

# CNB's New Forecast

February 2008

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Meeting with analysts, Prague, 15 February 2008

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## Outline

- Changes in the QPM;
- External assumptions;
- Recent trends in inflation and the economy;
- Fiscal policy;
- Regulated prices and tax changes;
- Exchange rate and imported inflation;
- Forecast of GDP, inflation and interest rates;
- Alternative forecast scenario.

## Changes in QPM

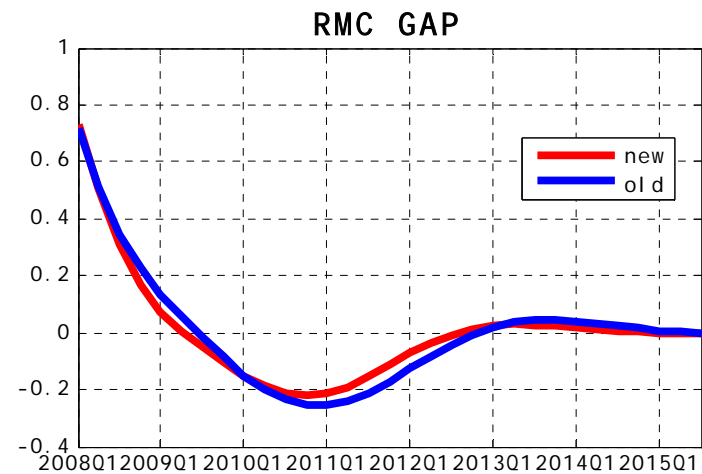
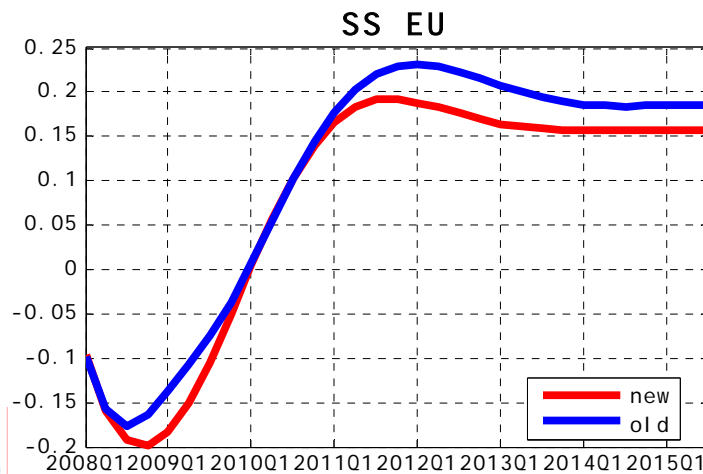
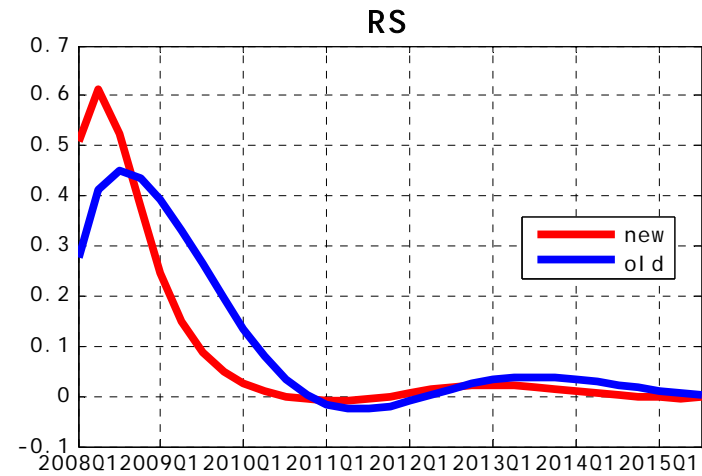
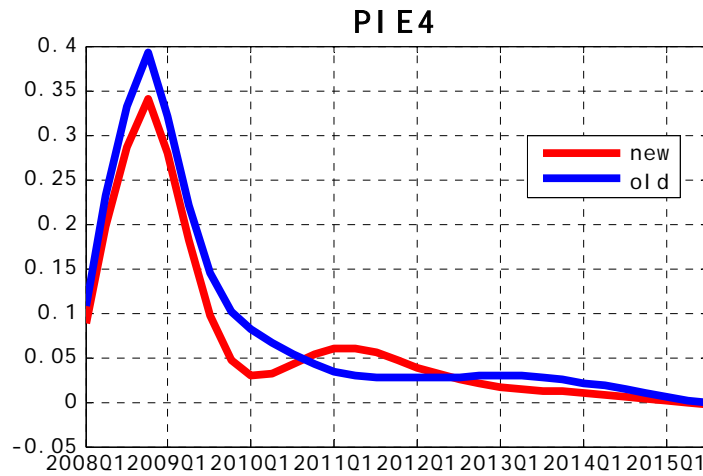
- Reflect past experience with limited effect of specific price shocks (taxes, regulated prices) and anchored expectations;
- Change in assumed price-setting behaviour;
- Example: expectations and Phillips curve for core inflation

$$E0\_XF\_CORE4 = 0.65*PIE\_XF\_CORE\{1\} + 0.35*PIE\_XF\_CORE\{-1\}$$

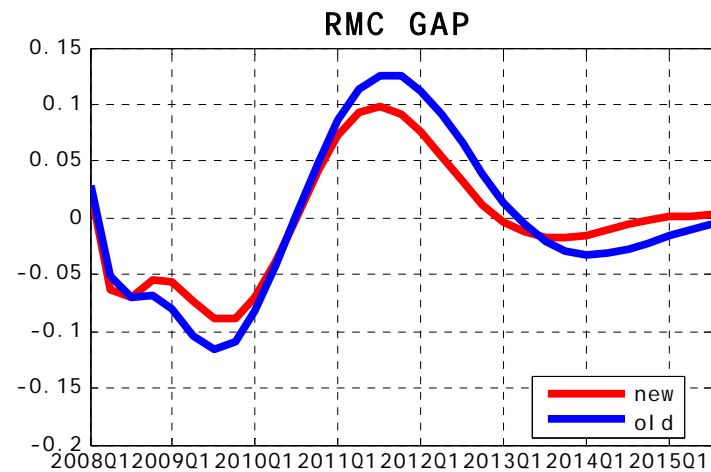
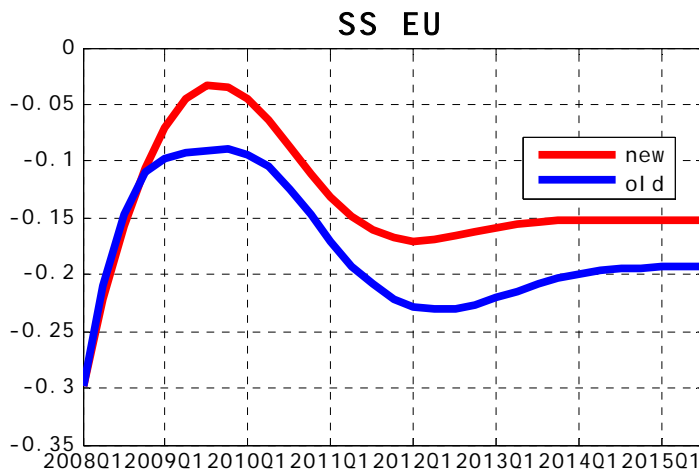
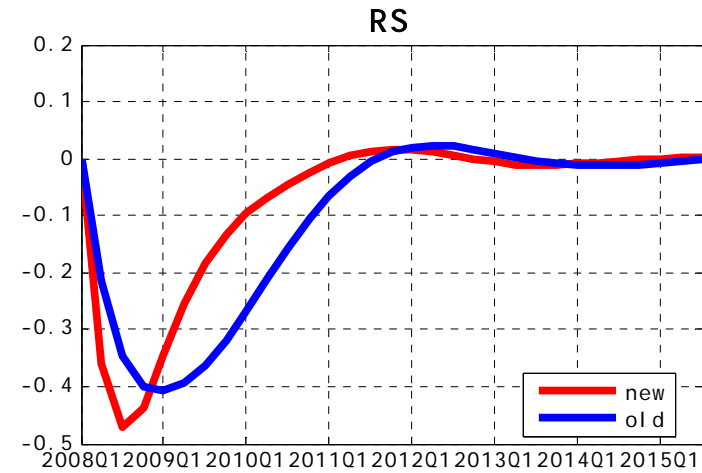
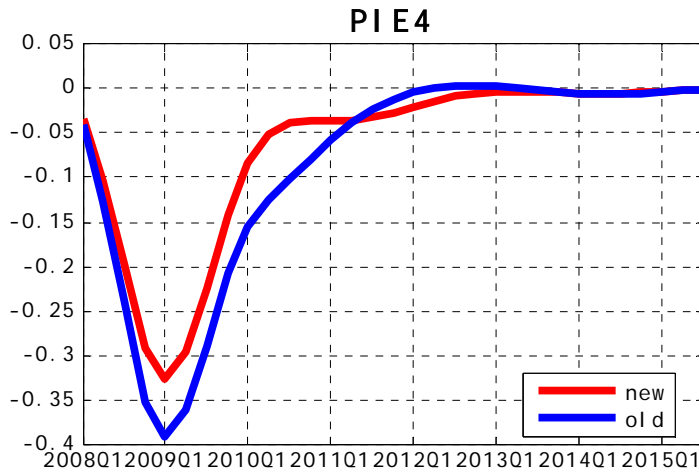
$$PIE\_XF\_CORE = 0.15*(PIE\_M\_XEXF4 + DOT\_LZ\_XF\_CORE\_EQ4) + 0.30*E0\_XF\_CORE4 + 0.55*PIE\_XF\_CORE\{-1\} + 0.40*RMC\_GAP$$

- Reduced persistence in the CB reaction function;
- Tested using impulse-responses, historical simulations and replication of the October 2007 forecast;
- Lower historical forecast errors on the 4-6 Q horizon.

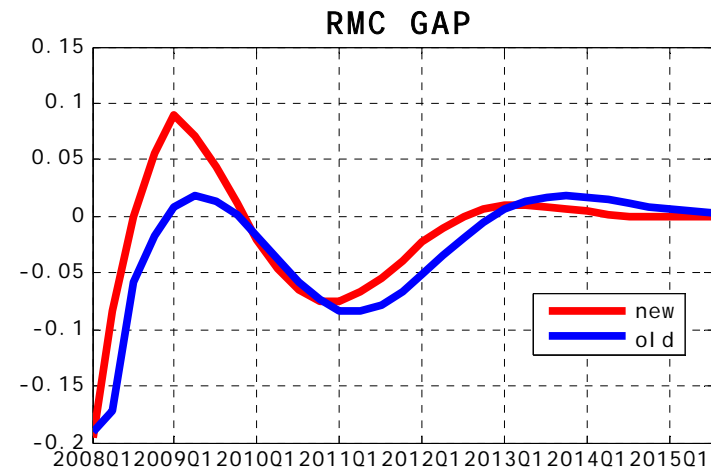
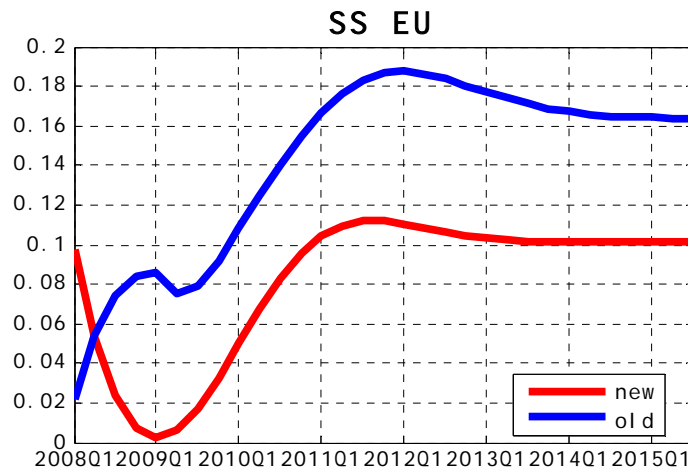
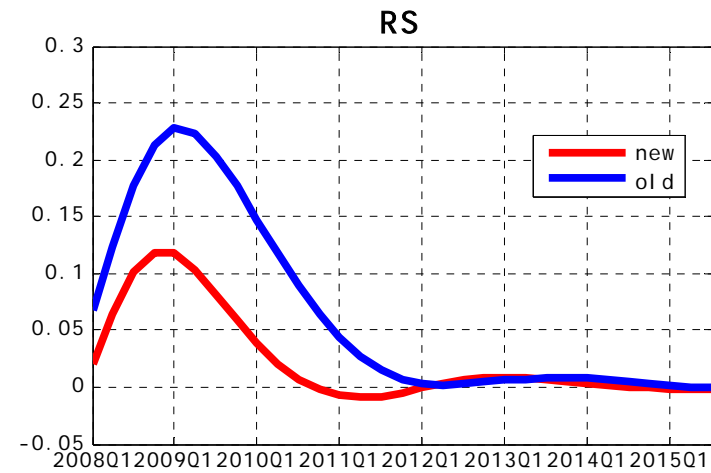
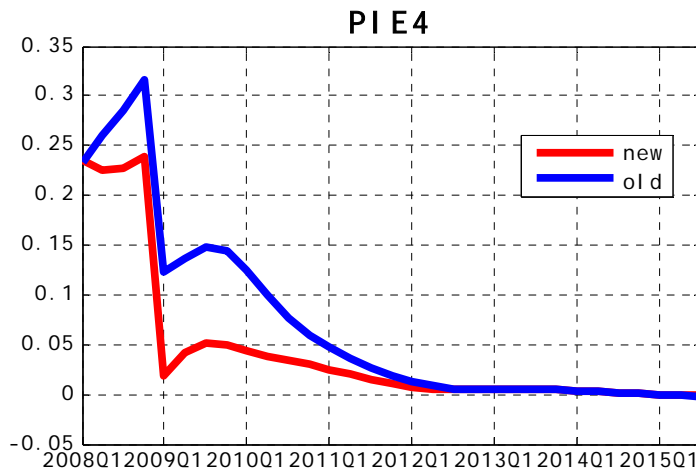
# Response to Demand Shock



