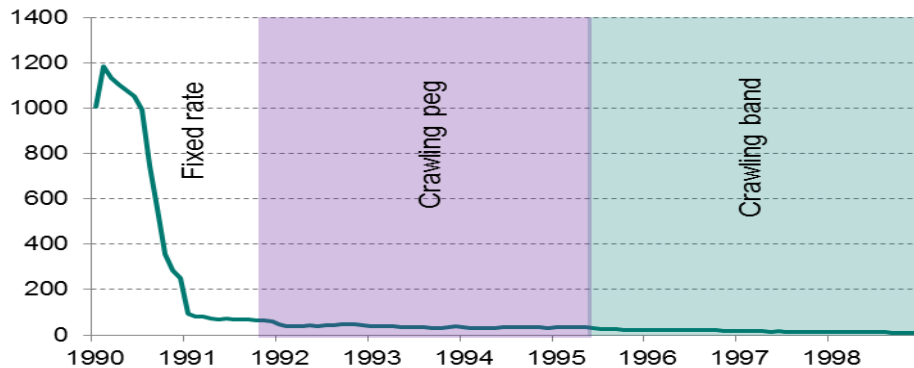


Source: Polish Financial Supervision Authority.

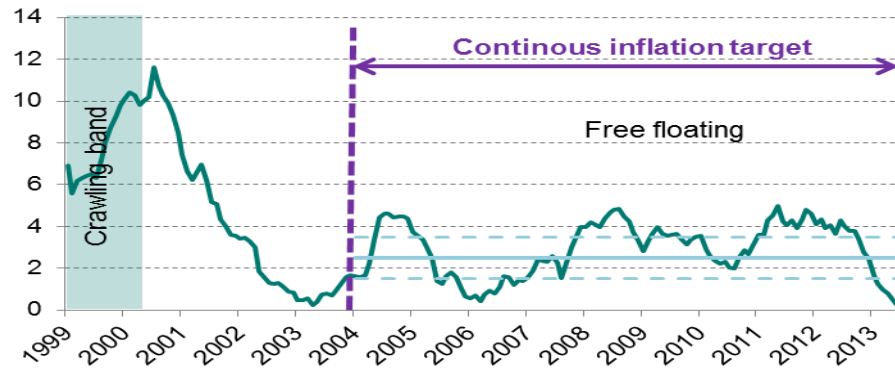
Since the beginning of transition Poland was experimenting with different monetary policy strategies

Annual CPI inflation in Poland, in %

1990-1998

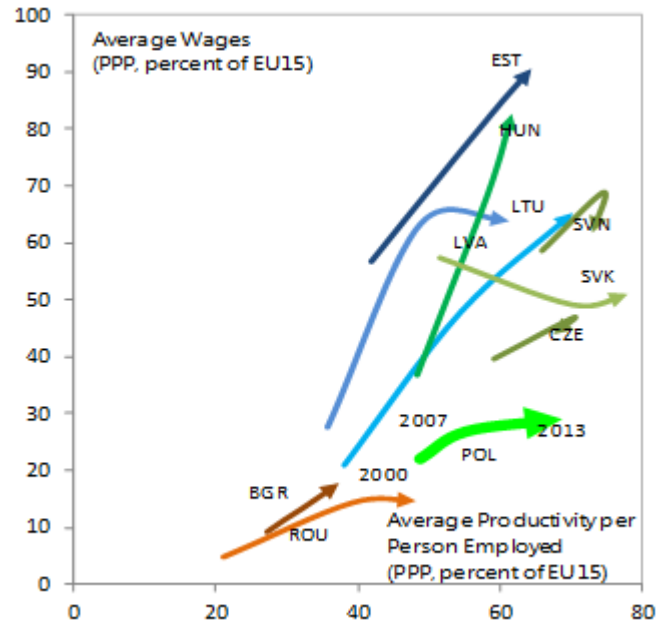


Direct inflation targeting - since 1999



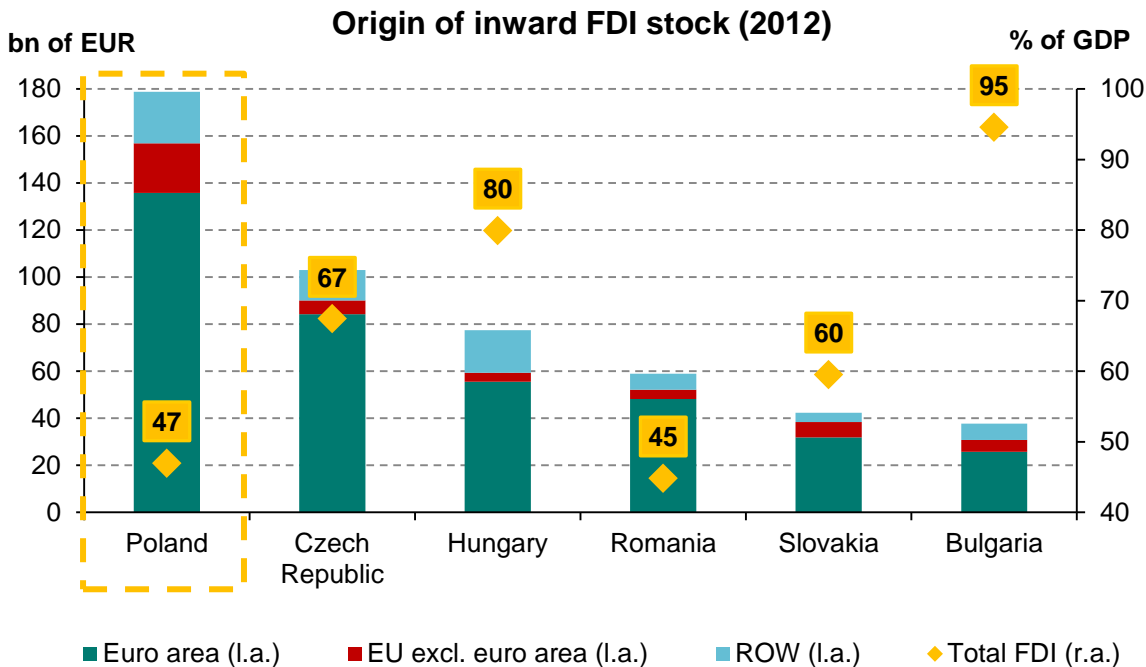
As wages in Poland were not growing as fast as productivity, Poland became extremely cost competitive

Labor Productivity and Wages

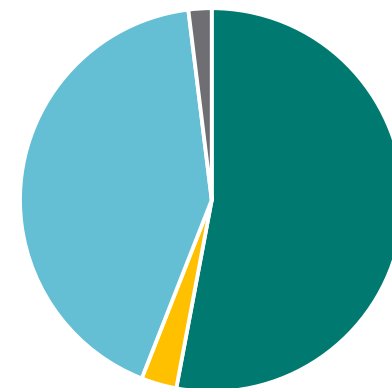


Source: IMF (2015).

Low labor costs relative to productivity attracted foreign capital, in particular to manufacturing



Inward FDI stock by economic activity (2013)

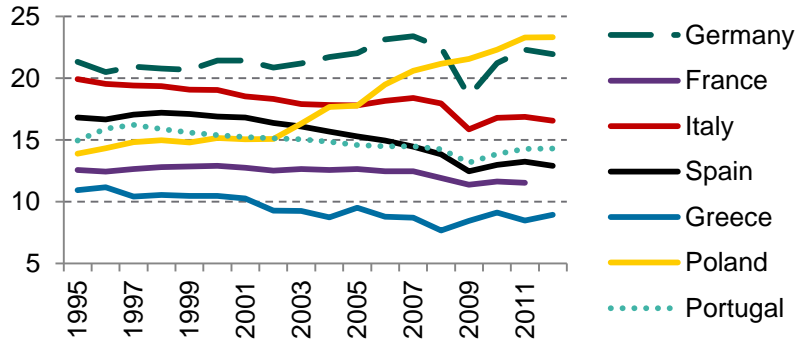


- Manufacturing
- Electricity, Gas, Steam and Air Conditioning Supply
- Total Services
- Agriculture, Forestry and Fishing

Source: Eurostat, NBP calculations.

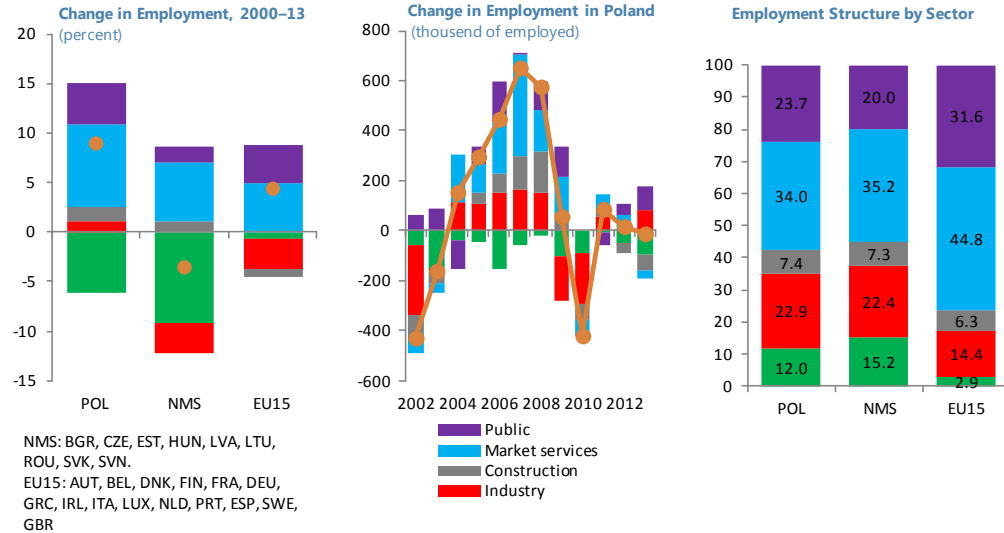
Poland avoided the deindustrialisation....

Share of manufacturing in total gross value added (%)



Source: Eurostat.

Employment Structure

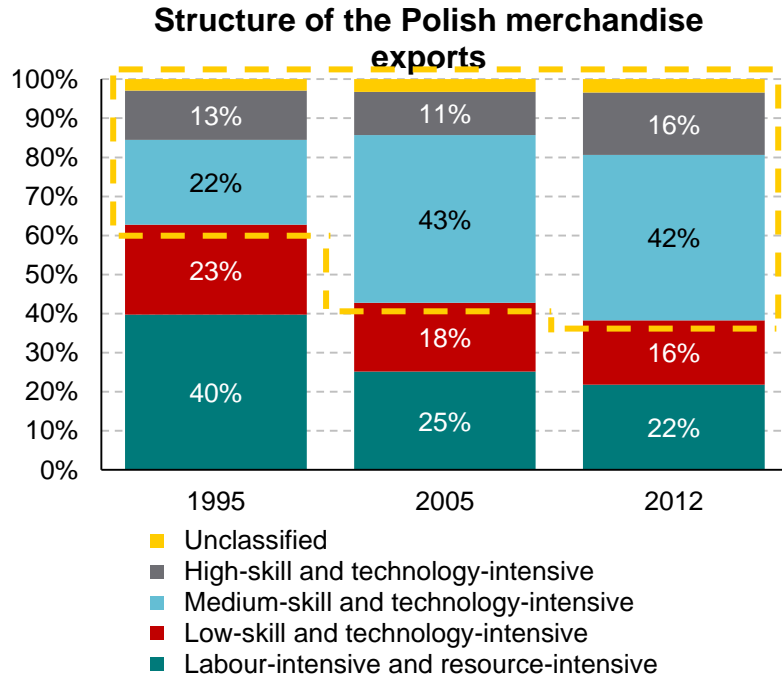


NMS: BGR, CZE, EST, HUN, LVA, LTU, ROU, SVK, SVN.
 EU15: AUT, BEL, DNK, FIN, FRA, DEU, GRC, IRL, ITA, LUX, NLD, PRT, ESP, SWE, GBR

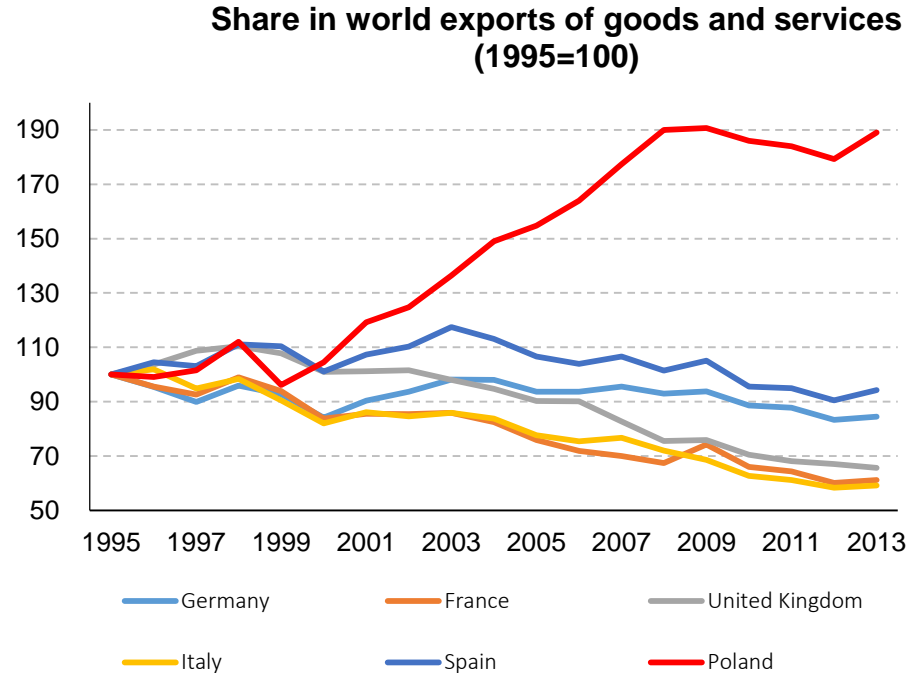
Source: Eurostat.