# Response to Exchange Rate Shock

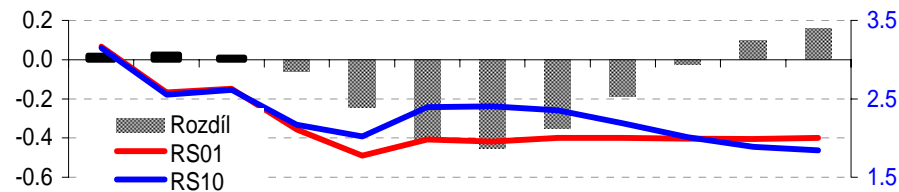


# Response to Regulated Prices Shock

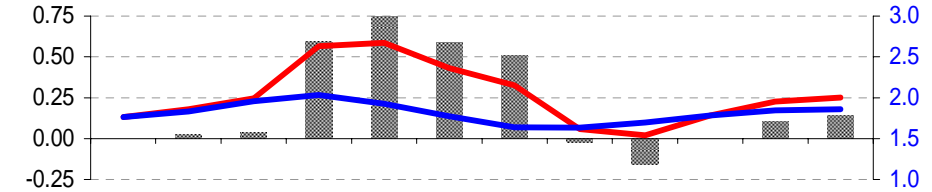


# External Assumptions (CF01)

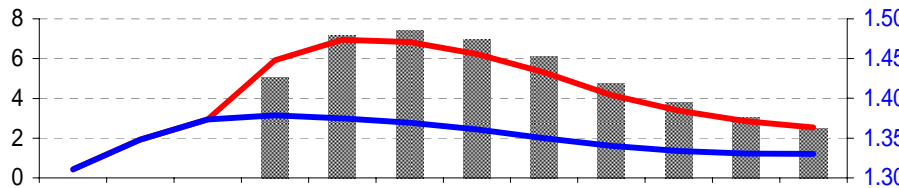
(difference in p.p.) Eurozone Effective GDP (y/y %)



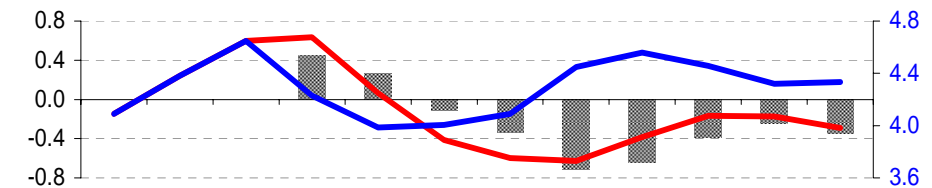
(difference in p.p.) Eurozone Effective CPI (y/y v %)



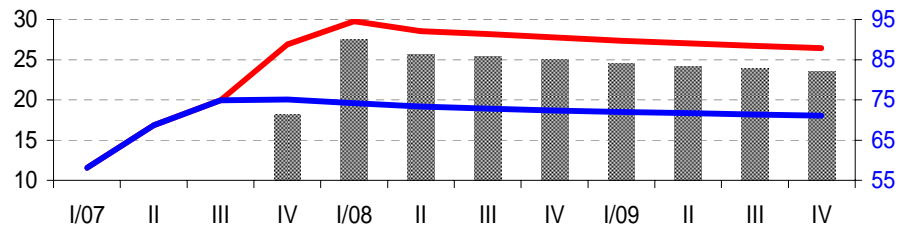
(difference in p.p.) USD/EUR (USD/EUR)



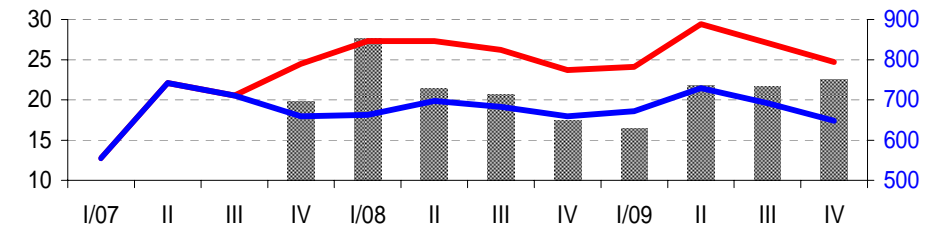
(difference in p.p.) 1R Euribor (% p.a.)



(difference in p.p.) Oil Brent (USD/barrel)

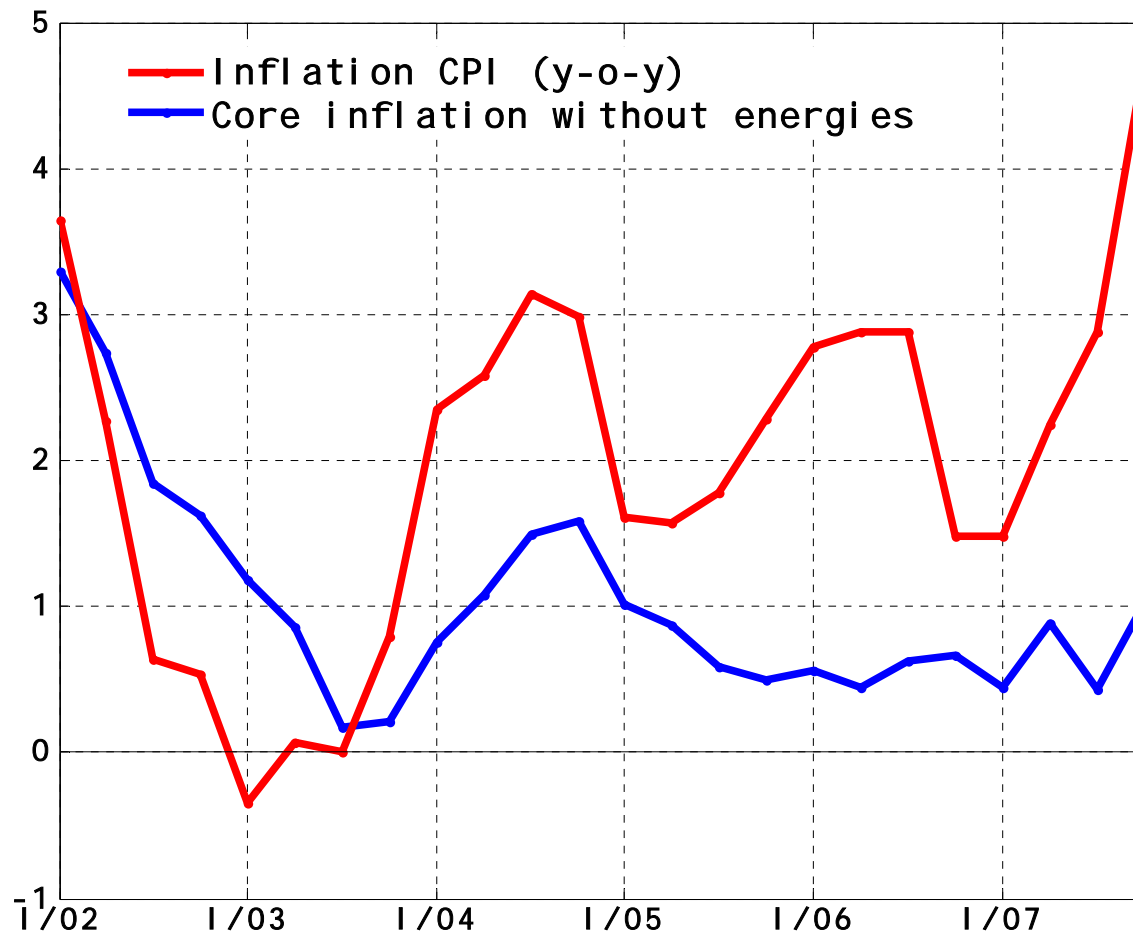


(difference in p.p.) Petrol Prices (USD/1000kg)



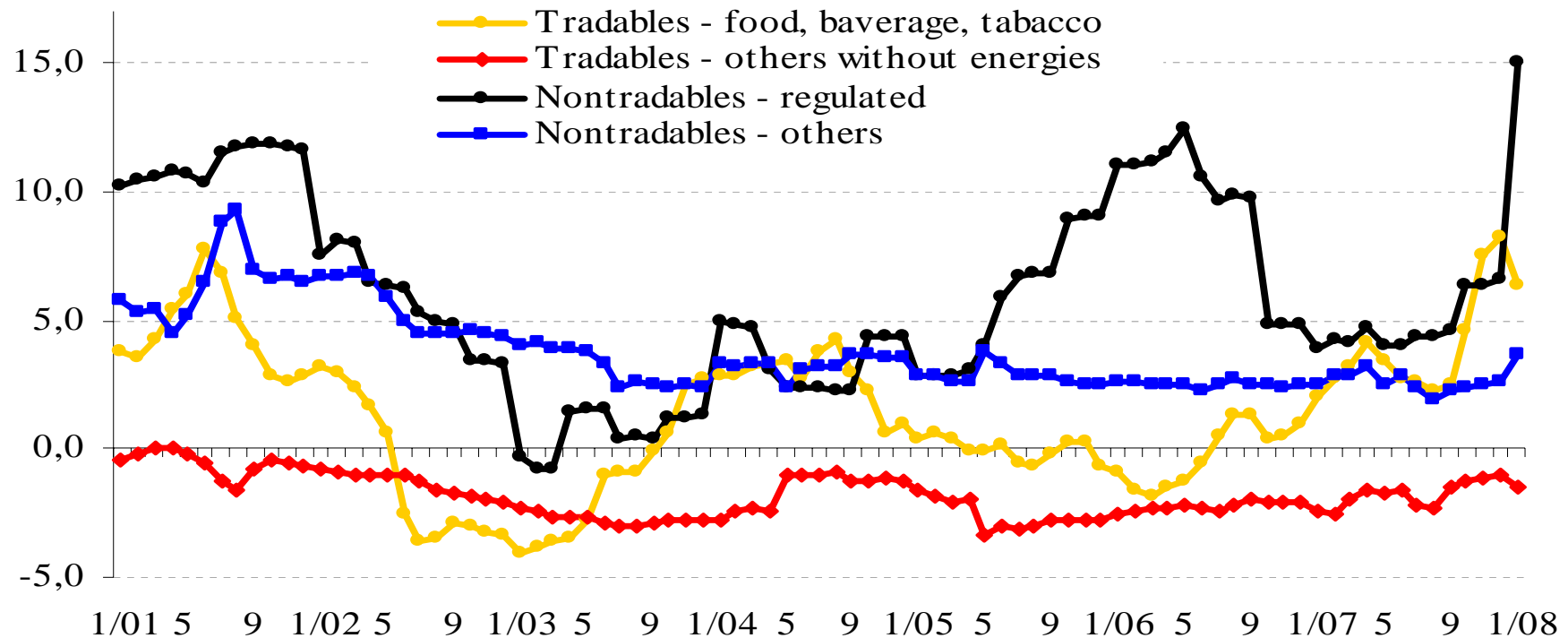
- Reduced growth optimism and interest rate outlook vs. higher oil prices and inflation outlook.

# Inflation



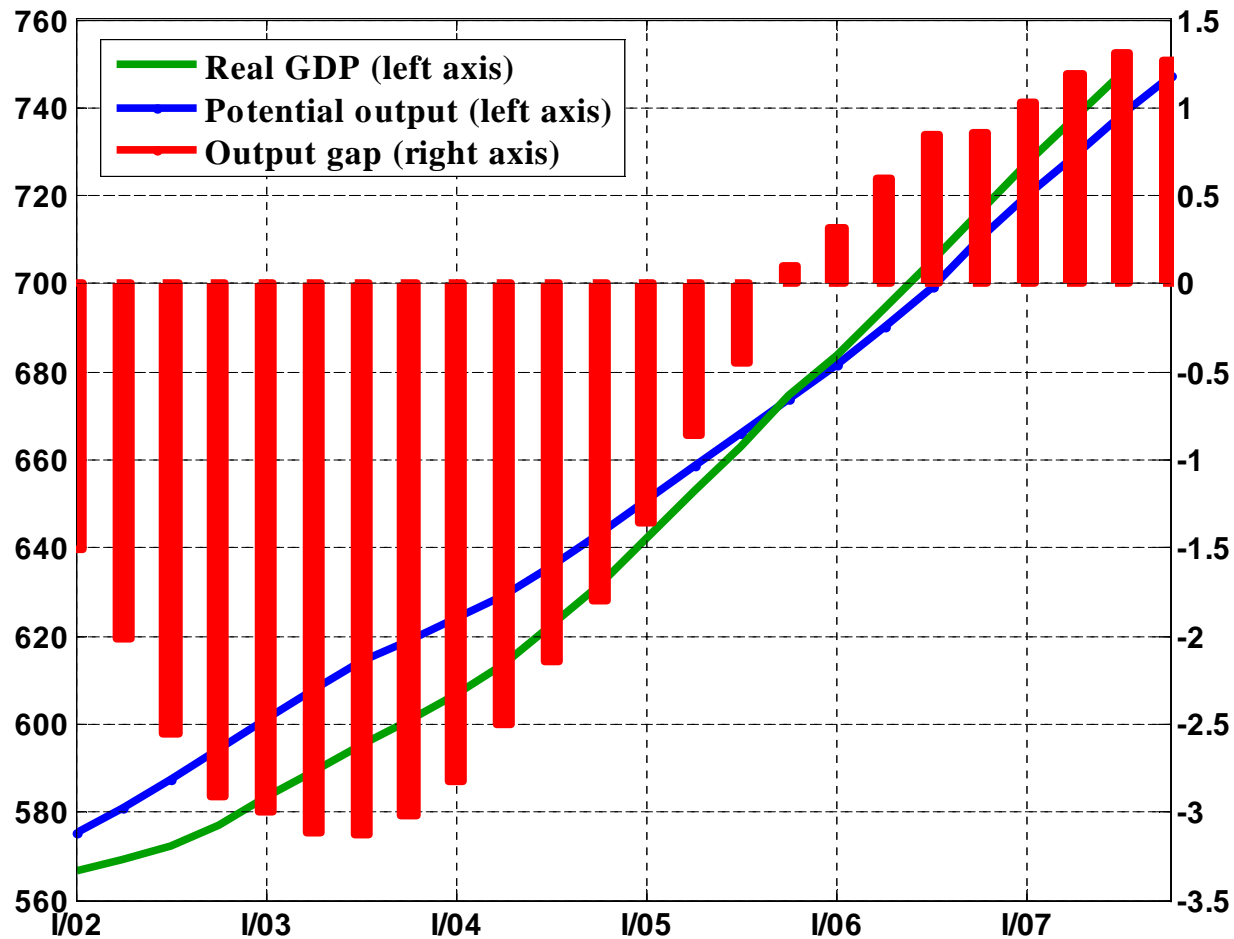
- Inflation in Q4/07 sharply increased;
- Core inflation was still very low;
- January 2008: further increase in headline inflation (7.5 %) and MP inflation (5.3 %), but also in core inflation (1.6 %).

# Structure of Inflation (excluding taxes)



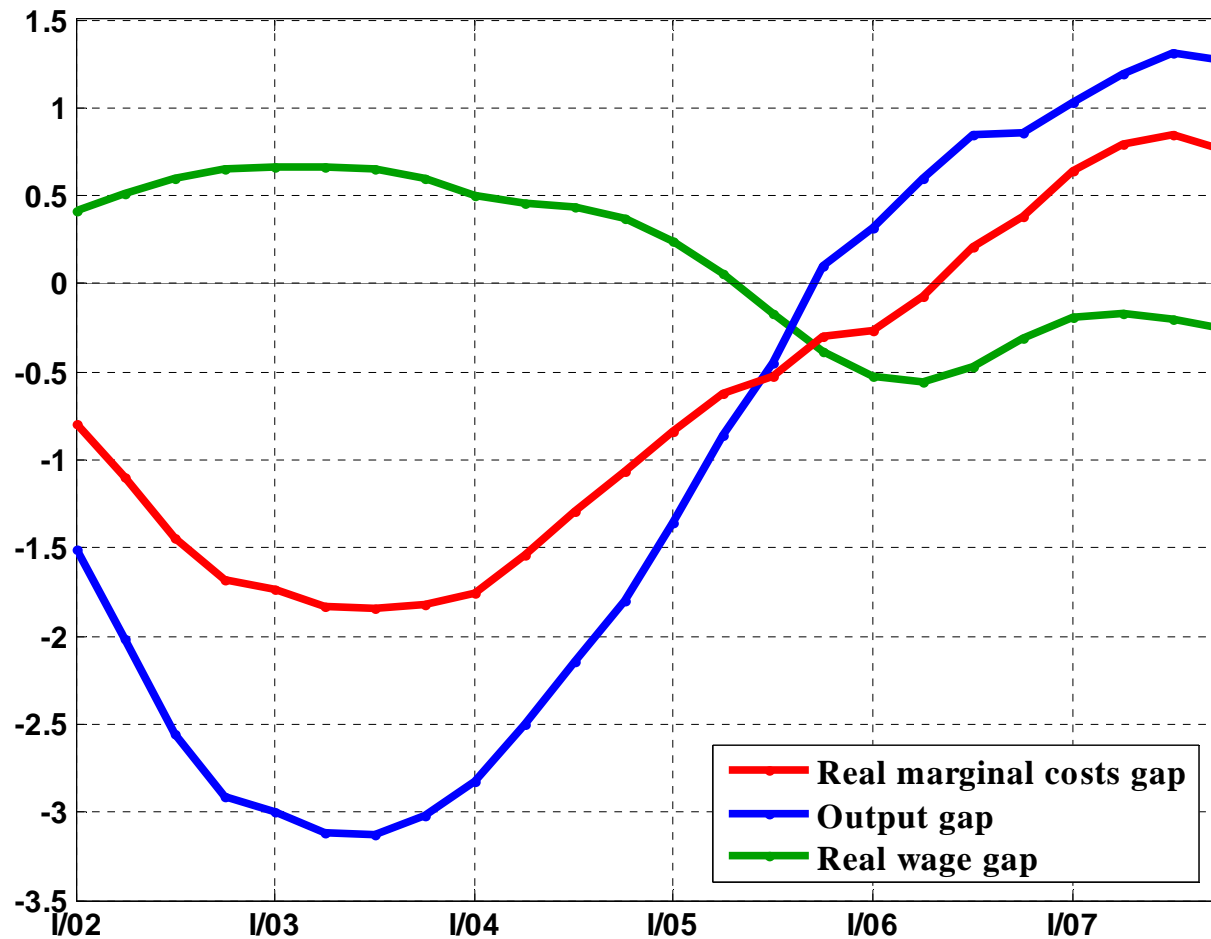
- Sharp acceleration in food price growth in late-2007 (partly due to “frontloading” of the VAT effect);
- January 2008: sharp acceleration in regulated prices, but to some extent also in core inflation (NT goods).

# GDP – Actual and Potential



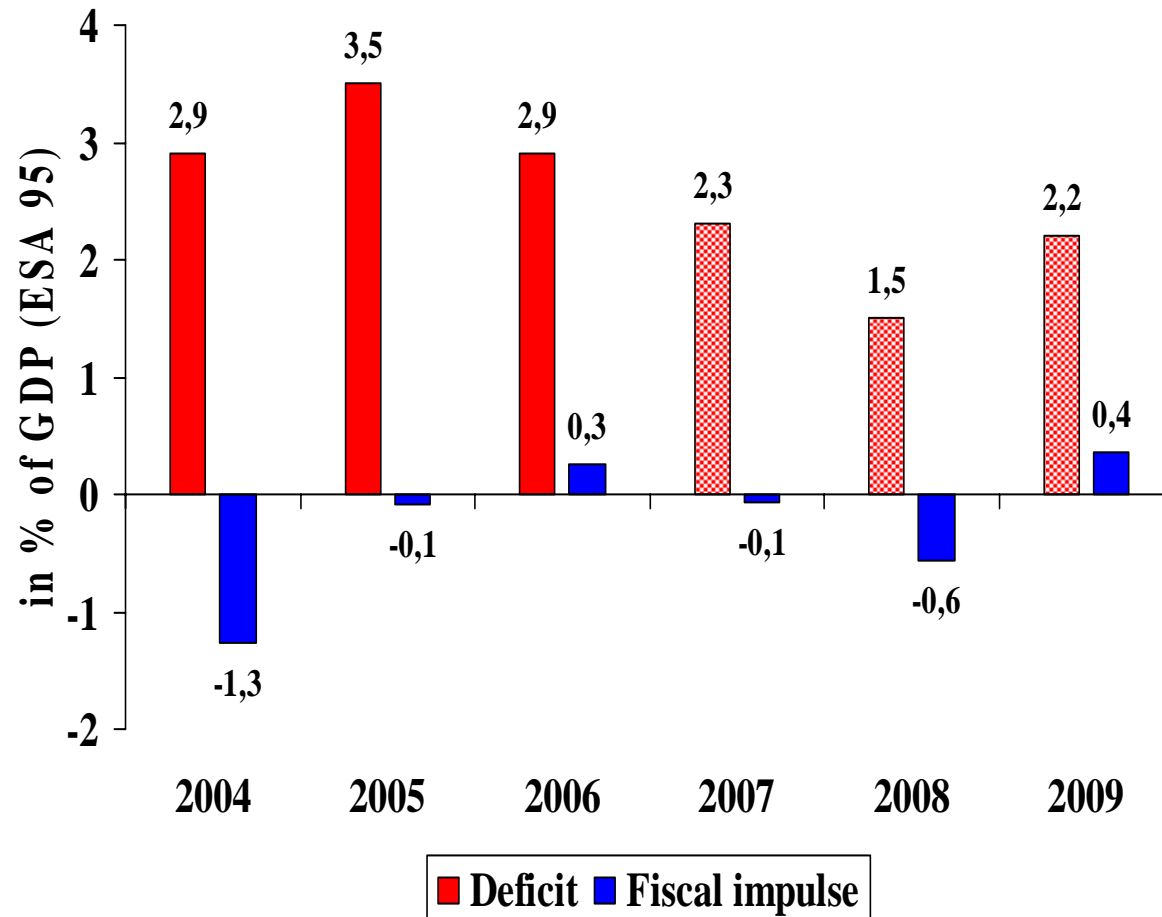
- The output gap (1.3 %) has passed its peak;
- Growth still pulled by domestic demand;
- Monetary conditions in Q4/07 neutral / slightly tight (in exchange rate component).

# Pressures from the Real Economy



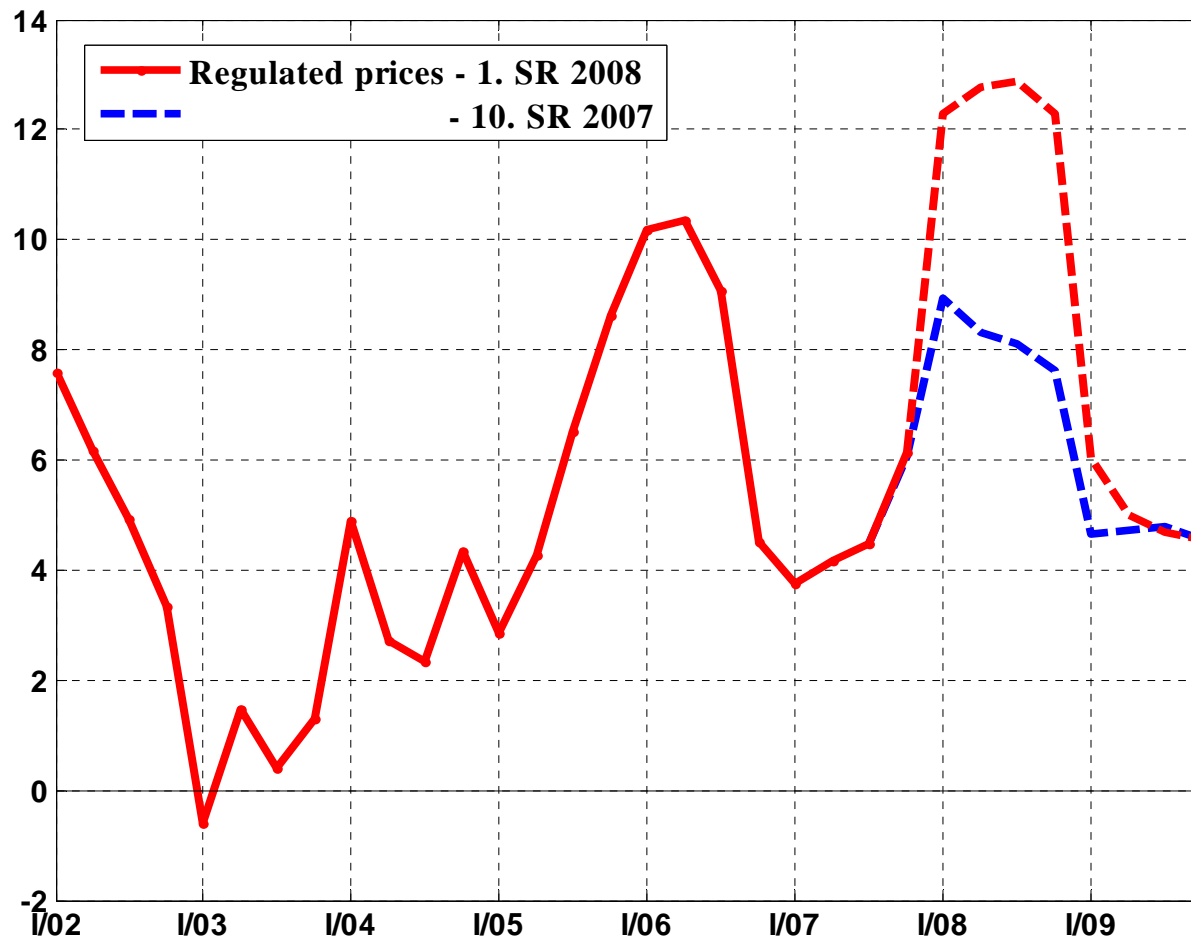
- Real wages slightly anti-inflationary;
- Nominal wage growth in business sector slightly below forecast in Q3/07 vs. higher inflation;
- NULC growth at 3.1 % in Q3/07;
- Overall pressures from the real economy pro-inflationary.

# Fiscal Situation



- Deficit in 2007 much lower than expected;
- Forecast of deficit lowered also for 2008 and 2009;
- Assumed fiscal impulse still restrictive in 2008 and expansionary in 2009.