Source: IMF (2015).

...managed to change the structure of export and double the share in global export



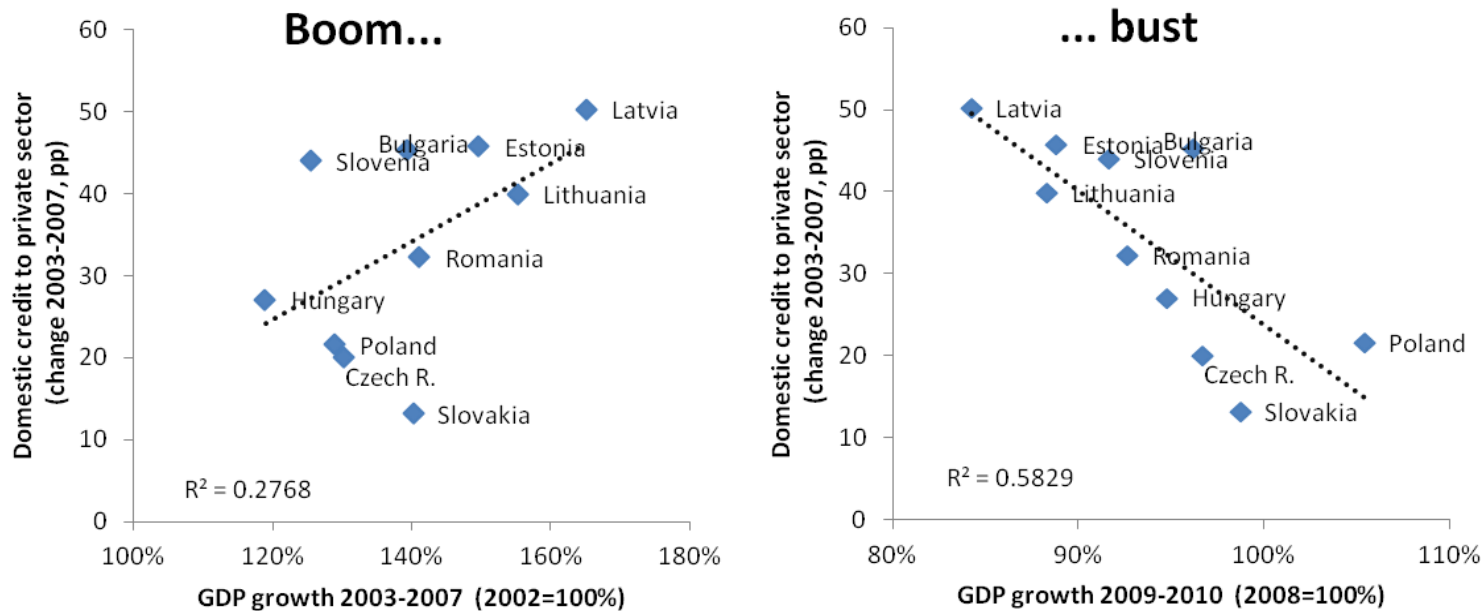
Source: UNCTAD data, NBP calculations.



Source: European Commission (2015).

The depth of the slump in CEE countries can be to large extent explained by the size of initial imbalances, in particular pre-crisis credit growth.

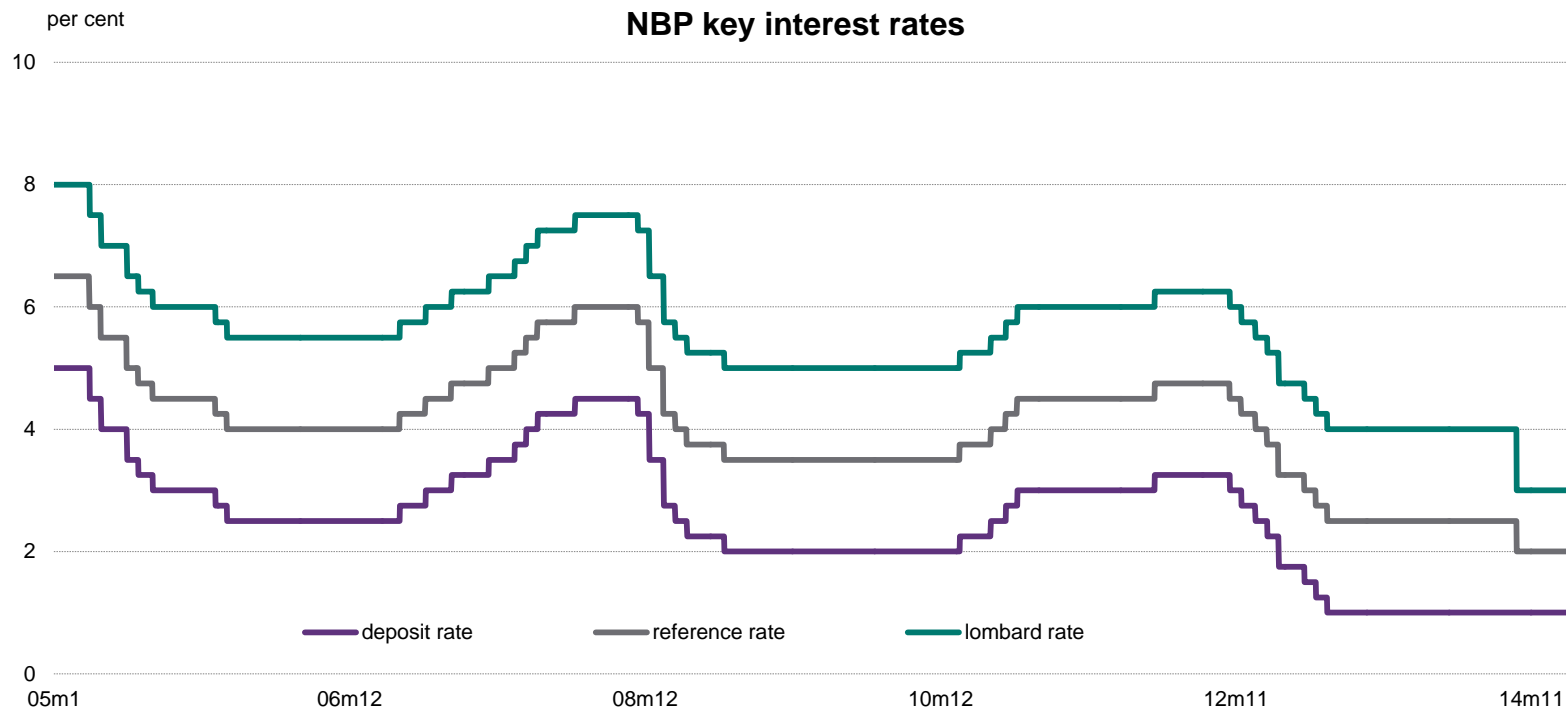
Cumulative GDP growth (in %) vs. change in domestic credit to private sector (in % of GDP)



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Challenges ahead of monetary policy in Poland

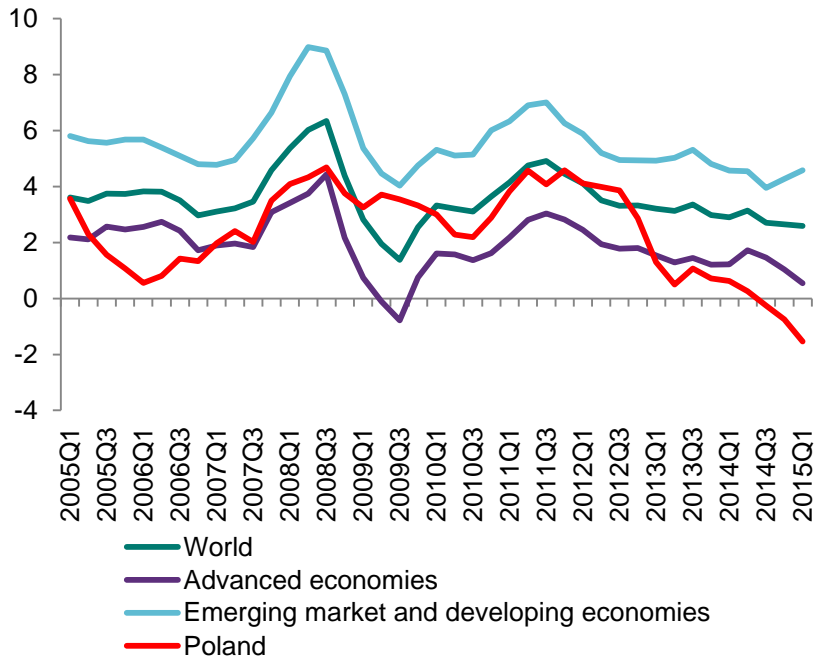
Interest rates in Poland are at historical lows



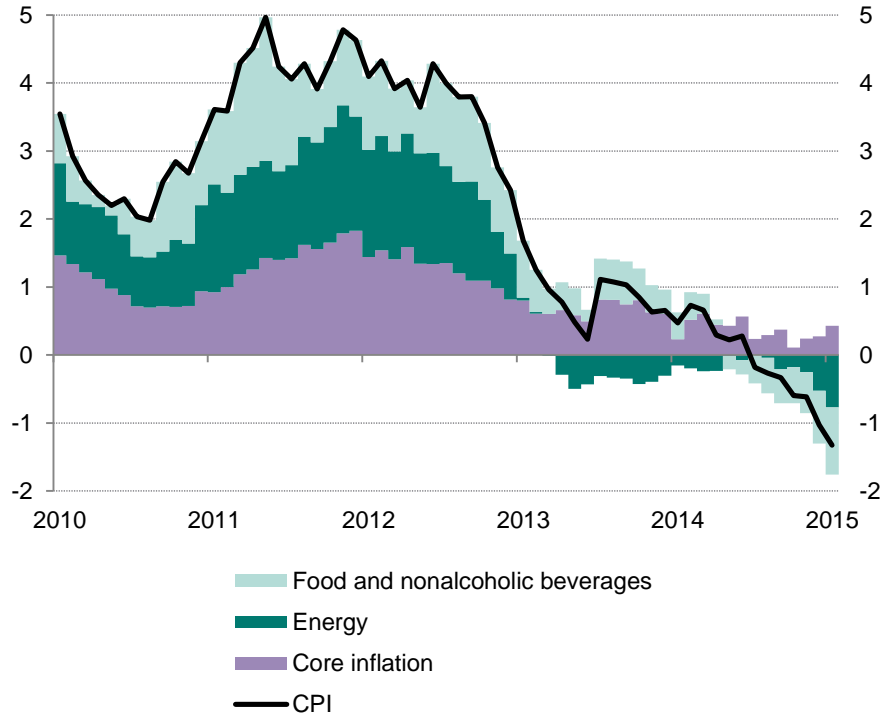
Source: NBP.

Despite this there is a deflation in Poland.