# Regulated Prices



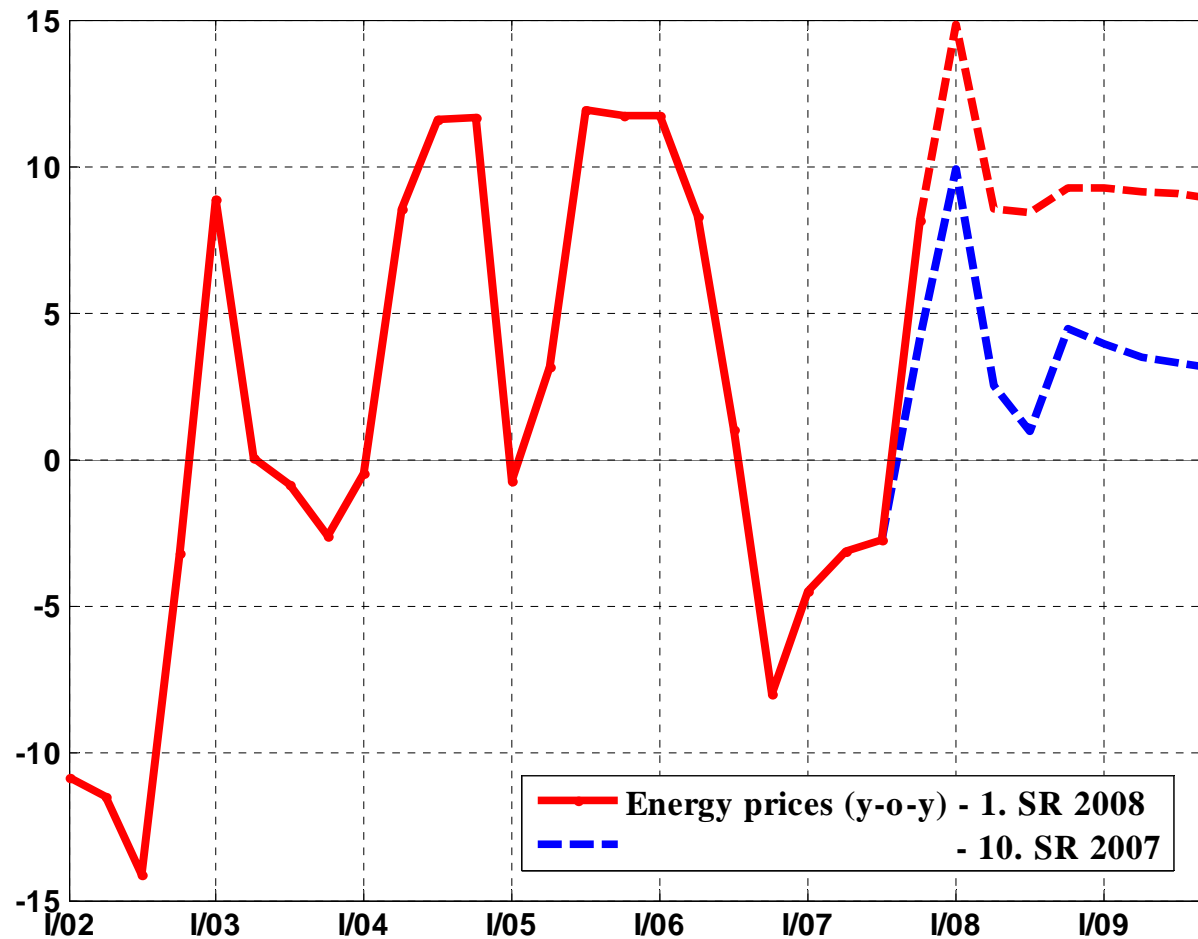
- Forecast raised due to healthcare payments and energy prices;
- Together with indirect taxes, the contribution to inflation will reach: 3.7 p.p. end-2008, 0.9 p.p. end-2009.

# Administrative Measures (selected items and total impact)

Year/date	Indirect tax changes in nonregulated prices		Regulated prices (with tax changes)		
	Item	Impact on CPI inflation	Item	Change in price	Impact on CPI Inflation
<b>2006-Total</b>		<b>0,16 p.p.</b>		<b>4.9%</b>	<b>1,08 p.p.</b>
<b>2007-Total</b>		<b>1,09 p.p.</b>		<b>6.5%</b>	<b>1,11 p.p.</b>
<b>2008</b>	Excise duties on tobacco products (delayed impact: 1Q+2Q)	0,60 p.p.	Regulated rents	20.0%	0,34 p.p.
	VAT 5 % --> 9 %	0.80 p.p.	Electricity	10.6%	0,41 p.p.
	Tax of energy (solid fuels)	0,03 p.p.	Heating	13.5%	0,41 p.p.
<b>Total</b>		<b>1,43 p.p.</b>	Natural gas	18.7%	0,42 p.p.
			Water	6.3%	0,08 p.p.
				<b>13.0%</b>	<b>2,23 p.p.</b>
				including impact of tax changes:	<b>0,39 p.p.</b>
				(VAT 5% --> 9%, tax of energy - electricity, heating)	
<b>2009</b>			Regulated rents	15.0%	0,29 p.p.
			Electricity	7.0%	0,28 p.p.
			Natural gas	3.0%	0,07 p.p.
			Heating	2.0%	0,06 p.p.
<b>Total</b>		<b>0,00 p.p.</b>		<b>4.7%</b>	<b>0,91 p.p.</b>
				including impact of tax changes:	<b>0,00 p.p.</b>

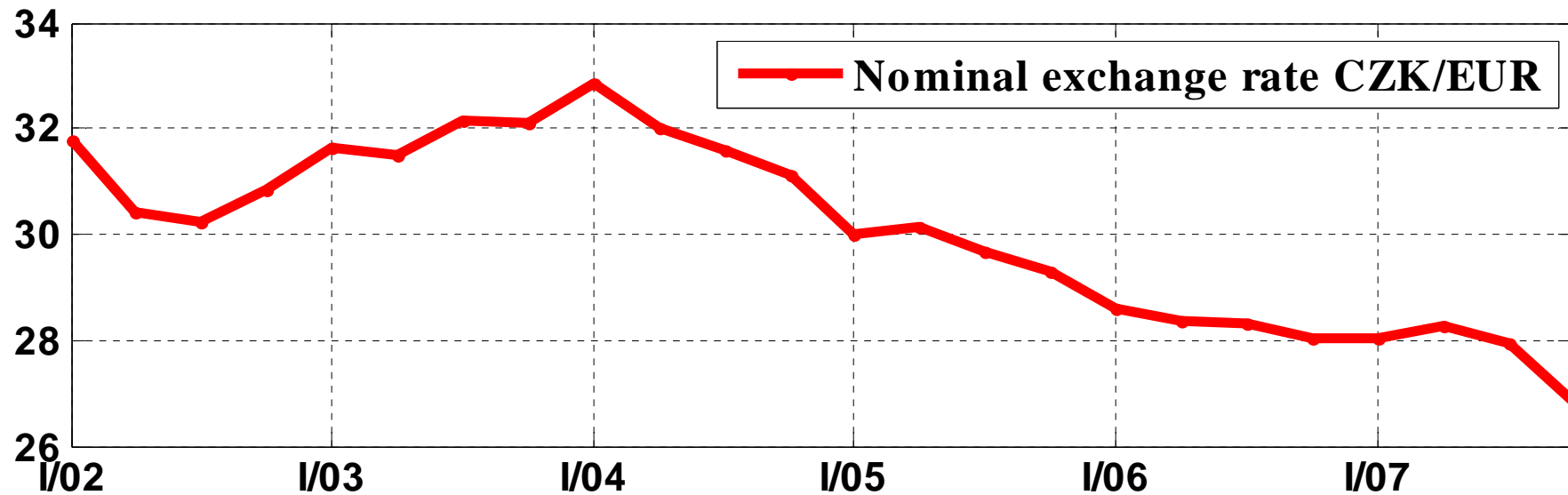
- Healthcare fees: assumed impact 0.4 p.p. in January (vs. 0.5 p.p. actual).

# Energy Prices



- Outlook increased due to higher oil prices (only partly offset by weaker USD).

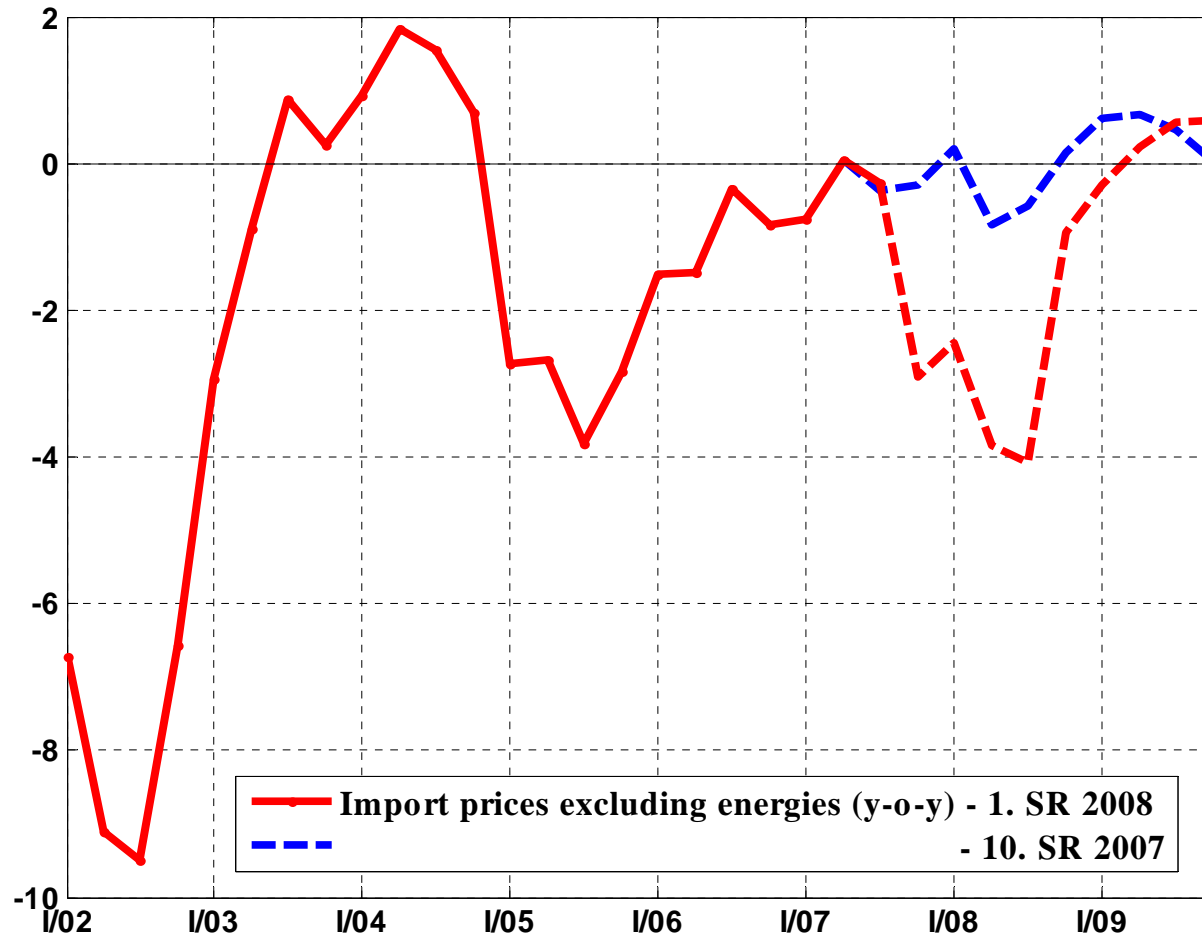
# Exchange Rate



**External forecasts of CZK/EUR**

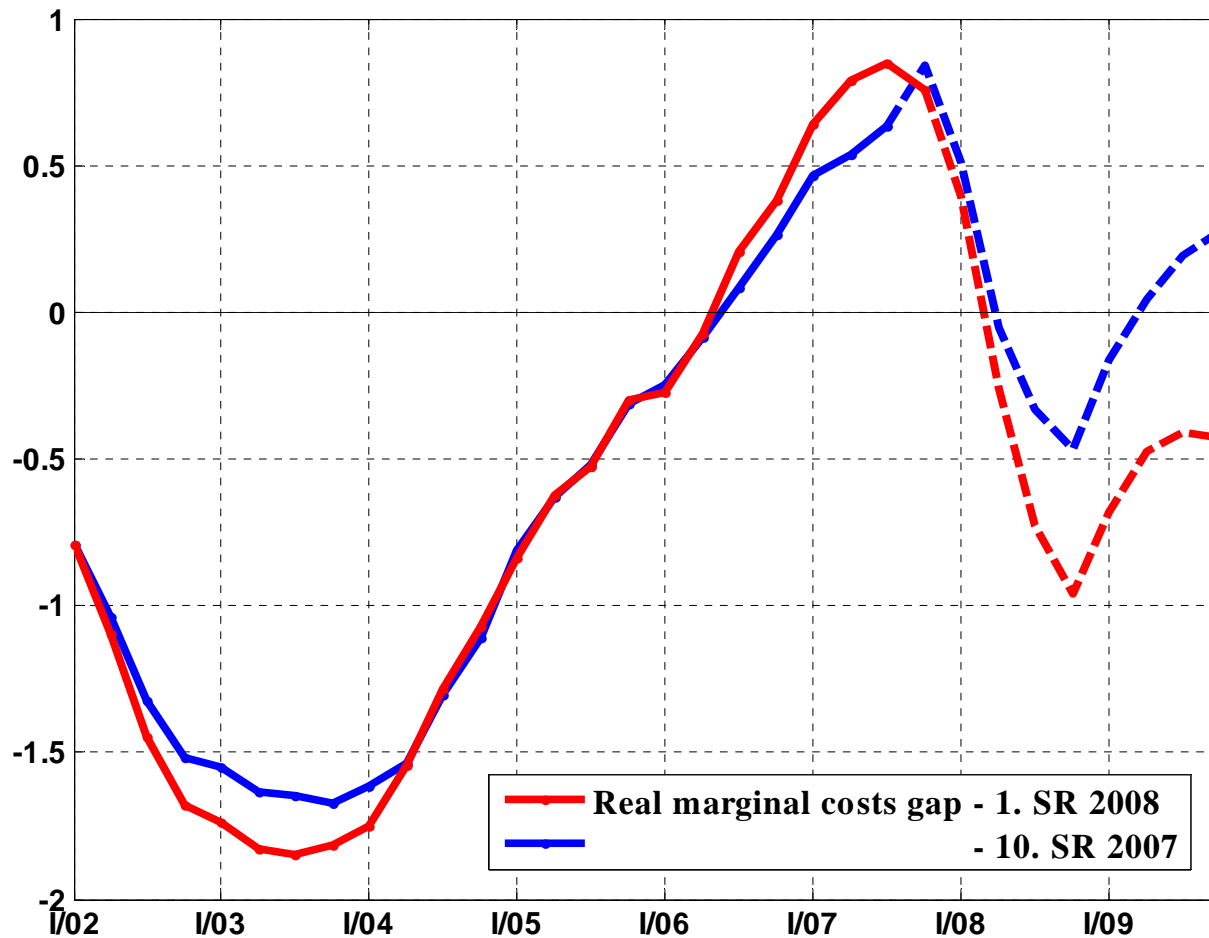
Date of forecast	Next quarter	1Y horizon	
	CF	CNB's survey	CF
<b>1/07</b>	27.5	27.1	27.6
<b>4/07</b>	28.0	27.2	27.7
<b>7/07</b>	28.5	27.4	27.9
<b>10/07</b>	27.6	26.9	27.6
<b>1/08</b>	26.3	25.8	26.2

# Import Prices excl. Energy



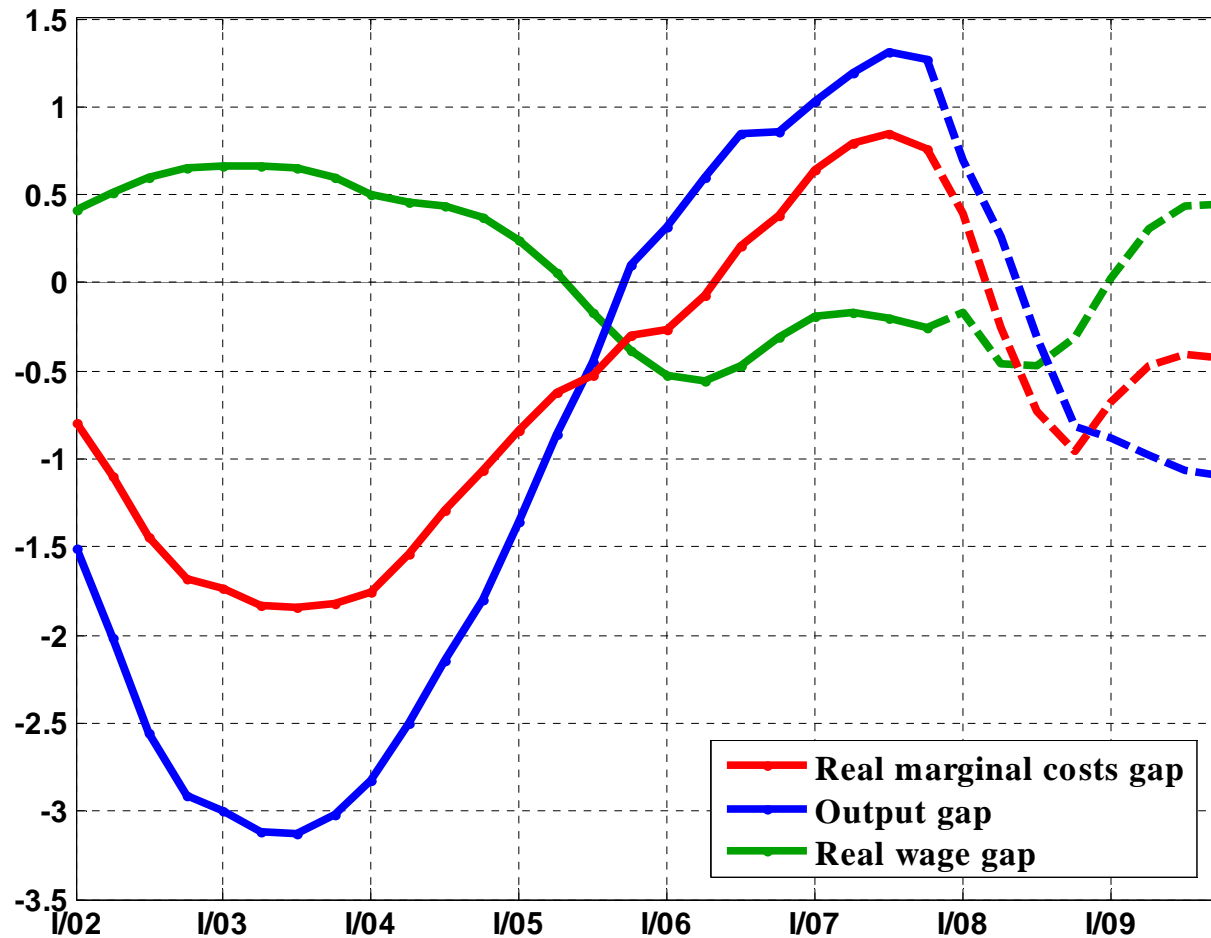
- Much more anti-inflationary due to stronger exchange rate.

# Pressures from the Real Economy



- Also more anti-inflationary on the whole forecast horizon due to the output gap.

# Pressures from the Real Economy



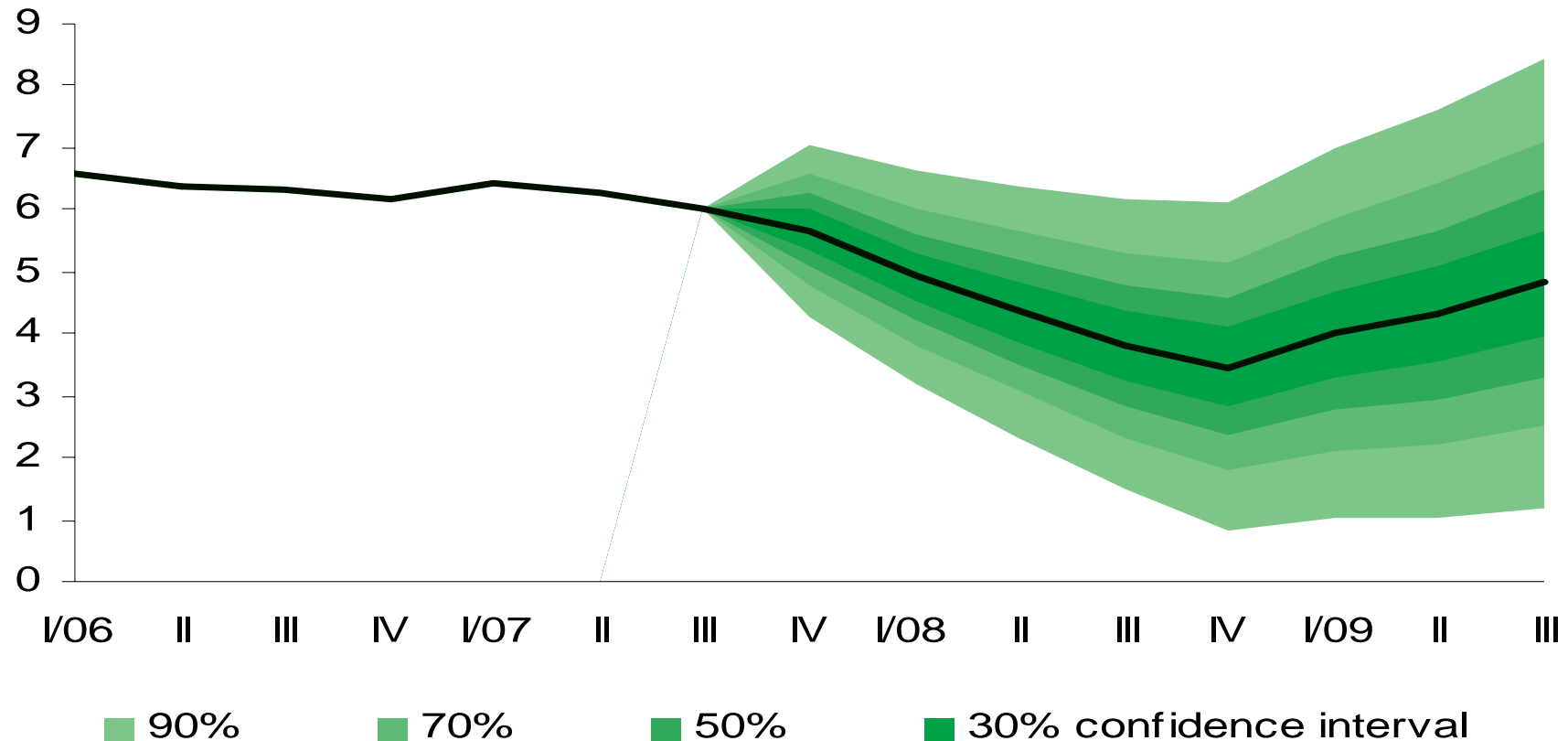
- Output gap will turn negative (restrictive fiscal impulse, monet. conditions and weak foreign growth);
- Real wages will turn slightly inflationary in 2009 due to inertia in nominal wages and sharp drop in inflation.

# GDP Growth Forecast

y/y change	2007	2008	2009
<b>Gross domestic product</b>	<b>6.1</b>	<b>4.1</b>	<b>4.6</b>
<b>Household consumption</b>	<b>5.5</b>	<b>2.8</b>	<b>4.3</b>
<b>Government consumption</b>	<b>0.5</b>	<b>-1.0</b>	<b>0.7</b>
<b>Fixed investment</b>	<b>5.8</b>	<b>7.8</b>	<b>8.9</b>
<b>Exports</b>	<b>13.9</b>	<b>9.7</b>	<b>10.8</b>
<b>Imports</b>	<b>13.4</b>	<b>10.1</b>	<b>10.9</b>

- GDP growth forecast revised down roughly by 1 p.p. for 2008 and 2009;
- Lower forecast of household consumption growth in 2008-9 due to higher inflation (slower real wage growth);
- Export growth lower than import growth due to strong exchange rate and weak foreign growth.

# GDP Growth Forecast – Fan Chart

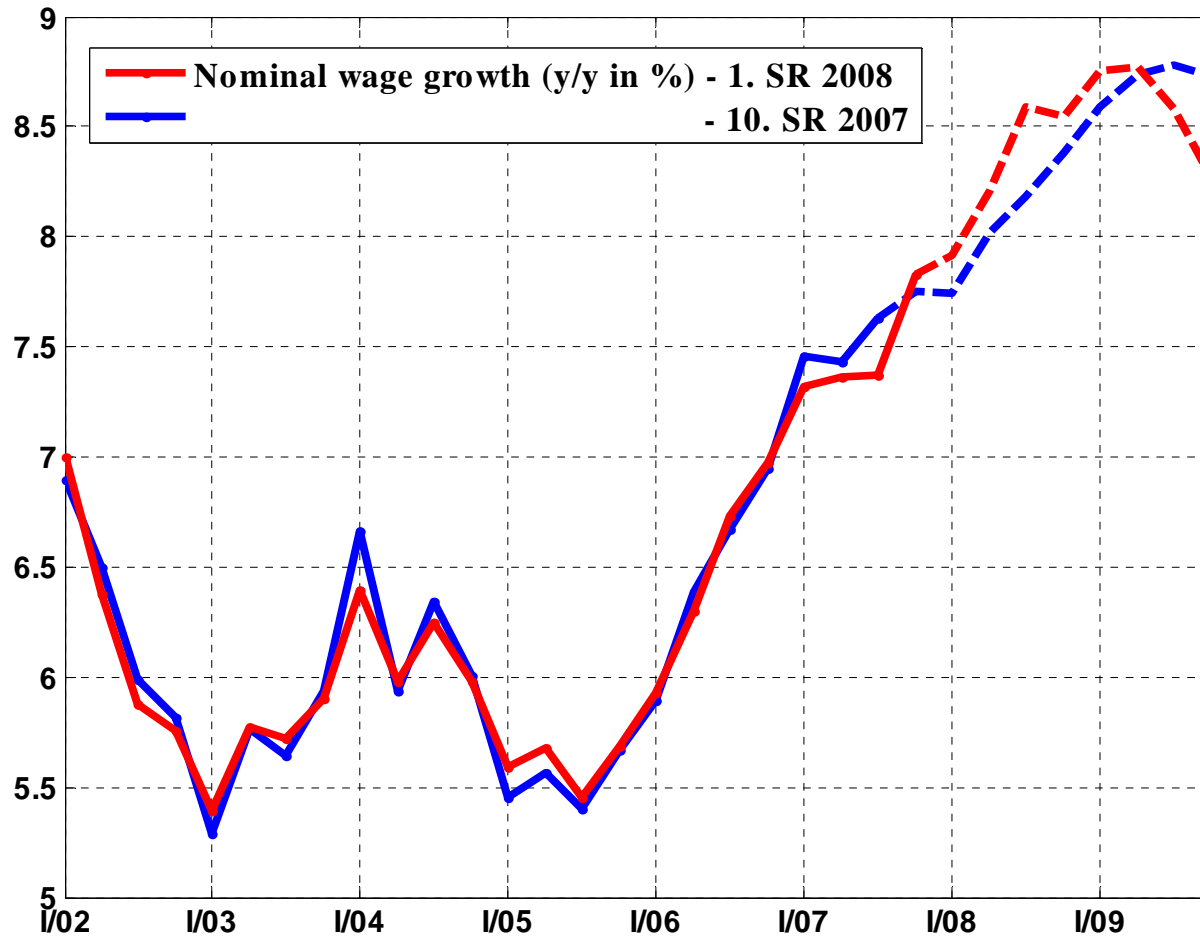


- Growth should start to accelerate again in 2009;



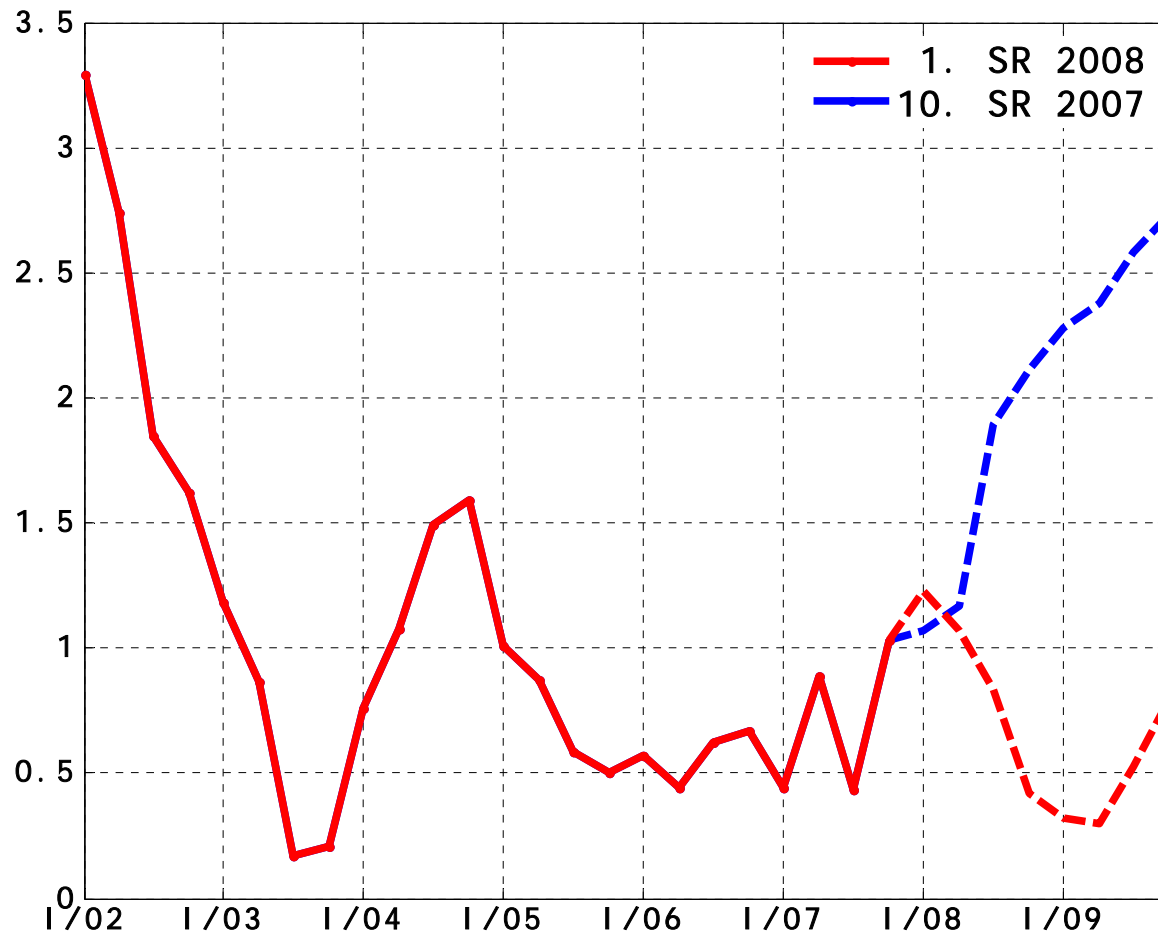
- Uncertainty relatively large (historically, but also at present).