Consumer price inflation (% , y/y)



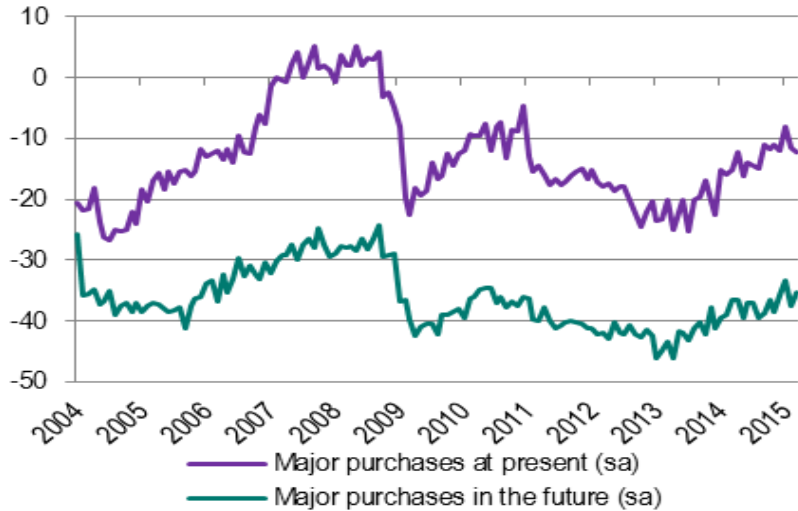
Inflation decomposition



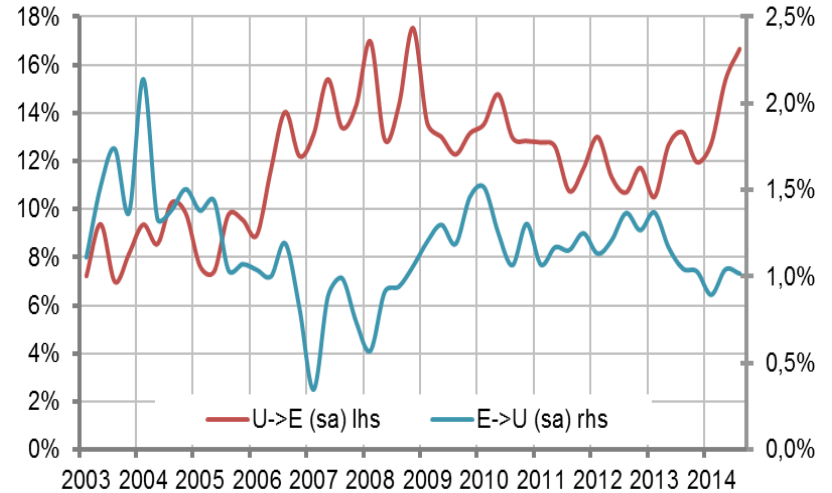
Source: CSO, IE NBP

However, consumer sentiment is improving driven by steadily growing employment and declining layoffs...

Percentage of households considering the current period and next year to be a good time for shopping

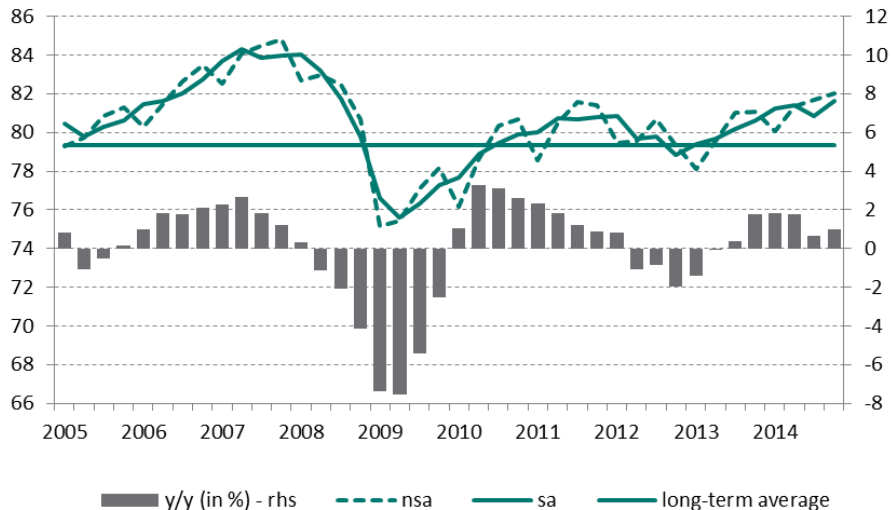


Flows to and out of employment

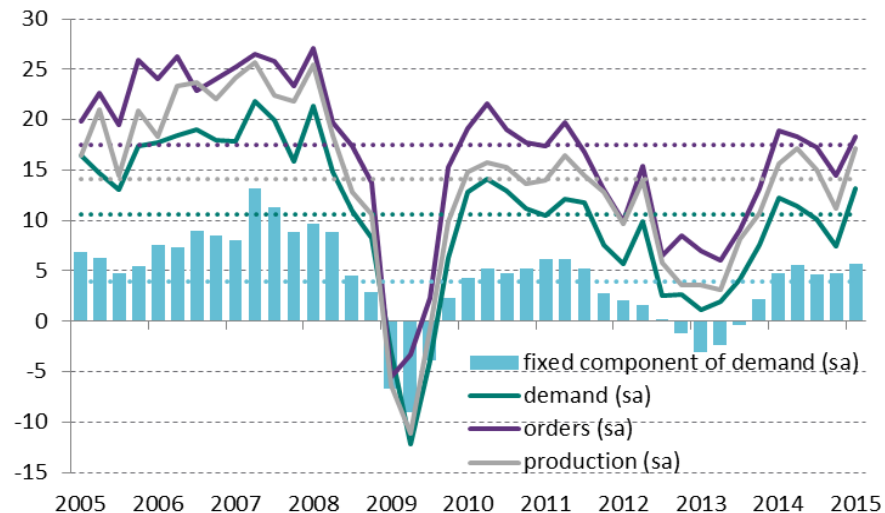


....and the corporate sector has good reasons to invest too

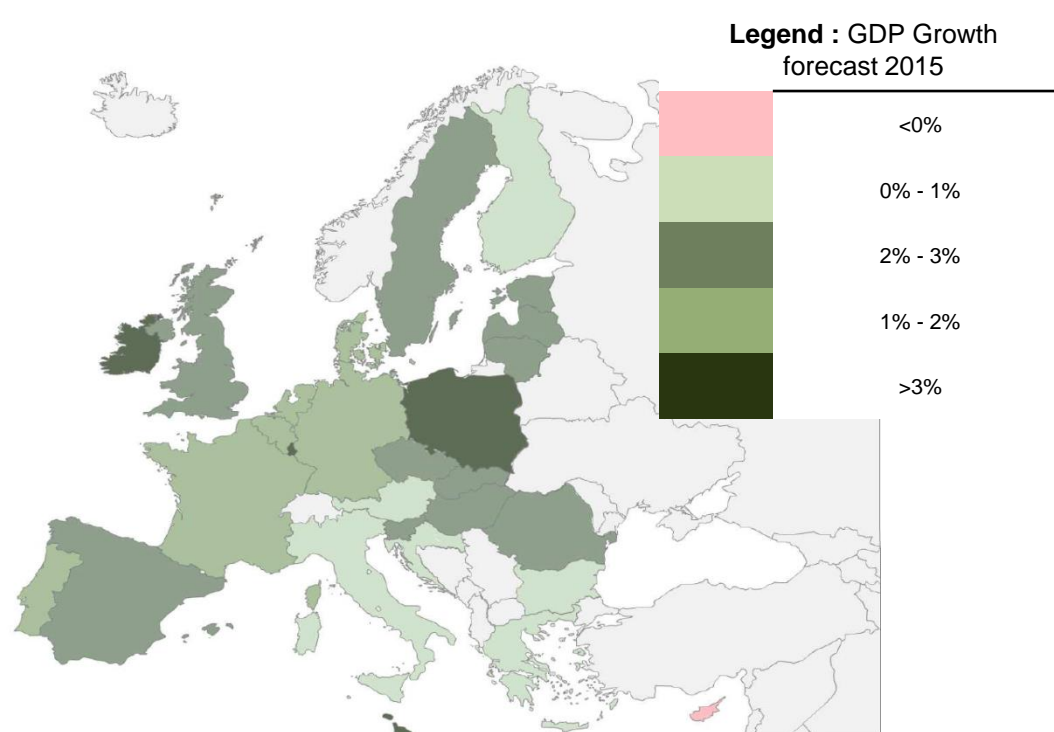
Capacity utilization



Forecast of demand, orders and production



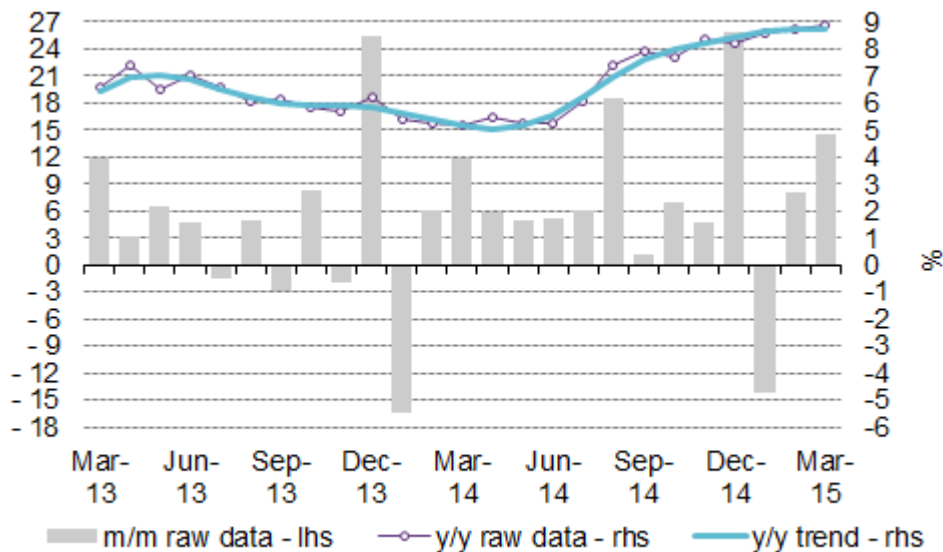
According to forecasts Poland is to remain one of the fastest growing economies in Europe



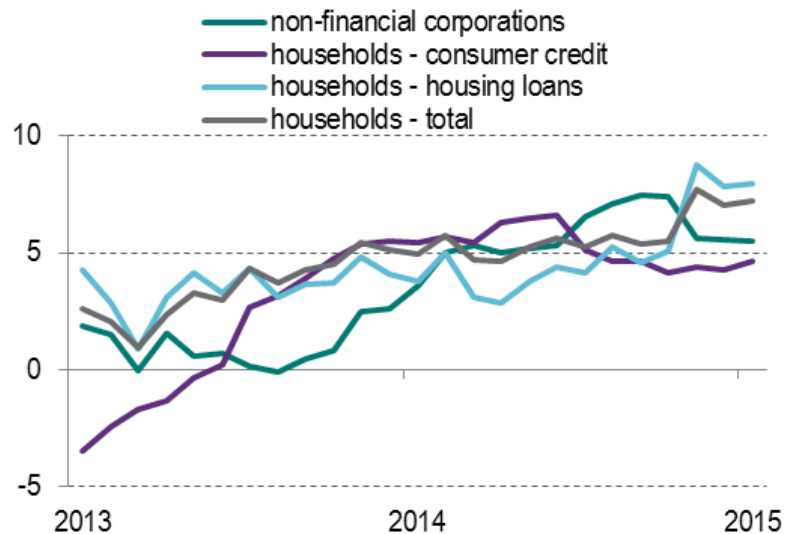
Source: Economic Commission.

Central bank has to be vigilant, as money supply is already growing by almost 10%...

Money supply growth

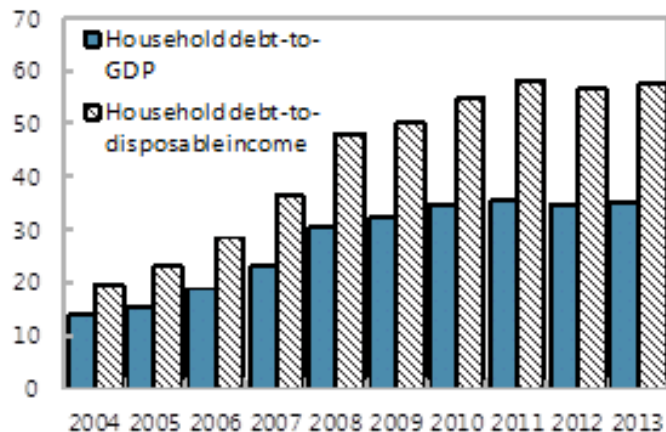


Credit growth

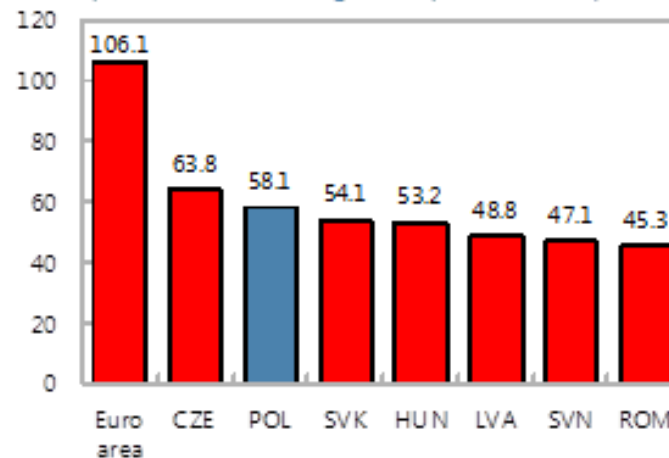


...while households' debt is already high both by historical standards and in comparison with the region...

Households' debt ratios (in %)

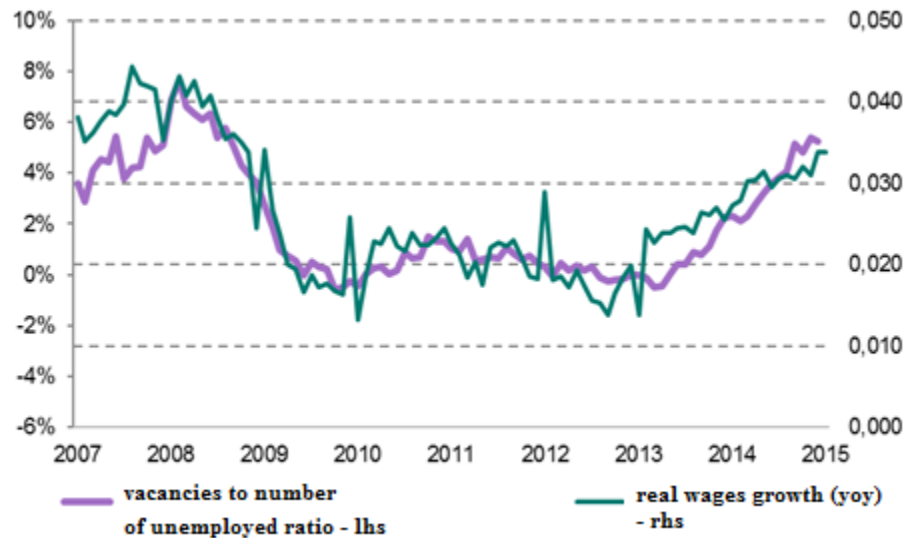


Households' debt in selected countries (in % of disposable income)

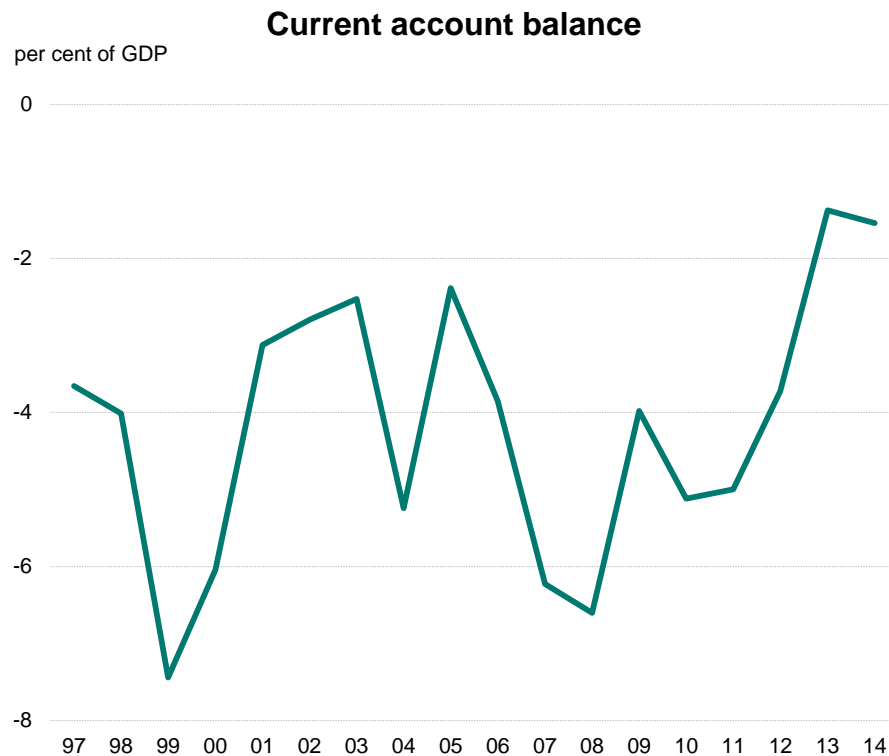


...and moderate nominal wage growth may blur tensions on labor market

Labor market tightness index vs. real wages' growth

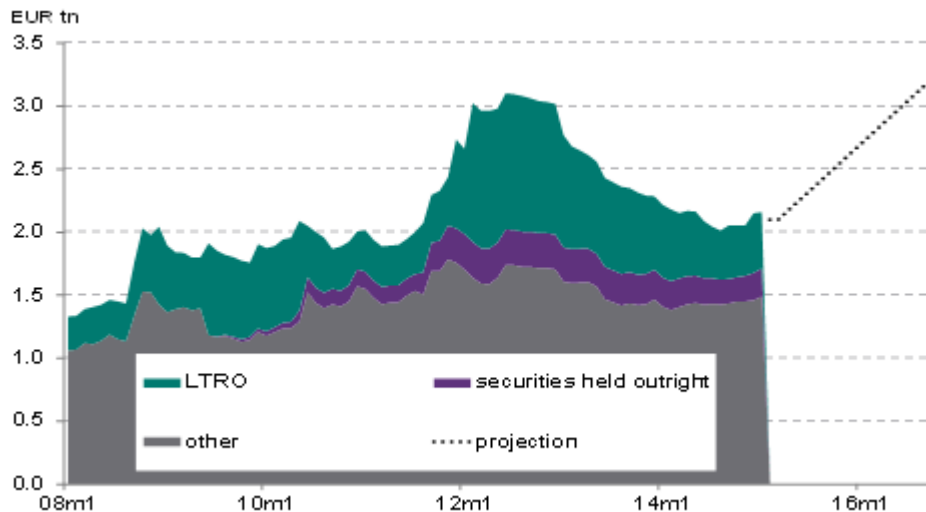


External imbalances have narrowed but largely due to improvement in terms of trade

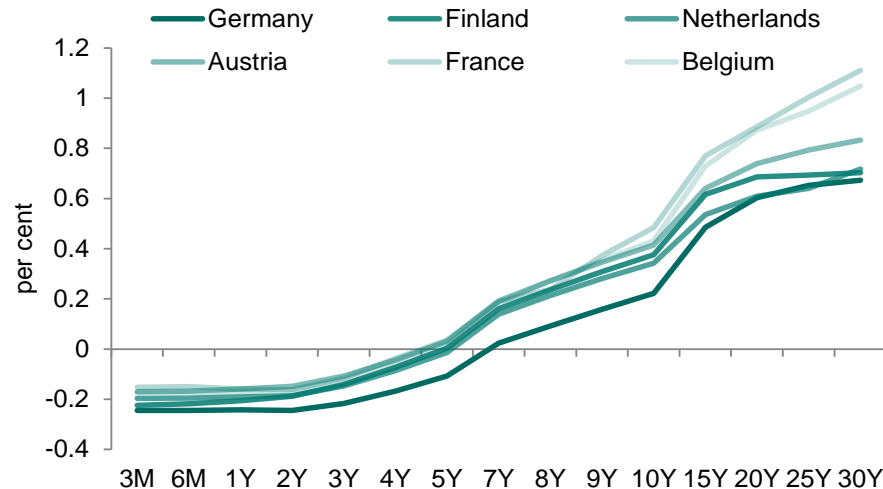


ECB has started QE and some yields on core sovereigns are negative

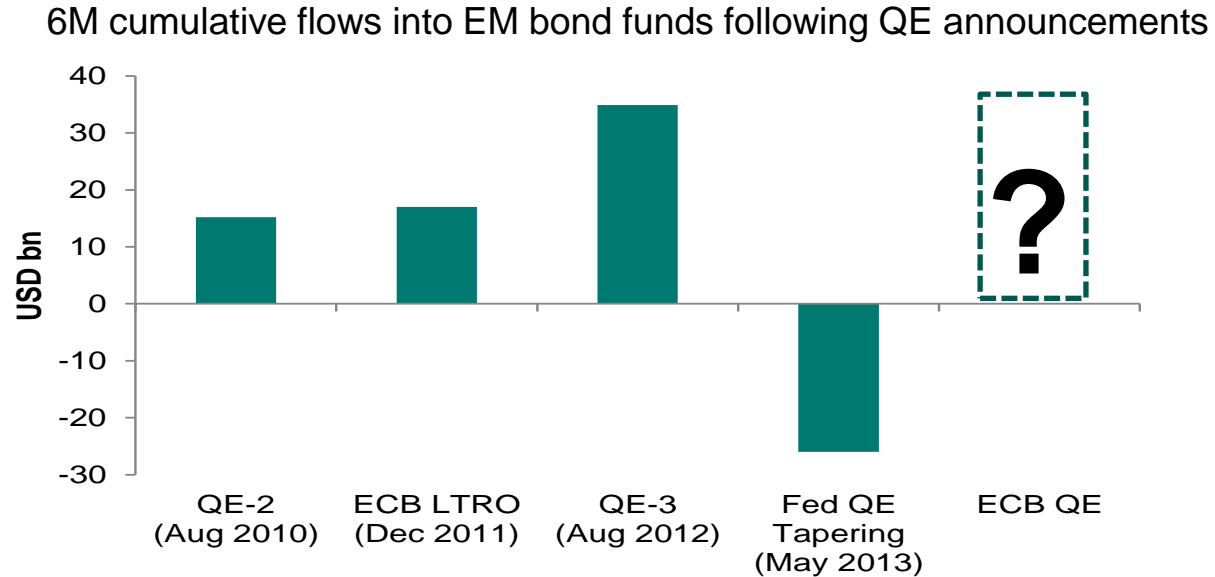
ECB balance sheet



Yield curves of selected euro area governments



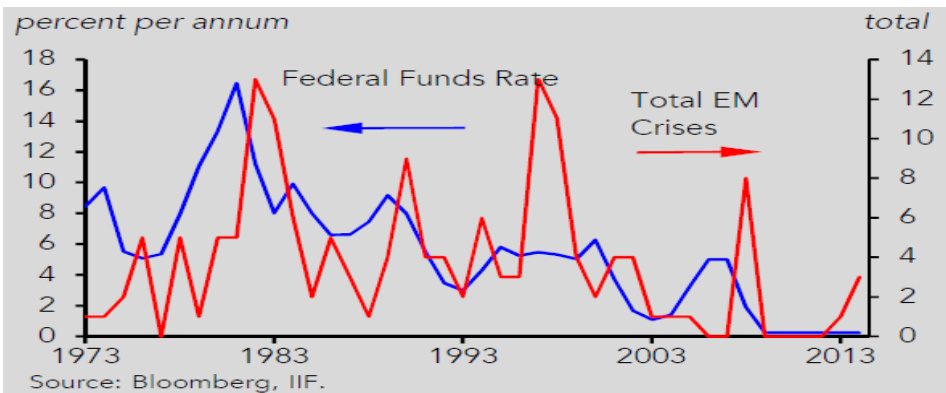
Previous rounds of quantitative easing resulted in considerable portfolio capital inflows into EM bonds



Source: EPFR Global, Barclays Capital

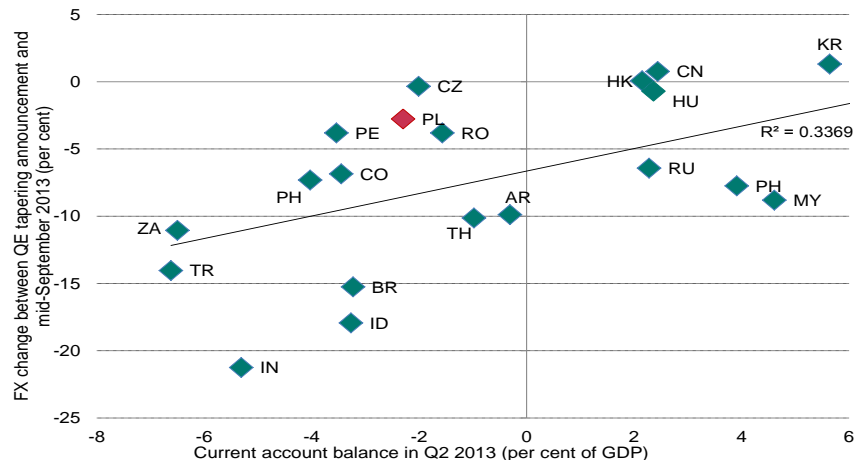
However, monetary tightening in the US may start very soon. Previous episodes of Fed tightening tended to produce instability in EM

US Federal Funds Rate and Number of EM crises (banking, currency, default)