# Nominal Wage Growth



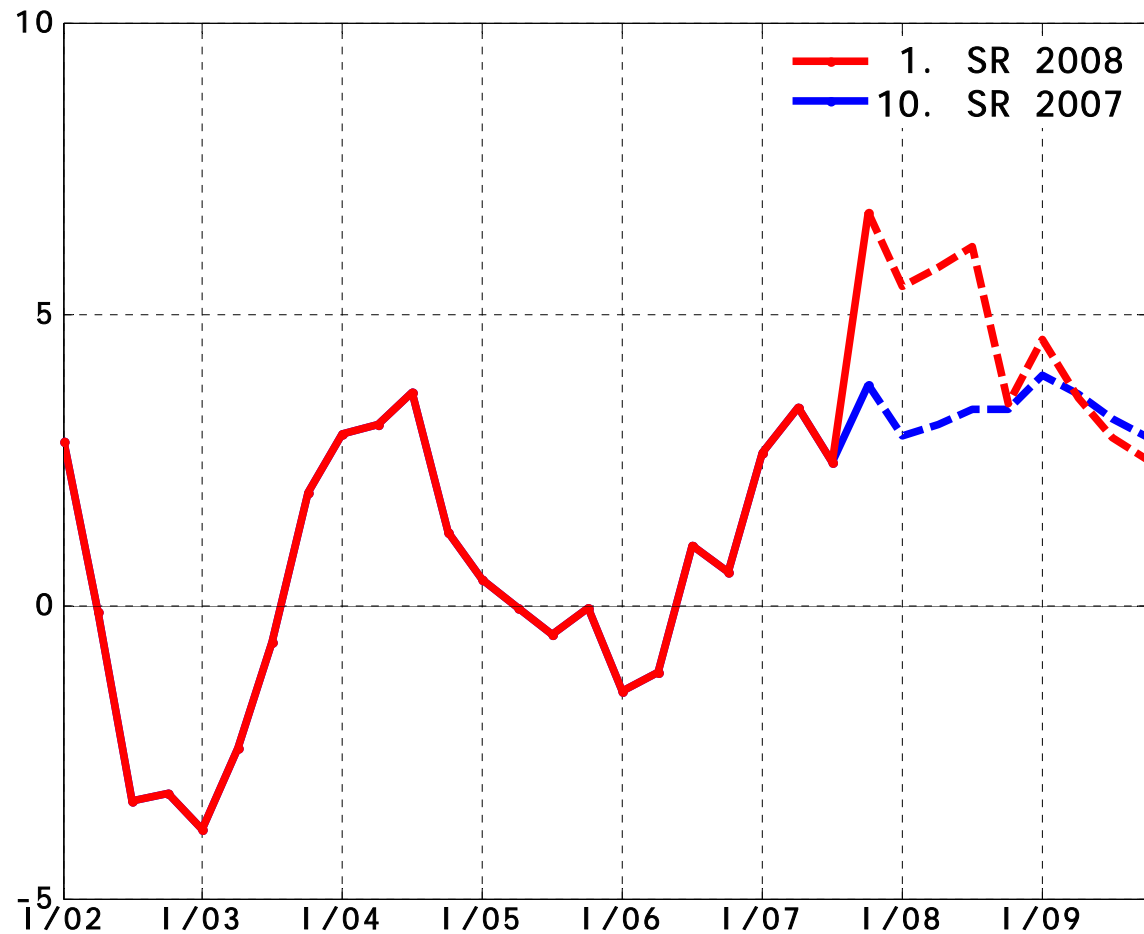
- Growth rate of average nominal wage in business sector: 9.0 % in 2008, 8.8 % in 2009;
- Revised up for 2008, but down for 2009;
- NULC growth 3.9 % in 2008 and 2.5 % in 2009.

# Core Inflation



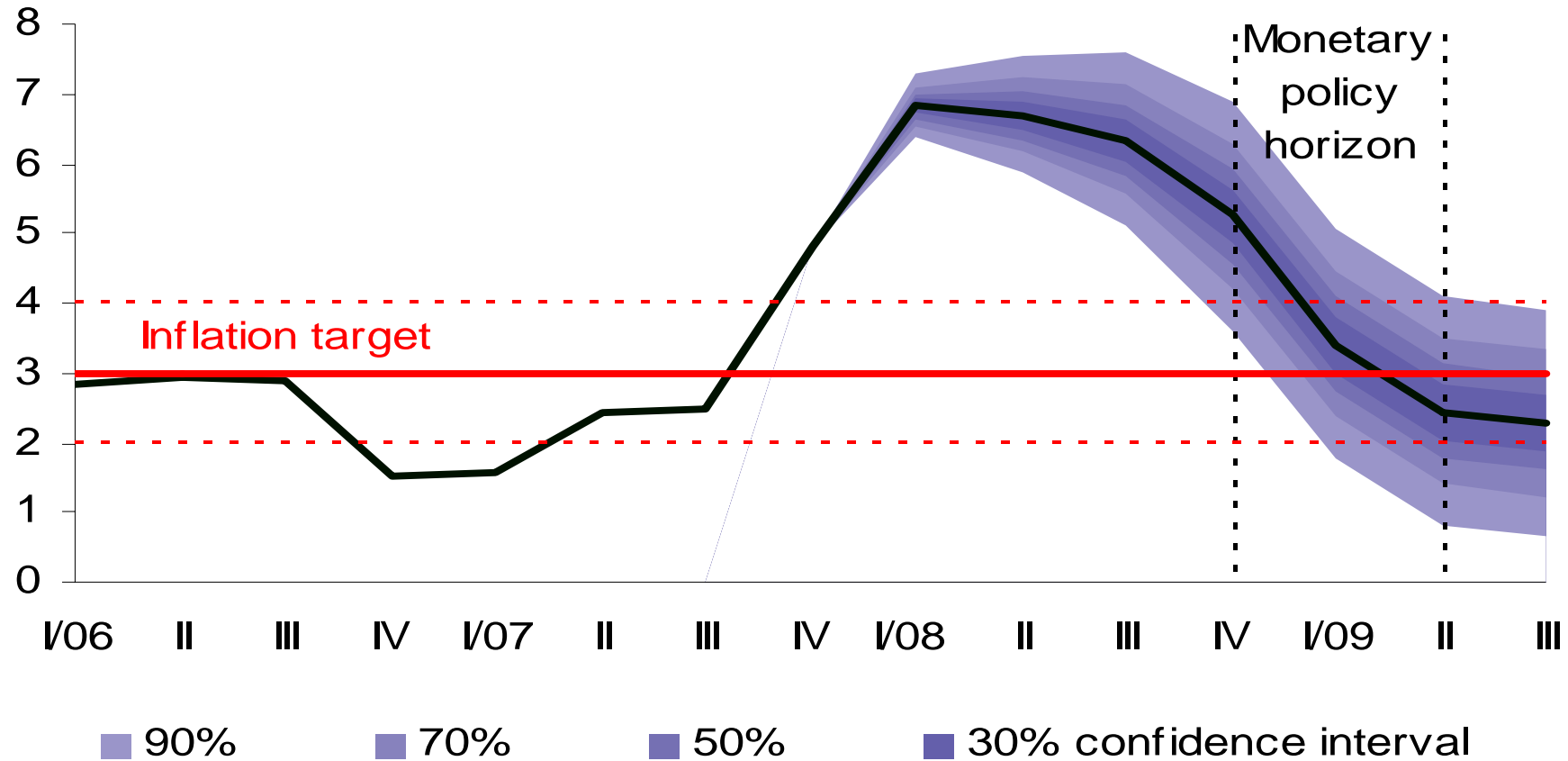
- Forecast substantially lowered due to anti-inflationary import prices and pressures from the real economy, and due to model changes (weaker spillovers of price shocks from other price groups).

# Food Prices (excluding taxes)



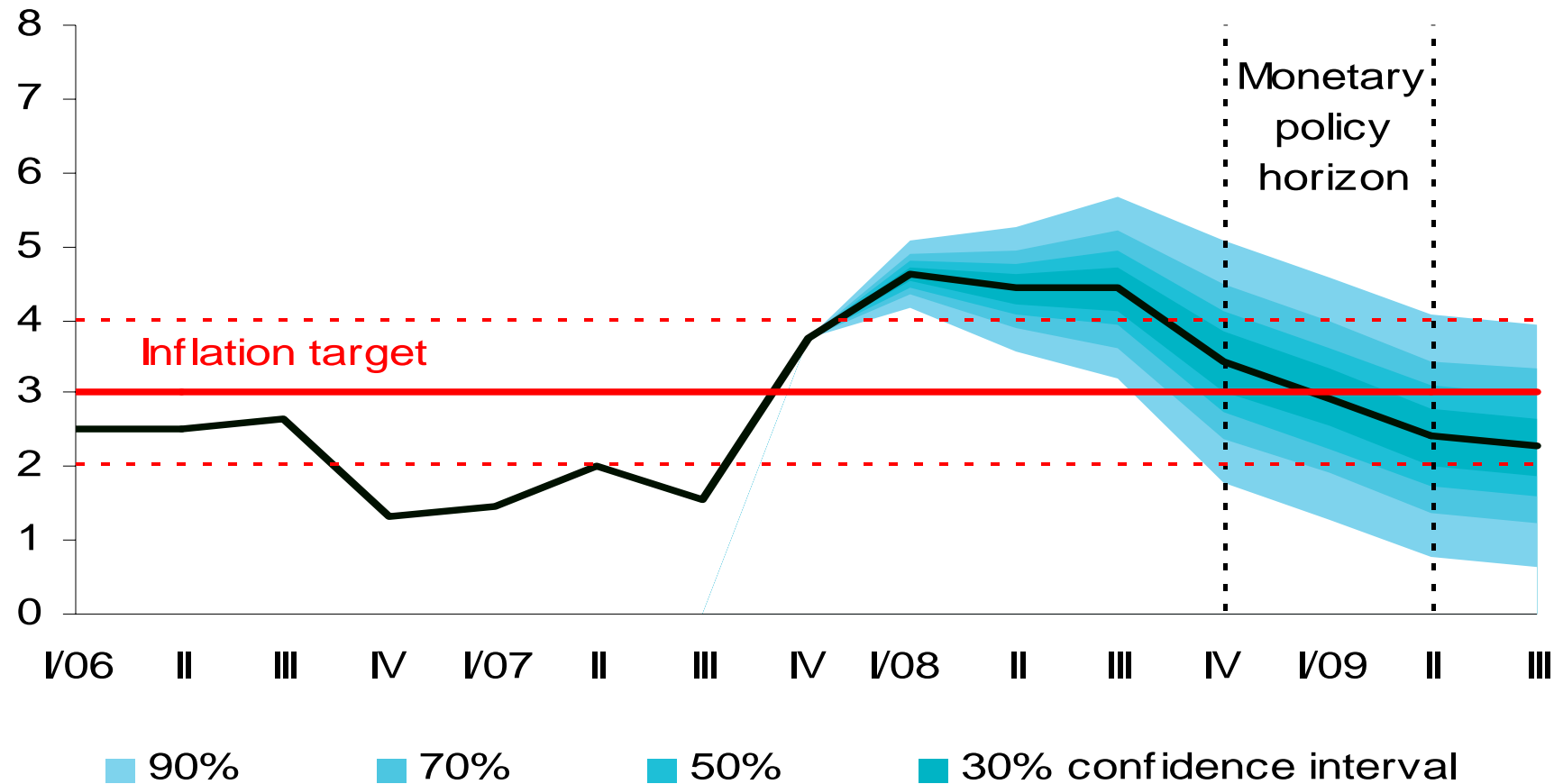
- Forecast increased for the coming quarters only;
- The impact of the current price shock assumed to be temporary.