Source: IIF (2015)

FX depreciation after “taper talk” in May 2013 and current account deficit in EM economies

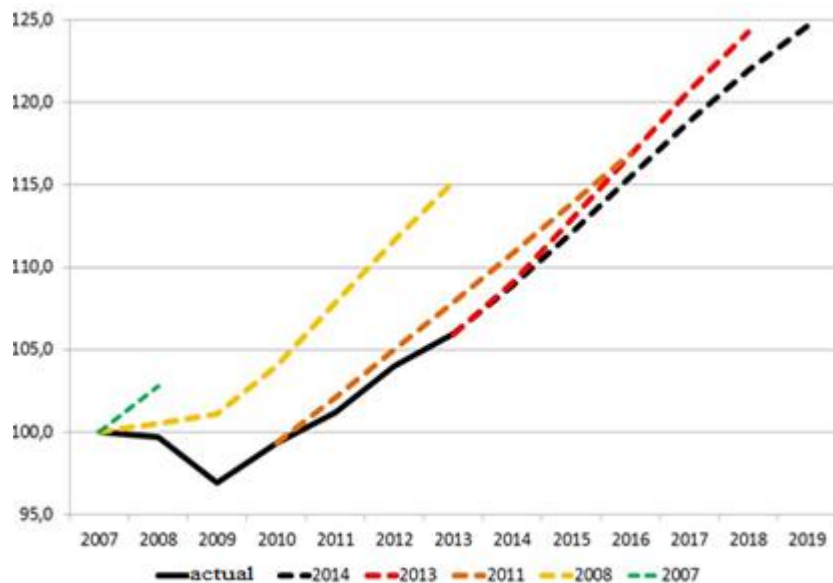


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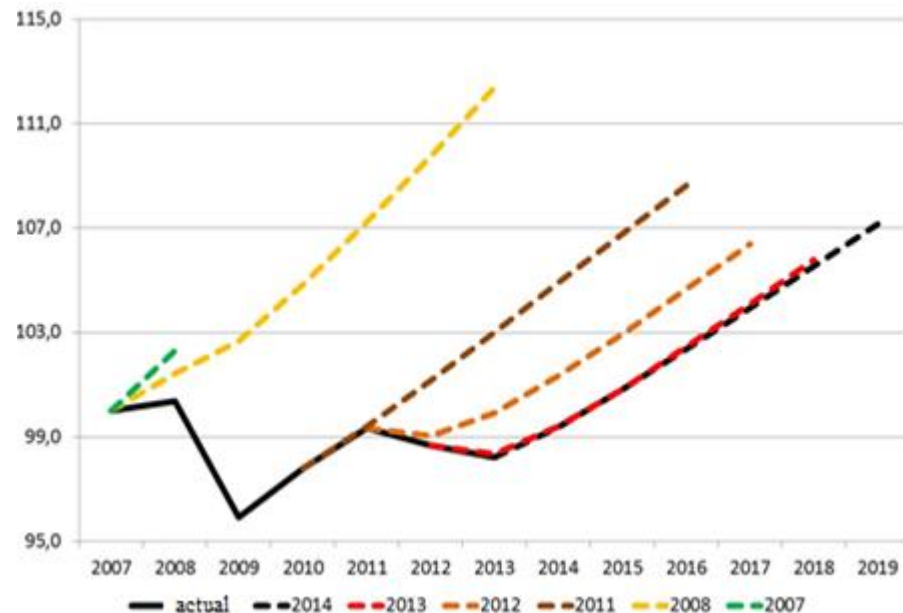
Secular stagnation or policy driven stagnation?

Recovery in major economies has been surprisingly sluggish

GDP path in the USA vs. forecasts from 2007-2014



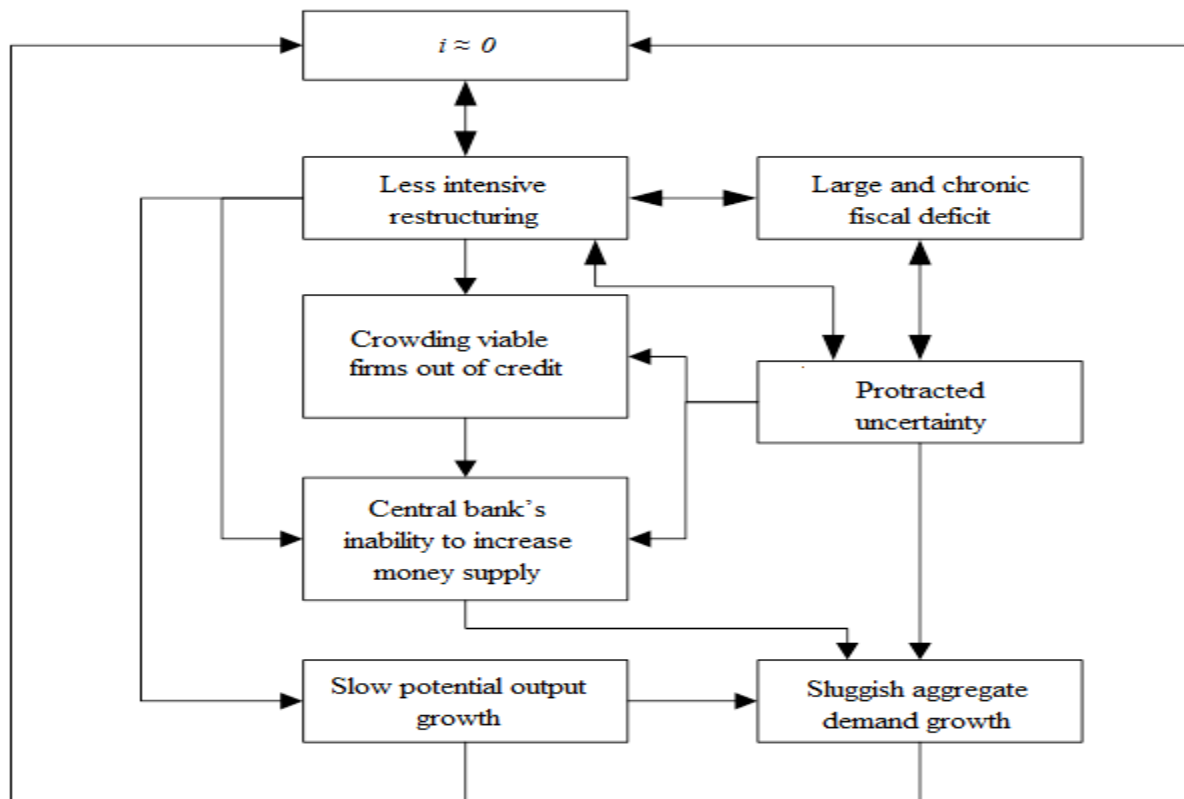
GDP path in the euro area vs. forecasts from 2007-2014



Majoritarian view: disappointing performance – either due to factors beyond reach of monetary policy, or because of central banks' reluctance to rigorously follow prescriptions from the NK framework (see, e.g. Eggertsson and Krugman, 2012; Gali et al., 2012; Mian and Sufi, 2011; Stock and Watson, 2012; Summers, 2014 or Woodford, 2012).

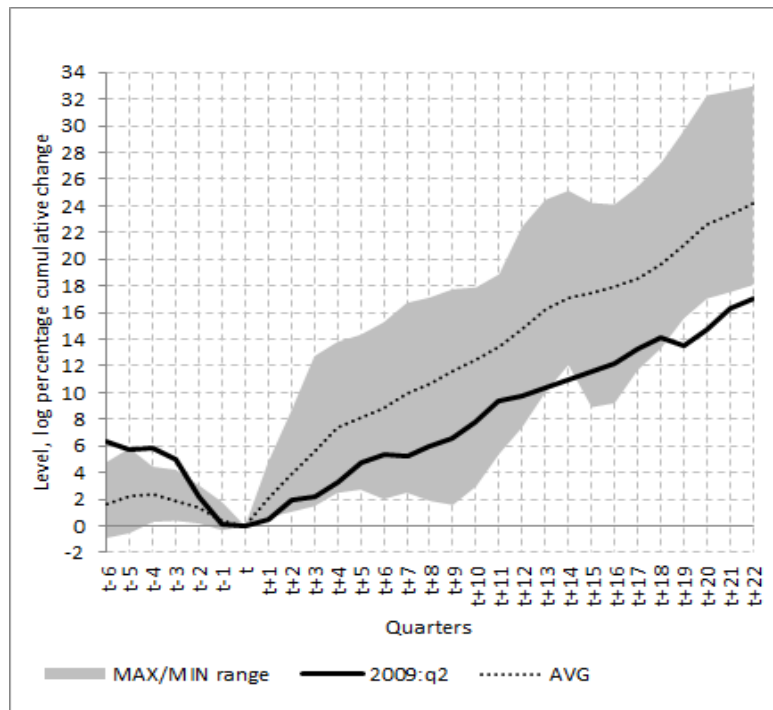
Minority view: disappointing performance – due to extremely accommodative monetary policy by historical standards (see, e.g. BIS, 2013, 2014; Meltzer, 2014, or Taylor, 2014)

Channels of possible negative impact of interest rates close to zero on economic growth

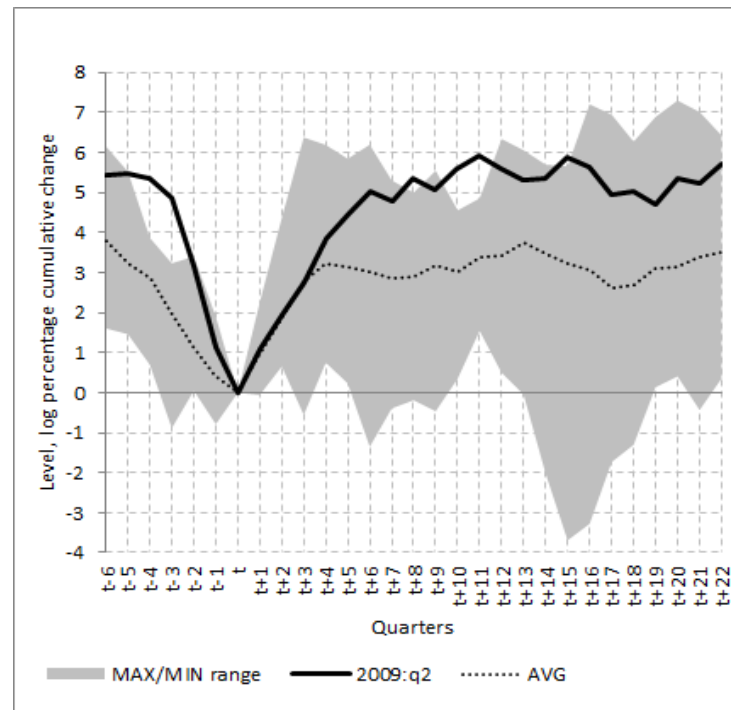


Even though the recovery of the US economy has been sluggish by historical standards, there has been less slack than over previous recoveries

GDP path in the US after the Great Recession compared to previous recoveries

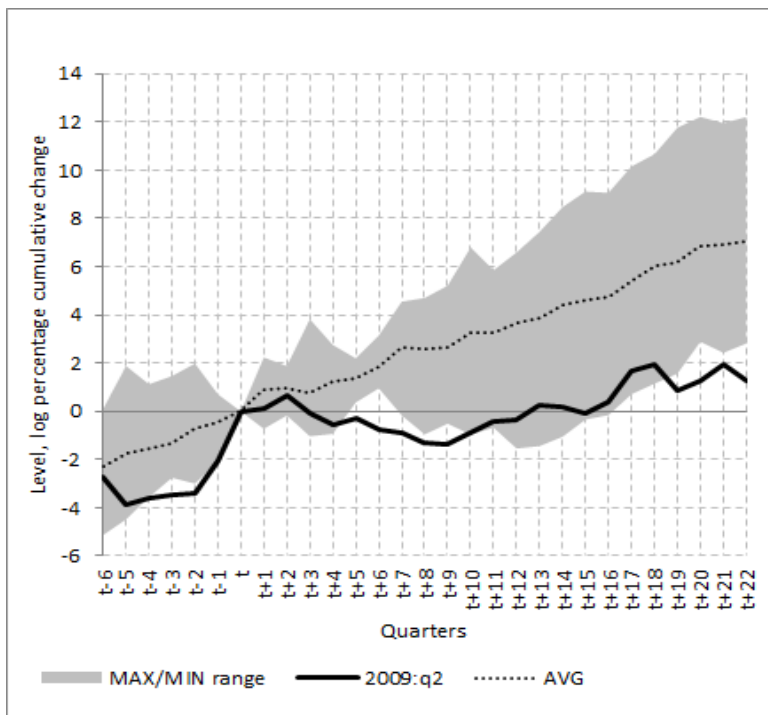


Utilization of capital and labour in the US after the Great Recession compared to previous recoveries

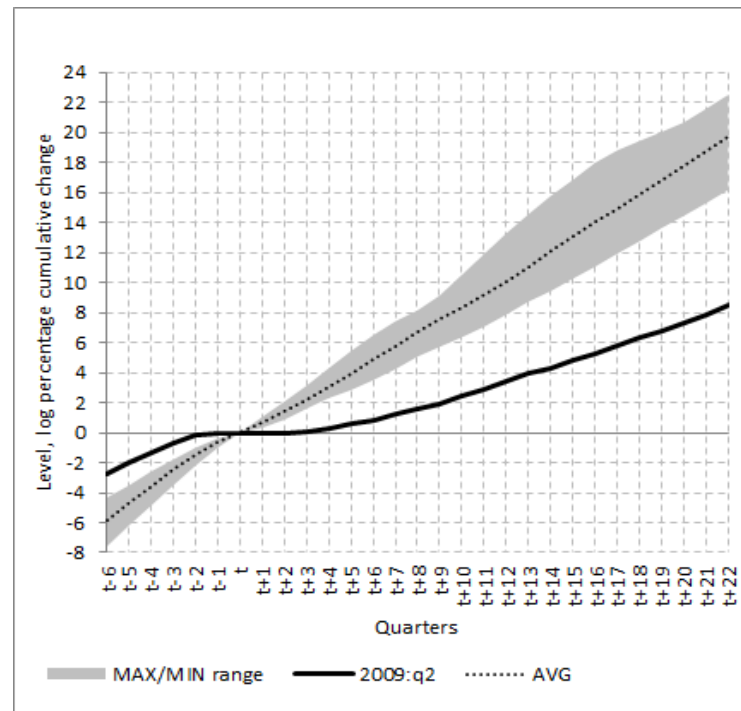


In contrast, productivity and, above all, capital stock growth have been very slow

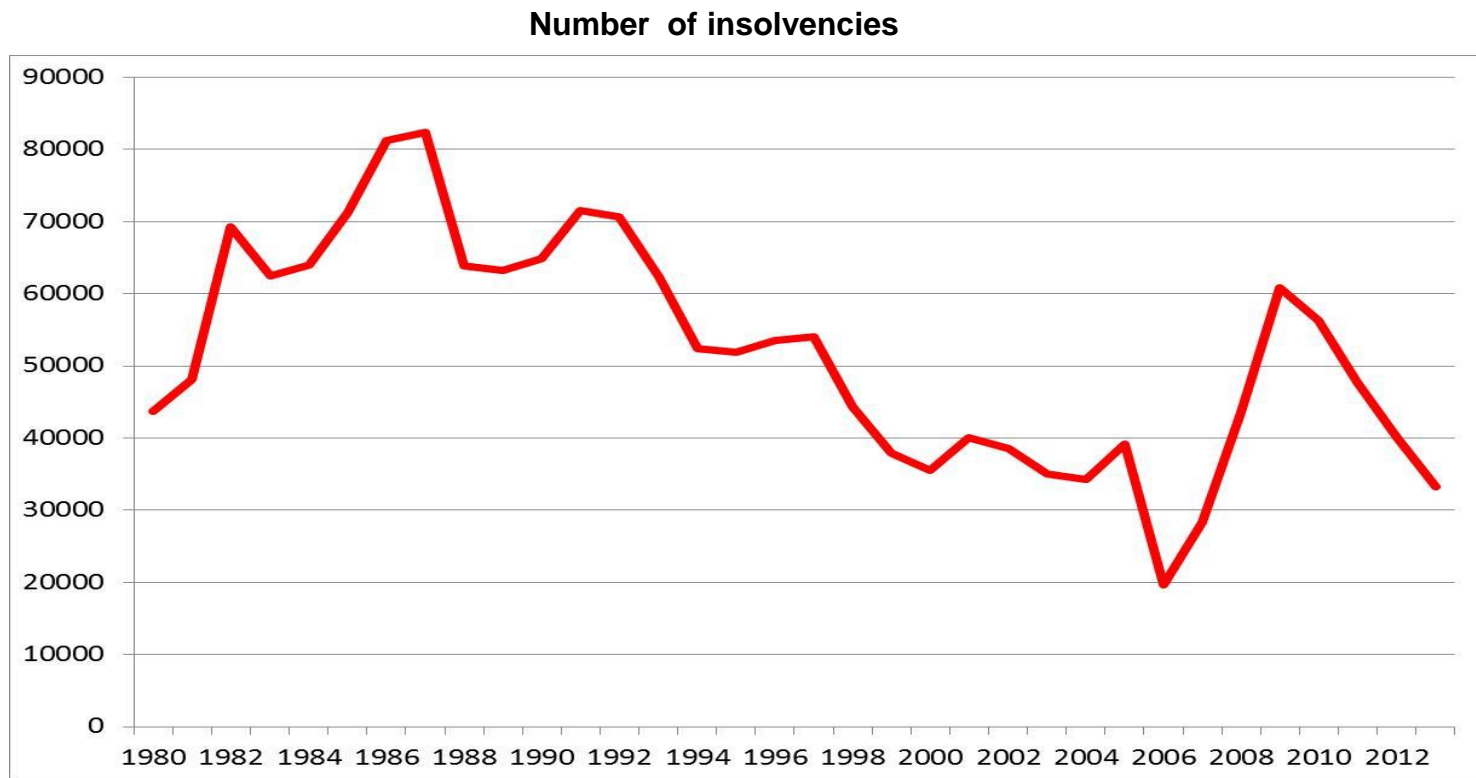
TFP path in the US after the Great Recession compared to previous recoveries



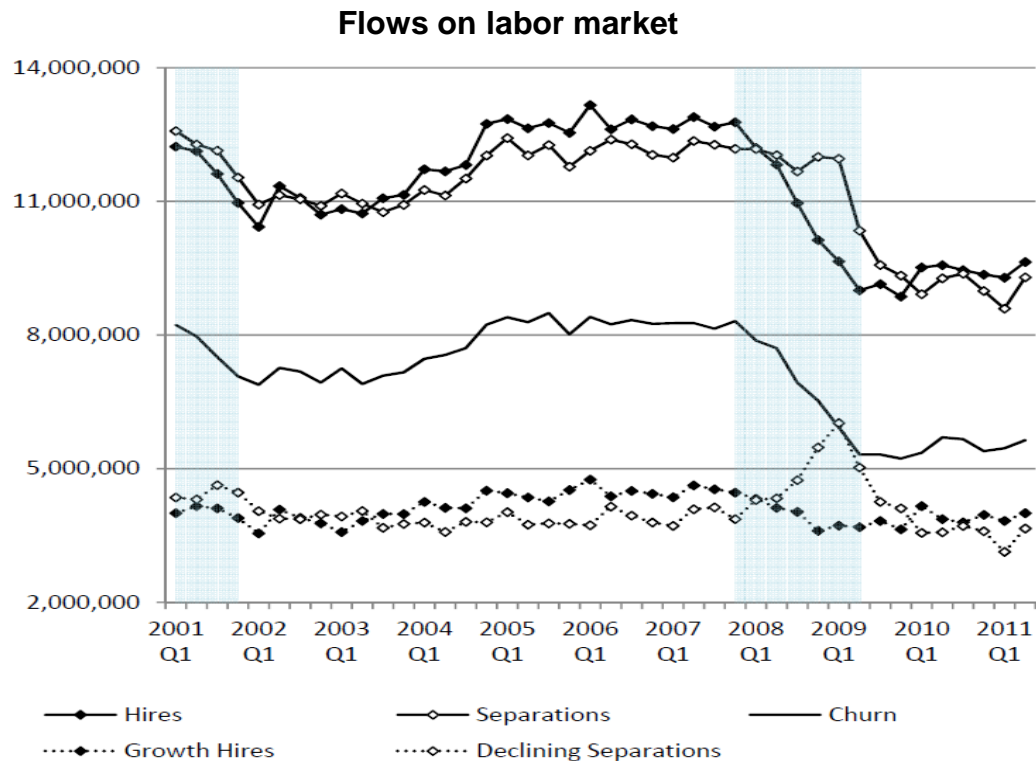
Capital stock in the US after the Great Recession compared to previous recoveries



In the US increase in insolvencies after the outburst of the crisis was very short-lived



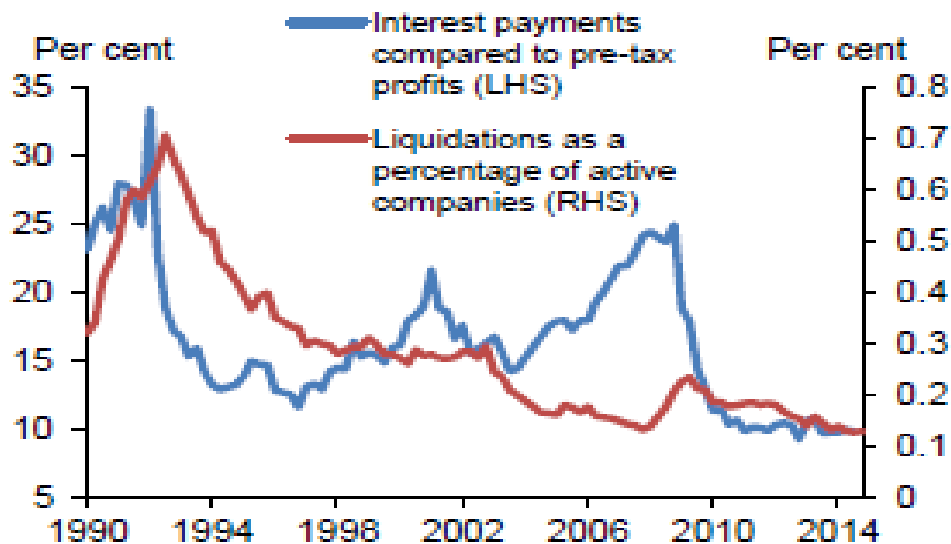
Churn decreased significantly



Source: Lazear and Spletzer (2012)

Corporate insolvencies in the UK remained historically low...

Insolvencies vs. interest payments

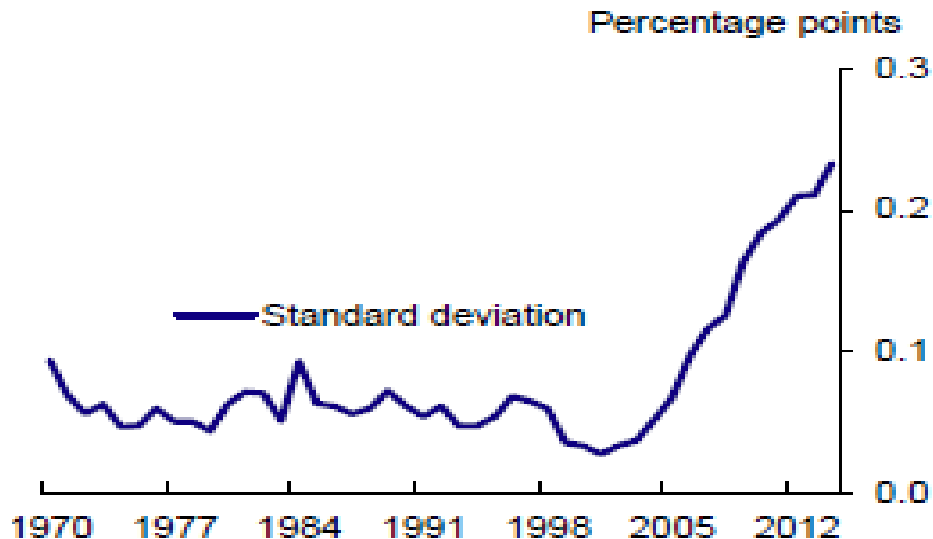


Source: ONS, Department of Business, Innovation and Skills and Bank calculations.

Source: Forbes (2015)

...and differences in productivity across firms became wider than ever

Productivity dispersion

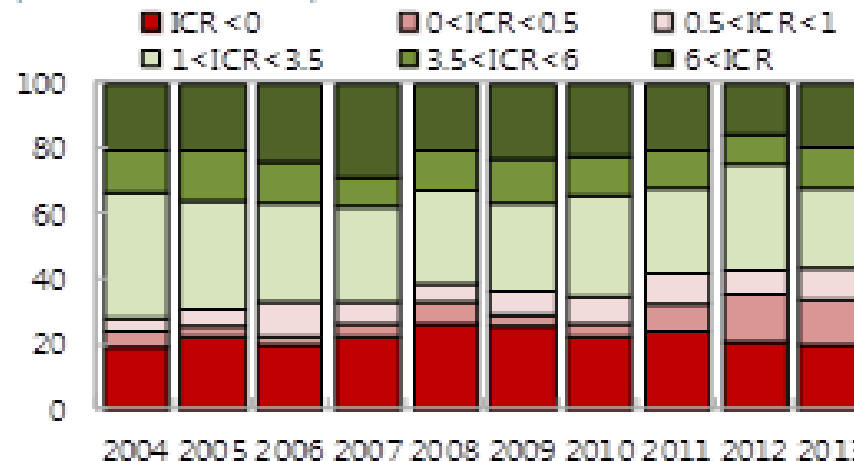


Source: EUKlems, ONS and Bank calculations. (a) The chart shows the standard deviation of productivity shortfalls (relative to a trend calculated between 1970 and 2006) across 1-digit Standard Industrial Classification (SIC) for all sectors excluding Mining & Quarrying.