# Headline Inflation



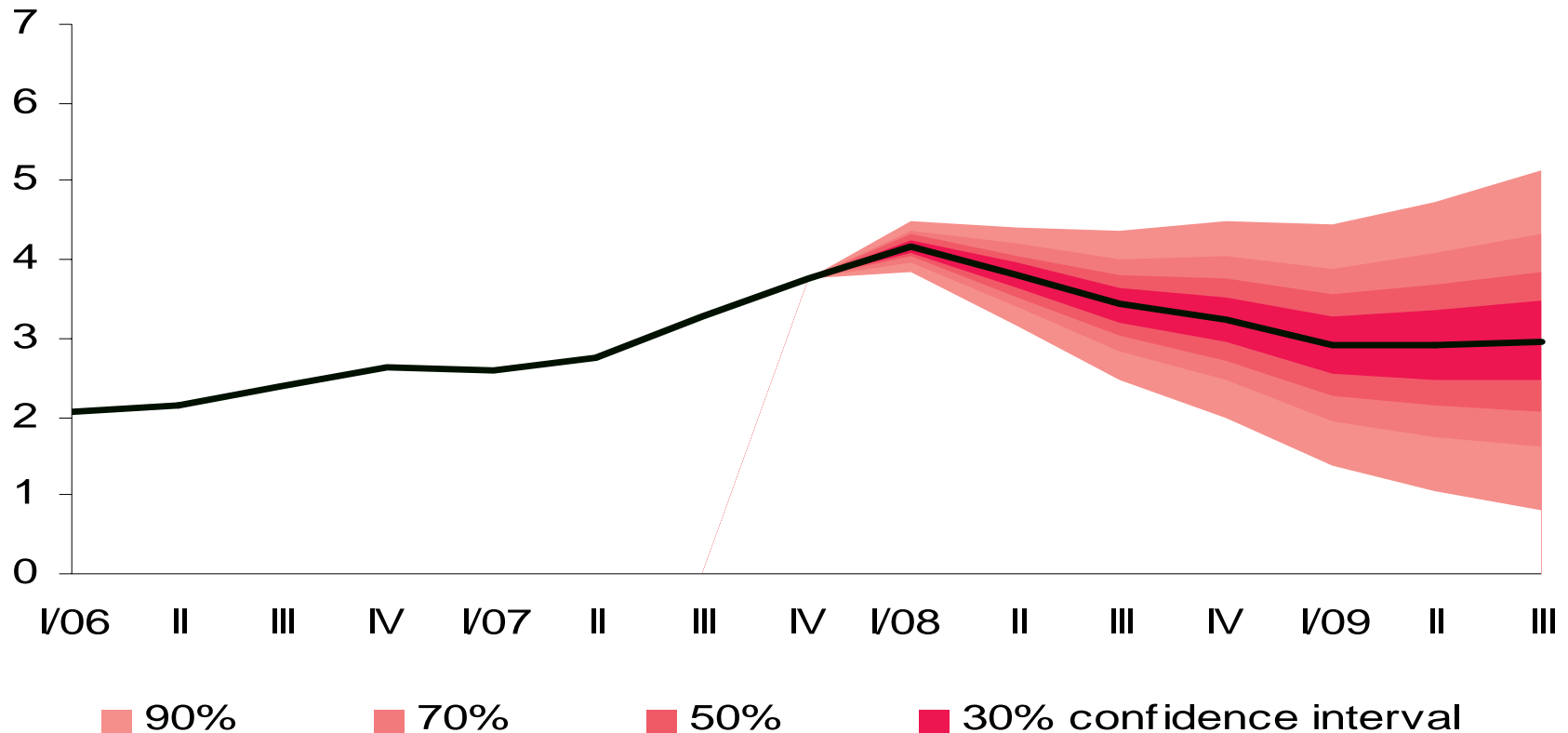
- Forecast increased for 2008, but lowered for the MP horizon.

# MP Inflation



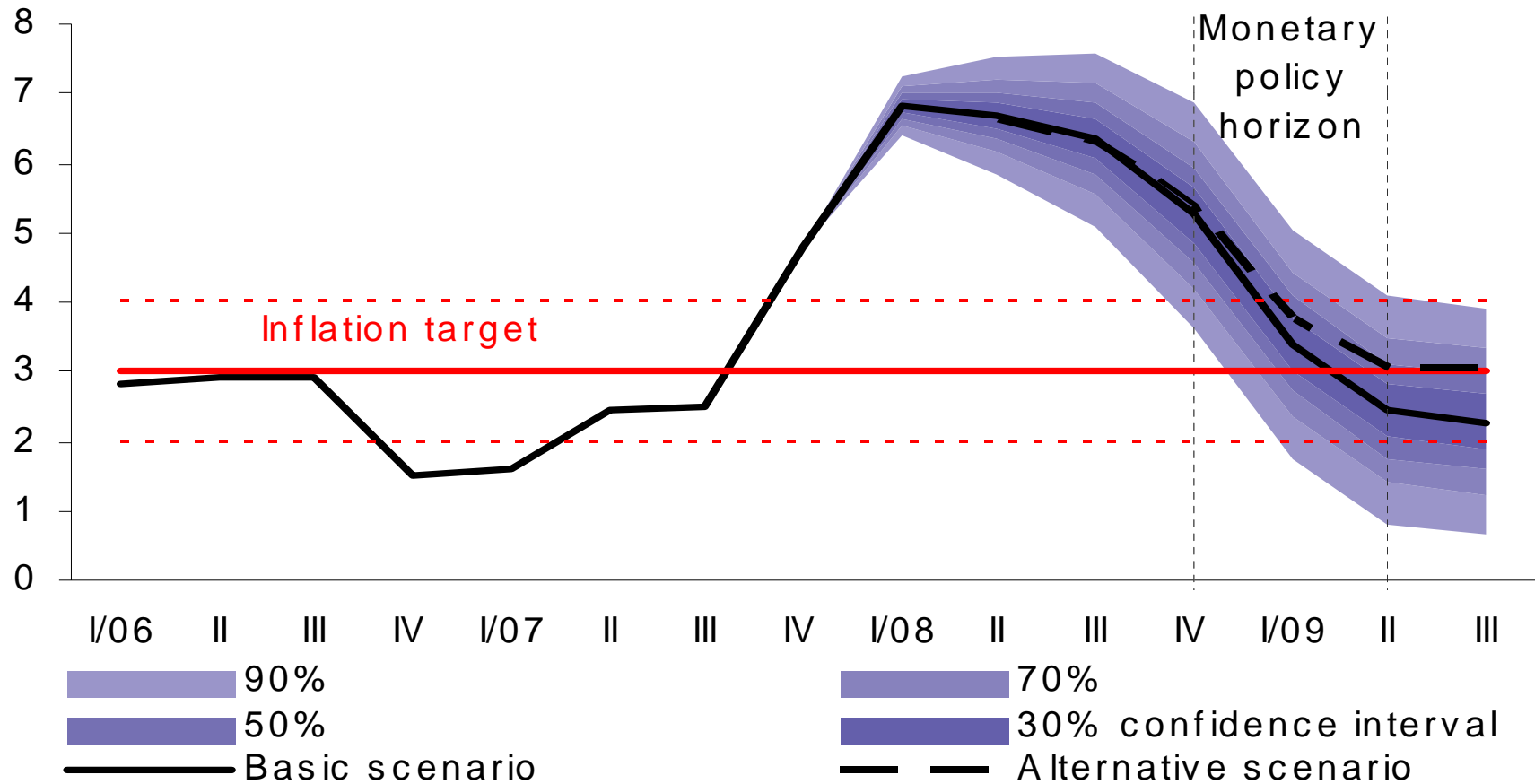
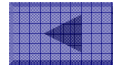
- The impact of tax changes will fade away in 2009.

# Interest Rate Forecast



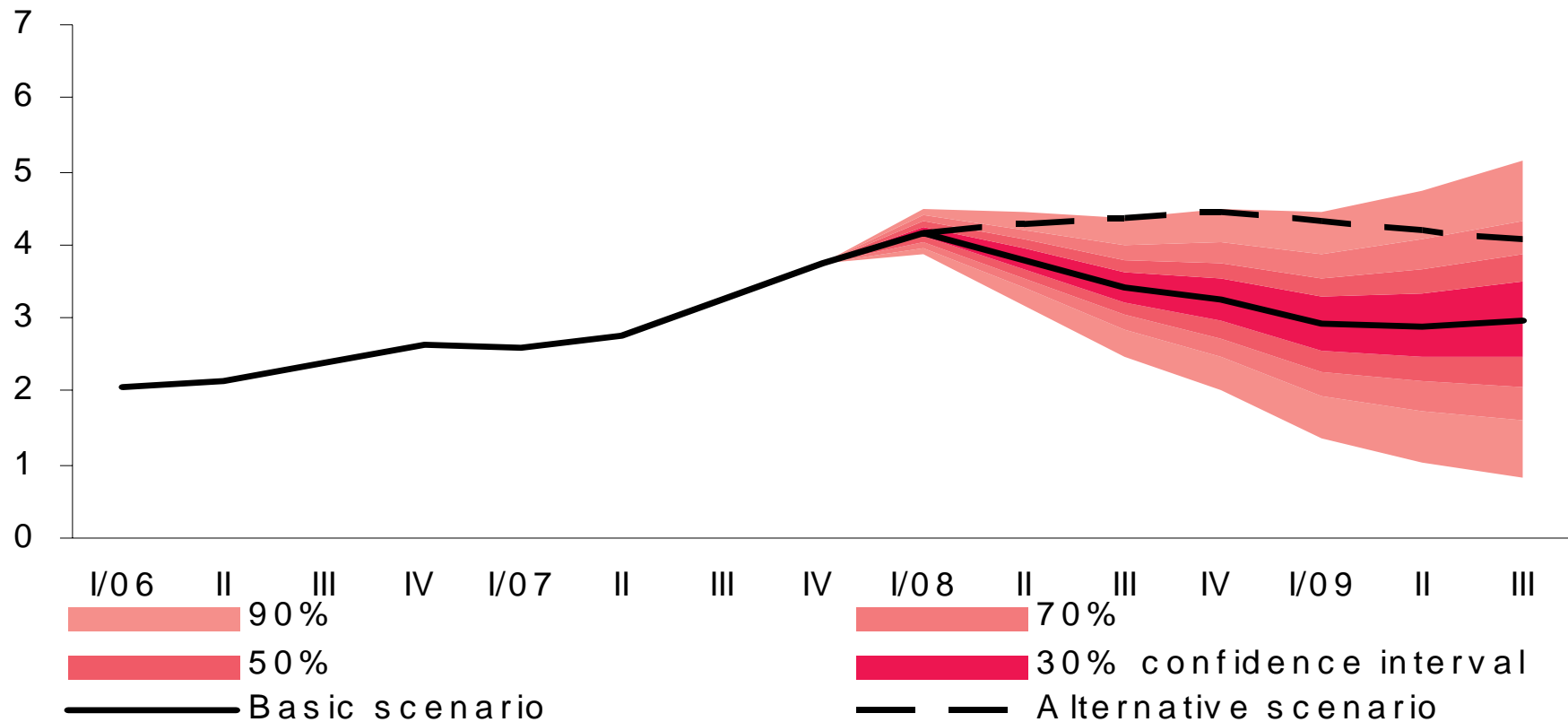
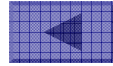
- Consistent with the macroeconomic forecast and its assumptions is a modest rise in nominal interest rates initially, followed by a decline still in 2008. In 2009, nominal interest rates are expected to be broadly flat.

# Headline Inflation – Alternative Scenario



- Forecast higher for 2009 (2nd-round effects).

# Interest Rate Forecast – Alternative Scenario



- Consistent with the alternative inflation forecast is a gradual rise in interest rates during 2008 followed by a slow decline, in response to the higher inflation outlook.

# Publication of the Interest Rate Path

February 2008

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Meeting with analysts, Prague, 15 February 2008

CNB

CZECH CNB NATIONAL BANK

## Outline

- Reasons for publication of the IR path;
- Foreign experience;
- CNB's past forecast errors for IR path;
- Construction of the fan chart;
- Interpretation of the fan chart.

## Reasons for Publication

- Further step towards higher transparency;
- IR path an integral part of the forecast;
- Necessary for full understanding of the forecast;

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Arguments against:

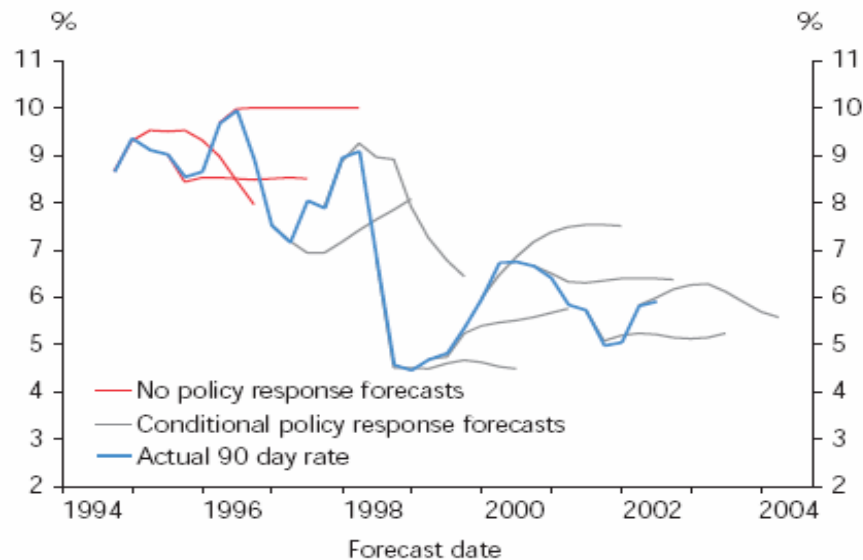
- May be viewed as a commitment;
- “Crowding-out“ of market participants’ analyses.

## Foreign Experience

- New Zealand: since June 1997, central projection;
- Colombia: from December 2003 till June 2004;
- Norway: since November 2005 (short-term outlook from June 2004), symmetric fan chart;
- Sweden: since early-2007, symmetric fan chart;
- Iceland: since March 2007, asymmetric fan chart;
- Israel: since January 2007, symmetric fan chart.