In spite of low interest rates, the share of corporate debt at risk in Poland has been steadily growing

Distribution of corporate debt by interest coverage ratio

(Percent of total debt)

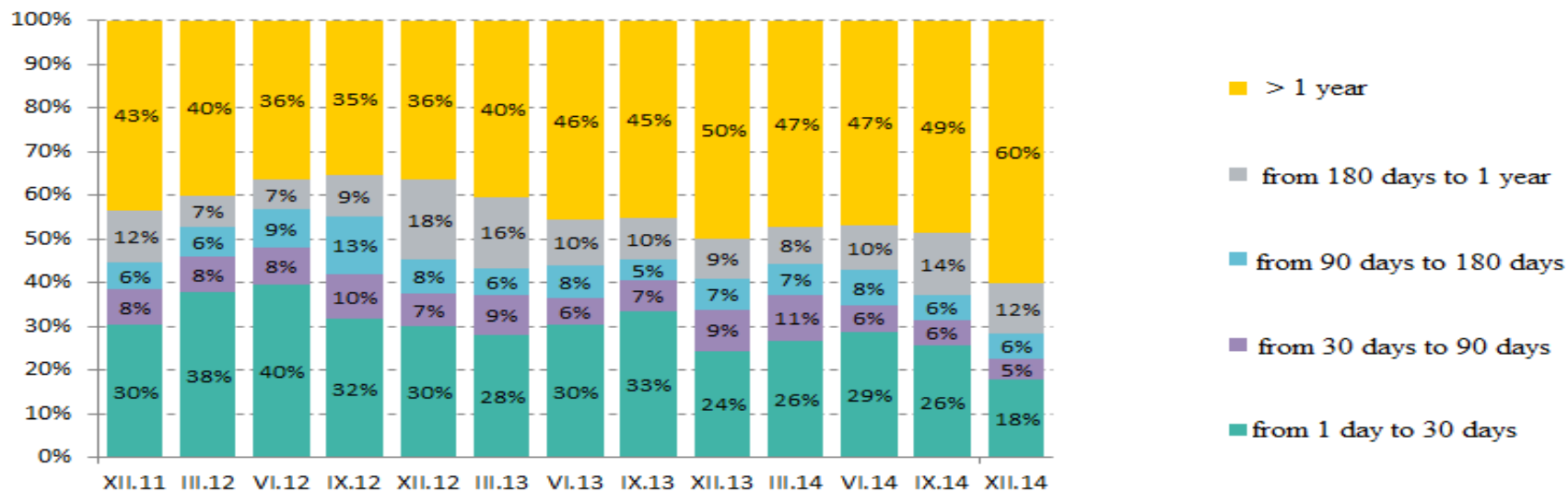


Sources: Orbis, IMF Regional Economic Issues, and IMF staff calculations.

1/ICR below one indicate potential payment difficulties.

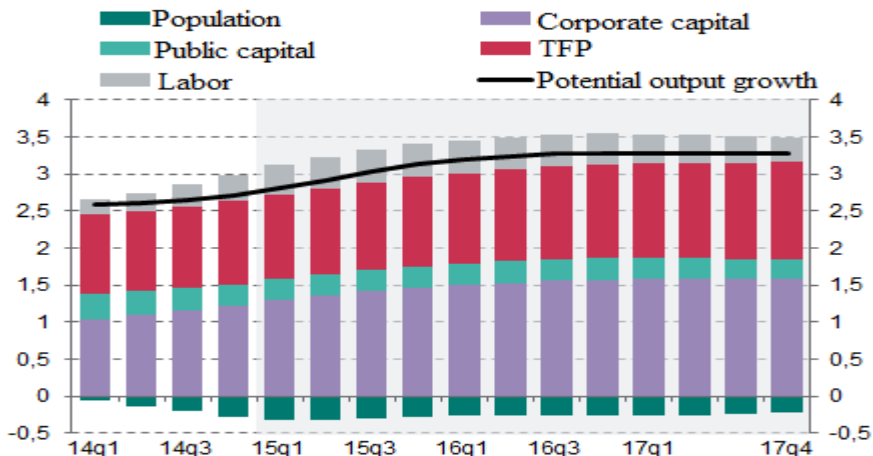
At the same time banks have been reluctant to write off non performing loans

Composition of NPLs to corporate sector

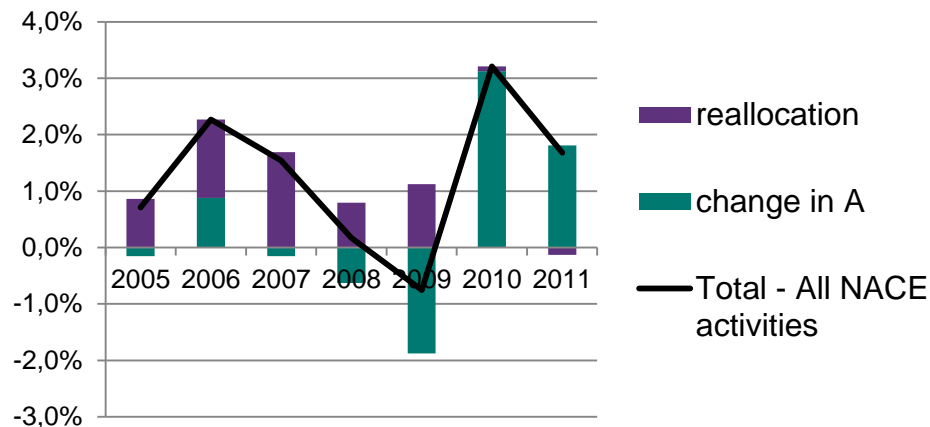


Productivity growth has decelerated. Reallocation of capital and labor across industries has vanished.

Estimate and forecast of potential output growth



Contribution of factors reallocation across industries to potential output growth



4

Effects of positive lower bound

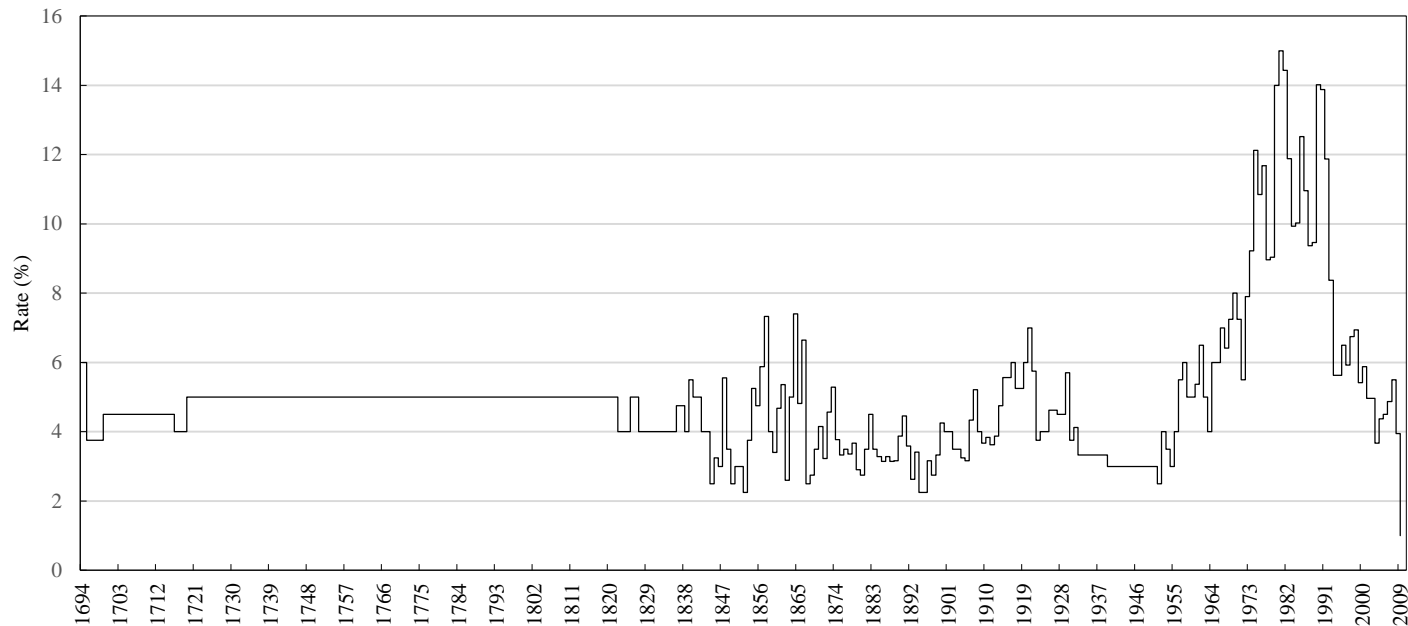
Reserach problem: how strong (weak) possible side effects of holding interest rates close to zero would have to be so that it would pay to set an effective lower bound at a higher level in order to avoid those effects.

Solution: approach developed by Jung et al. (2005), generalized in two ways:

- the lower bound allowed to be any real number
- trend inflation allowed

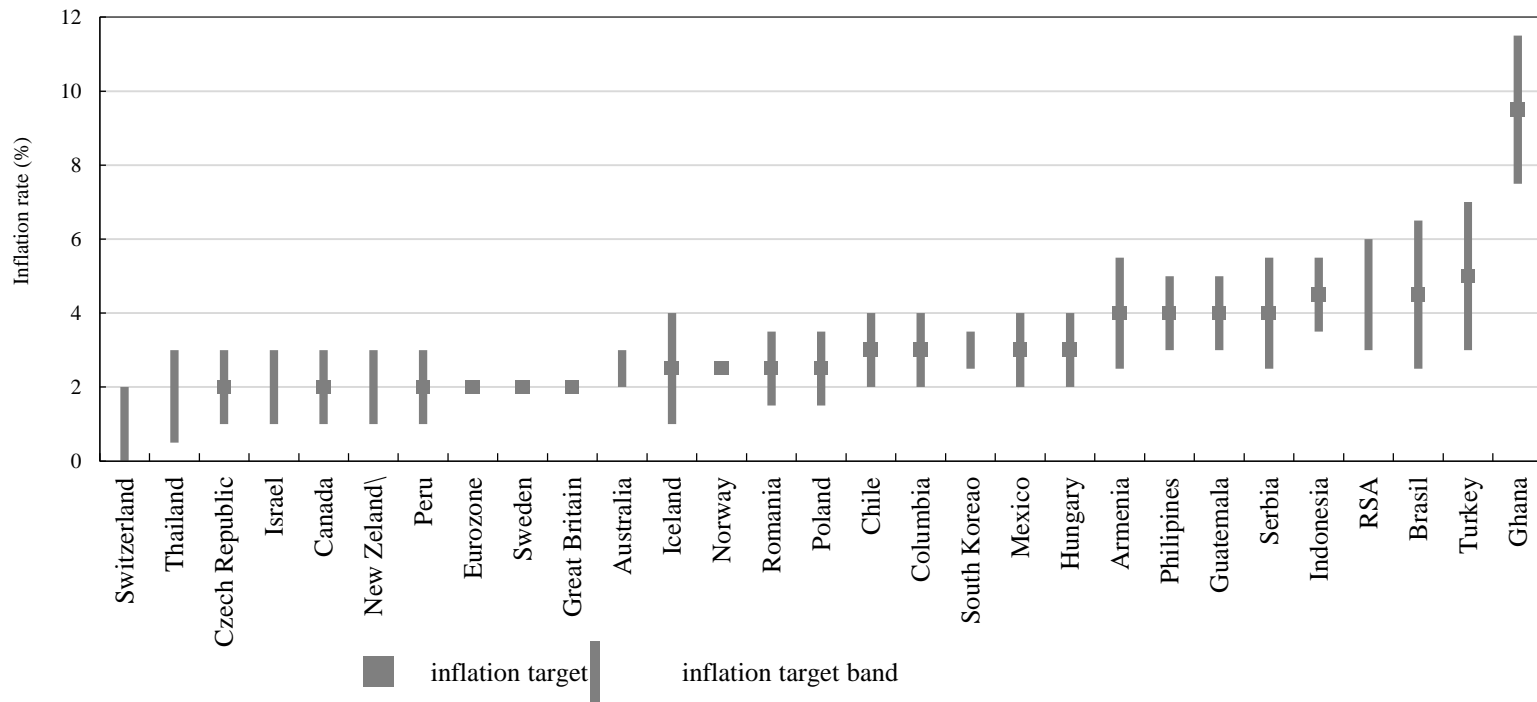
In the case of BoE 2% was the effective lower bound until 2009

Policy rate of Bank of England in 1694-2015



Trend inflation set at 2% matches the inflation target most frequently used in the advanced economies

Inflation targets and inflation targets bands in selected countries



The evaluation made in **two steps**:

- Effects of PLB policy compared to those of ZLB policy. Four possible combinations under scrutiny.
- Reduction of persistence of shock under PLB policy, required for the welfare losses of the PLB to be smaller than those incurred under the ZLB, checked.

Small scale DSGE model used for two reasons:

- to provide results as comparable as possible to previous research on the ZLB;
- the extension that we do complicates computations, but it does not (significantly) affect results.

The contribution:

- First attempt to analyze effects of PLB in the context of ‘fundamental’ shock.
- Simple framework to compare benefits with possible costs of interest rate close to zero.
- Call for very aggressive interest rates cuts in response to severe negative shock or its anticipation questioned.
- Significance of central bank’s credibility highlighted from different perspective.

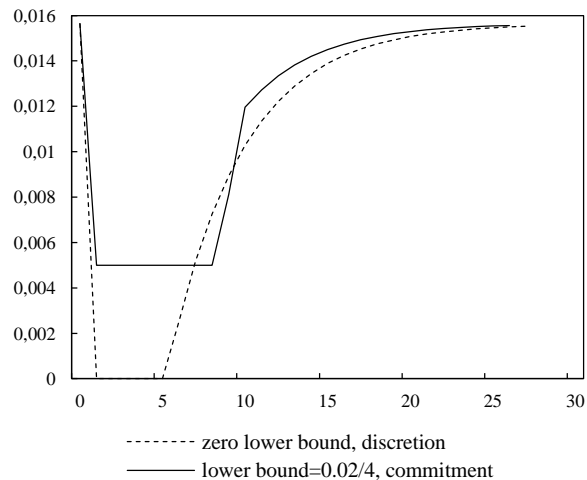
Baseline calibration of the model

Parameter	Value	Source
β	0.99	Woodford (1999)
σ	0.157	Woodford (1999)
λ	$0.048/(4^2)$	Woodford (1999)
$1 - \alpha$	0.7	Smets and Wouters (2003)
ε	3	Smets and Wouters (2003)
φ	0.25	Smets and Wouters (2002)
θ	0.7505	implied from other parameter values and Woodford (1999)
ρ	0.8	Adam and Billi (2006, 2007)
ϵ_1	0.05	Levin et al. (2010)
$y_{t+1}^P - y_t^P$	0.02/4	based on Penn's World Tables
$\bar{\pi}$	0.02/4	authors
PLB	0.02/4	authors

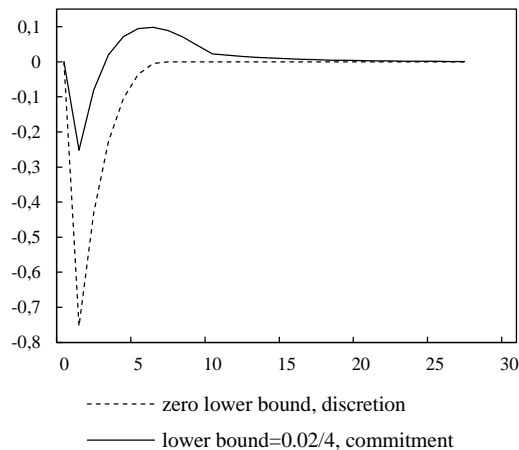
If the ZLB policy has no side effects, then it is welfare enhancing, except for the case where the PLB policy is pursued under commitment, while the ZLB policy is discretionary

Interest rate, output gap and inflation under ZLB under discretion and PLB under commitment

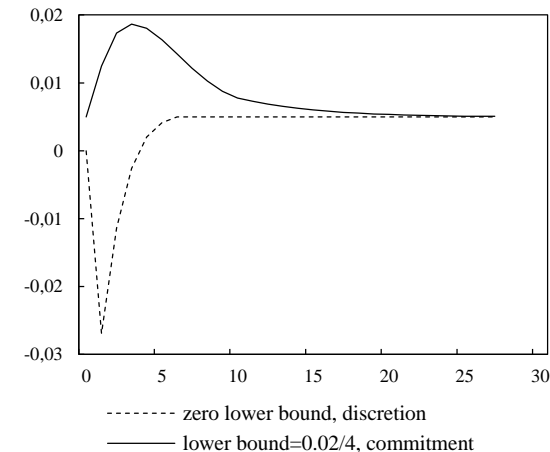
Interest rate



Output gap



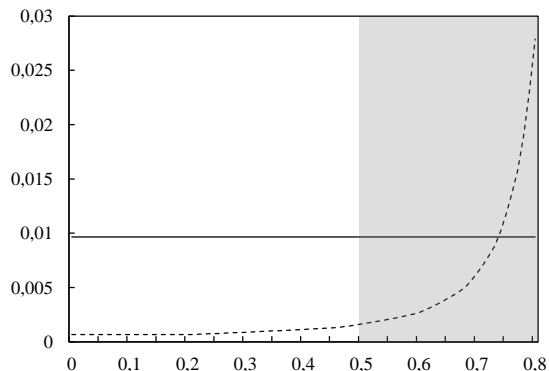
Inflation



Even limited side effects of the ZLB policy suffice for the PLB policy to pay off in terms of welfare. Only if the ZLB policy is pursued under commitment, while the PLB policy is discretionary, would the PLB policy dominance over the ZLB policy, in terms of welfare, require strong adverse side effect of ZLB policy.

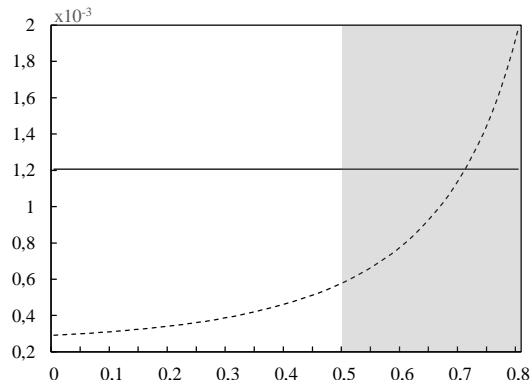
Loss function value under PLB and various rho vs. loss function value under ZLB and baseline rho

PLB and ZLB under discretion



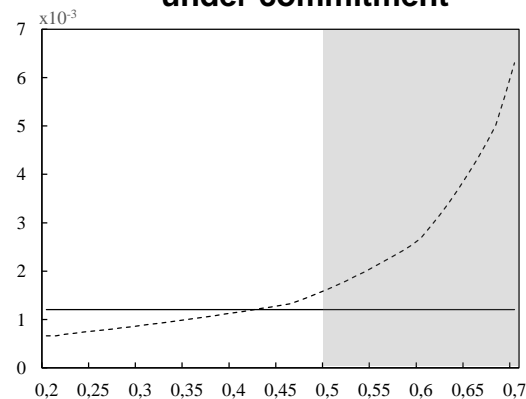
----- loss function value at NZLB=0.02/4 for a given rho
 ——— loss function value for ZLB and rho=0.8

PLB and ZLB under commitment



----- loss function value at NZLB=0.02/4 for a given rho
 ——— loss function value for ZLB and rho=0.8

PLB under discretion and ZLB under commitment



----- loss under discretion and PLB (different rhos)
 ——— loss under commitment and ZLB (rho=0.8)

With given side effects of the ZLB policy, the larger and the more persistent the shock that makes the ZLB bind, the more likely the PLB policy dominance over the ZLB policy.

Break-even rho under various baseline rho and baseline epsilon1

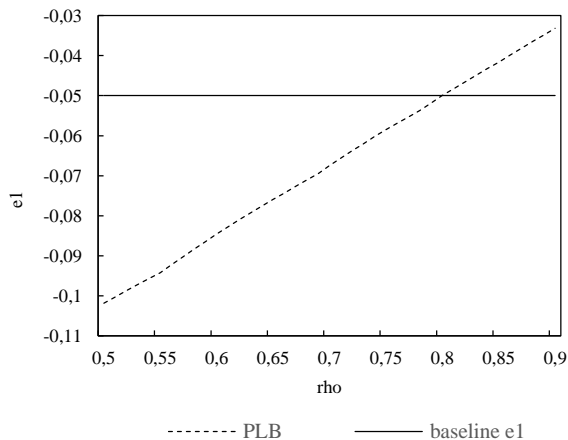
Baseline rho	0,5	0,55	0,6	0,65	0,7	0,75	0,8	0,85	0,9
(i) ZLB and PLB under discretion	0,324	0,377	0,475	0,533	0,605	0,667	0,737	0,803	0,868
(ii) ZLB and PLB under commitment	0,257	0,339	0,416	0,493	0,565	0,637	0,708	0,779	0,85
(iii) ZLB under discretion and OLB under commitment	0,649	0,684	0,744	0,797	0,851	0,902	0,952	0,994	
(iv) ZLB under commitment and PLB under discretion					0,22	0,308	0,421	0,512	0,605

Baseline epsilon1	-0,02	-0,03	-0,04	-0,05	-0,06	-0,07	-0,08	-0,09	-0,1
(i) ZLB and PLB under discretion		0,628	0,711	0,737	0,749	0,757	0,762	0,766	0,769
(ii) ZLB and PLB under commitment		0,549	0,668	0,708	0,729	0,742	0,751	0,757	0,762
(iii) ZLB under discretion and OLB under commitment		0,8	0,843	0,92	0,952	0,969	0,982	0,992	0,999
(iv) ZLB under commitment and PLB under discretion			0,347	0,421	0,445	0,449	0,453	0,456	0,459

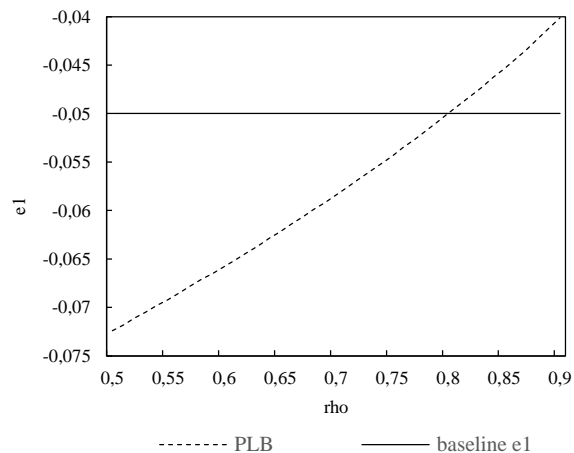
The findings hold even if restructuring, fostered by the PLB policy, entailed some costs, which could be reduced or even avoided through slow restructuring.

Rho for various epsilon1 under PLB resulting in loss equivalence between PLB and ZLB

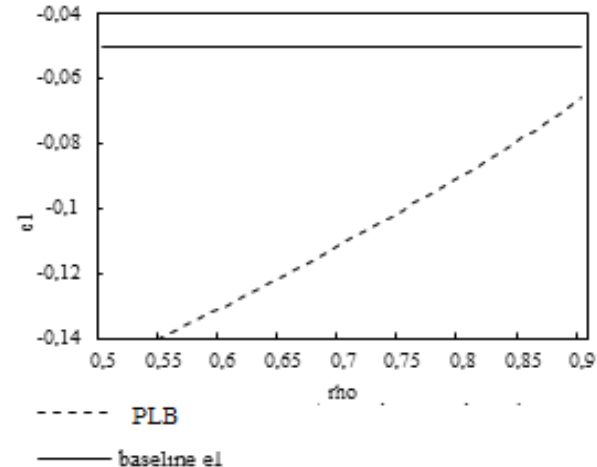
PLB and ZLB under discretion



PLB and ZLB under commitment



PLB under commitment and ZLB under discretion



Robustness check indicate that the findings hold for economies:

- with both fast and slow potential output growth,
- with low and higher inflation target,
- flexible and more rigid.

Conclusions:

- The aggressive interest rates cuts all the way to zero may not be the right response to severe shock. It might be that central bank should establish a PLB instead and use quantitative easing to keep panic down in systemically important segments of financial sector.
- There are two directions of particular policy relevance for future research on ZLB.
 - It should focus on what makes central bank commitment credible and what harms its credibility.
 - Quantitative evaluation of ZLB policy side effects should be given high priority in research agenda.

We protect the value of money