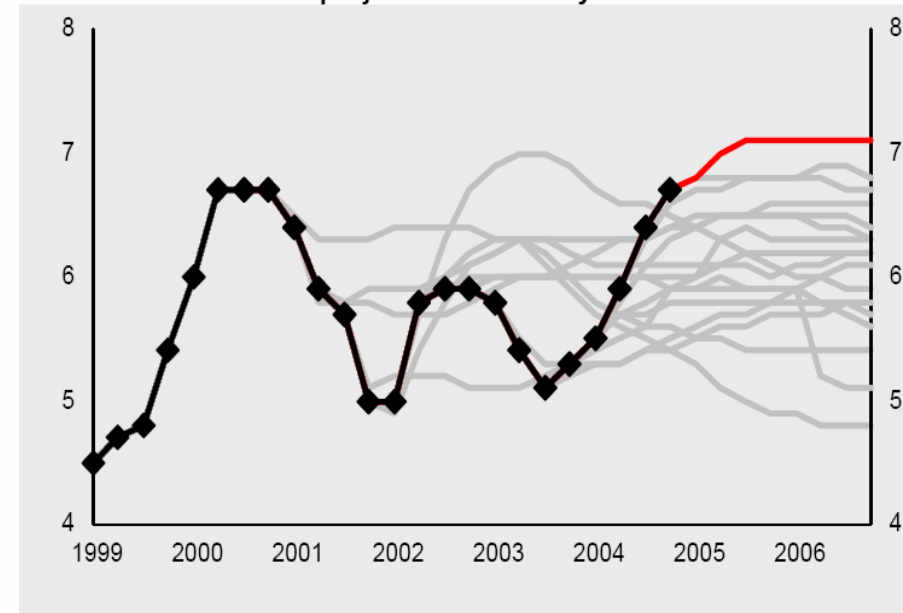
# Foreign Experience – New Zealand

The 90 day interest rate and the Reserve Bank's forecasts (3 quarter intervals)



Source: McCaw a Ranchhod (2002), RBNZ

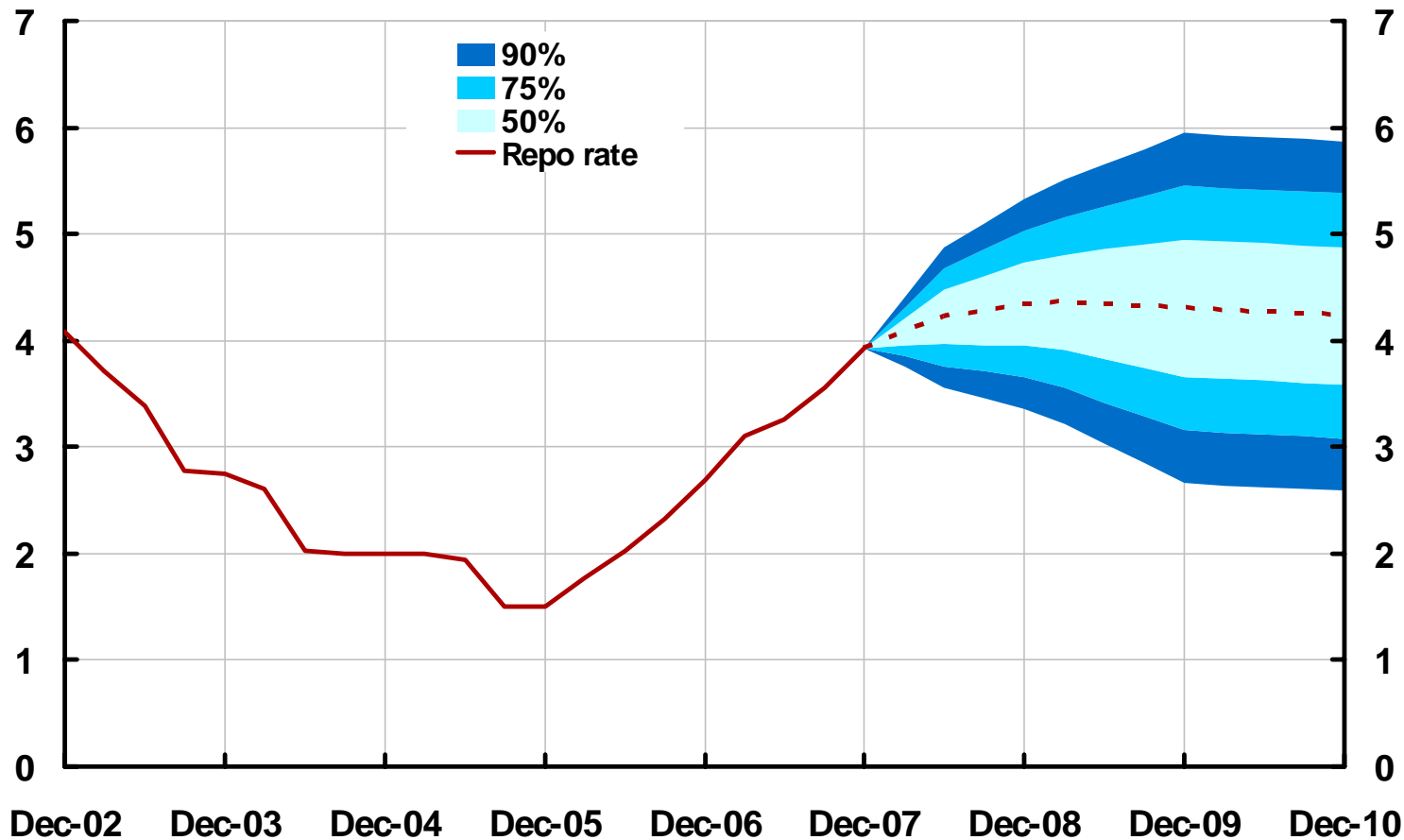
Successive projections of 90 day interest rates



Source: Archer (2005)

⇒ Reality often differs from forecasts substantially (no commitment).

# Foreign Experience - Sweden

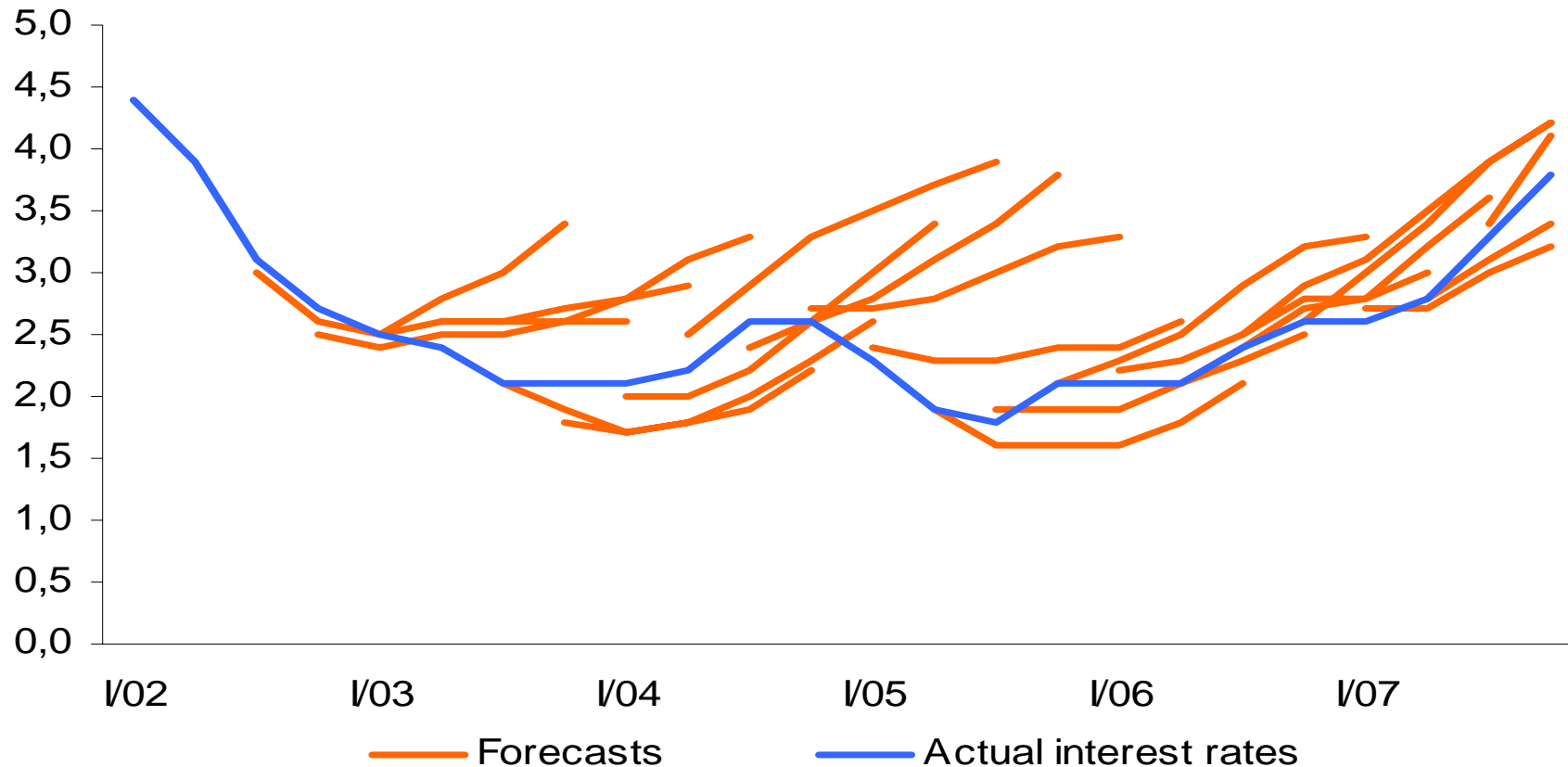


Source: The Riksbank



⇒ Fan chart illustrates the uncertainty.

# CNB's Past Forecast Errors for the Interest Rate Path

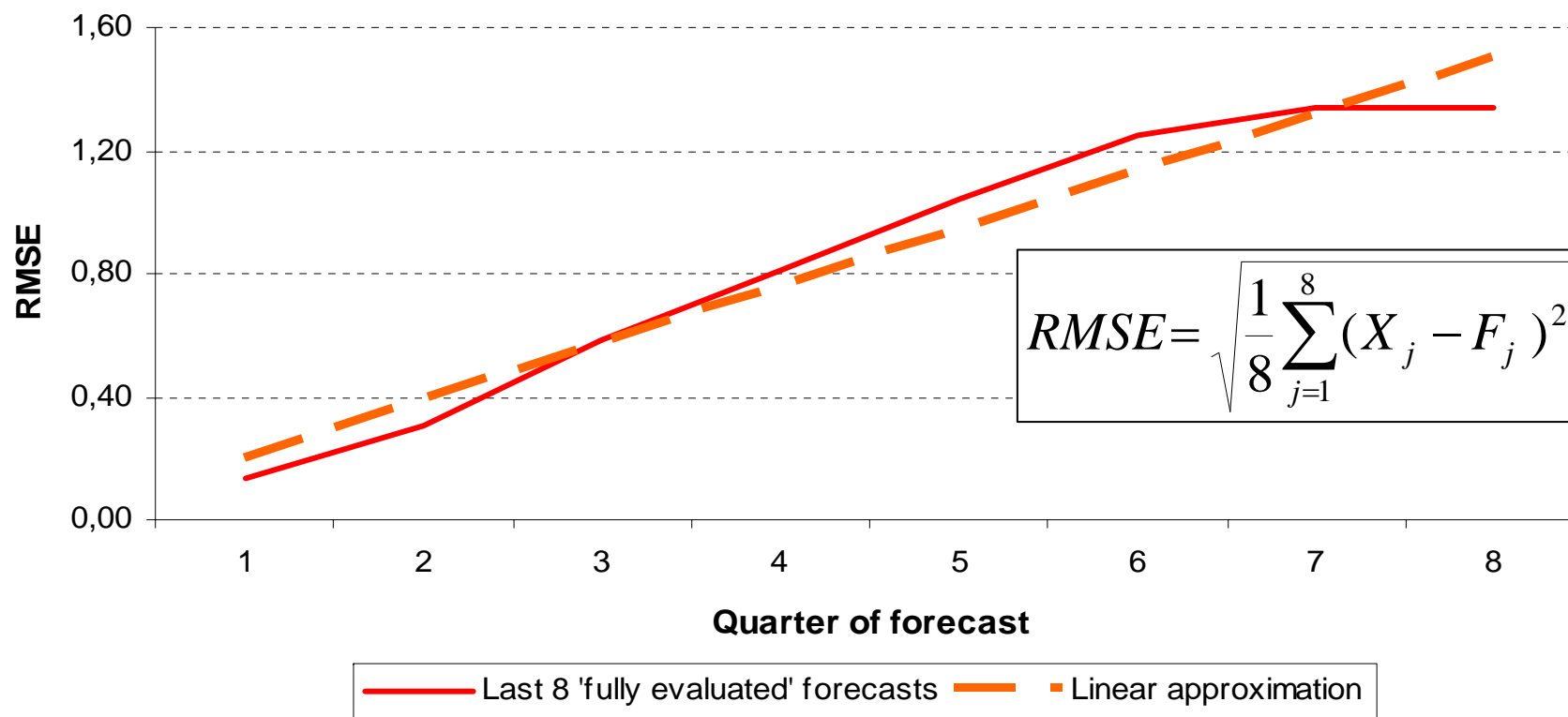


⇒ Experience similar to the New Zealand: reality often deviates from forecasts considerably (no commitment).

# RMSE of CNB's Past Forecasts for the Interest Rate Path

## RMSE - Interest rate path (3M PRIBOR)

(updated in January 2008)

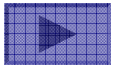


⇒ Forecast uncertainty increases for more distant future.

## Construction of the Fan Chart

- Constructed as symmetric around the baseline;
- Confidence intervals based on RMSE statistic and assumed normal distribution;
- RMSE calculated from 8 past forecasts which can be evaluated for all 8 forecast quarters;
- RMSE „smoothed“ by linear approximation;
- Updated once a year in January;
- Fan charts for other variables made analogically.

# Interpretation of Fan Chart

- Fan chart is a forecast, not a commitment!
- New information or Board's risk assessment may lead to different interest rates;
- It shows the general uncertainty, not specific uncertainty for the given forecast;
- For specific uncertainty and risks: watch the press conferences, Minutes, alternative scenarios,  public statements, meeting with analysts etc.

Thank you  
for your attention.