



NÁRODNÁ BANKA SLOVENSKA

Econometric Tools and the Forecasting Process at the NBS

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- Forecasting process
 - Motivation, position of the models
- Models
 - QPM, Structural model, Multivariate filter
- Illustration
 - Scenarios, Reports



- In December 2004 The Bank Board decided to establish: “Inflation targeting in the conditions of ERM II”
- 2005 - 2008: Explicit inflation targeting
- Announced inflation target is the main nominal anchor
- Exchange rate: Managed floating until the time of entry into the ERM II (Nov 2005)



- Focus of MP on price stability – **time lag** between MP action and reaction is longer than 1 year
- Role of **inflation expectations** – important transmission channel
 - Objective of monetary policy focused on future developments
 - Strong orientation on analyses
 - Requirement of a new system of work – forecasting and policy analysis system (FPAS)

Forecasting process – Needs



- Monitoring and analyzing developments
 - Prices, labor market, real economy, foreign trade, fiscal side
- Forecasting horizon: current + 2 years
 - Short-term + **medium-term forecasts**
- Scenario analysis
 - **Alternatives to baseline projection**
- Information flows
- Room for discussion
- Reporting to BB NBS

Forecasting process – Role of model



- Discipline enforcing device – unifies views about the economy
- Model formally captures the most significant parts of transmission mechanism
- Systematic component
- Transparency and consistency
- Medium-term forecasts
- Risk assessment – alternative scenarios



- Software support
 - Matlab – models
 - IRIS (Matlab toolbox developed at CNB) – models
 - MS Excel – input tables, output tables
 - Tex – reports



➤ Multivariate filter with unobserved components:
Kalman filter - extracts unobserved components of key variables:

➤ GDP – potential output, output gap

➤ Real interest rate – equilibrium i.r., i.r. gap

➤ Real exchange rate - equilibrium e.r., e.r. gap

→ Current imbalances in the economy

→ Inputs into forecasting model



- Quarterly Projection Model (QPM) - describes dynamic interaction of key macroeconomic variables
- Monetary policy affects economic cycles rather than trends
- Deviations from exogenous long-run trends
- Open economy model
- Active monetary policy
- Forward-looking model
- Monetary policy transmission channels: exchange rate channel, RMCI channel, expectations channel



- Structural model - describes dynamic interaction of key macroeconomic variables in greater detail
- Monetary policy affects economic cycles rather than trends
- Fluctuations around endogenous long-run trends.
- Open economy model
- No autonomous monetary policy – euro-area regime
- Backward-looking model

Illustration - Scenarios



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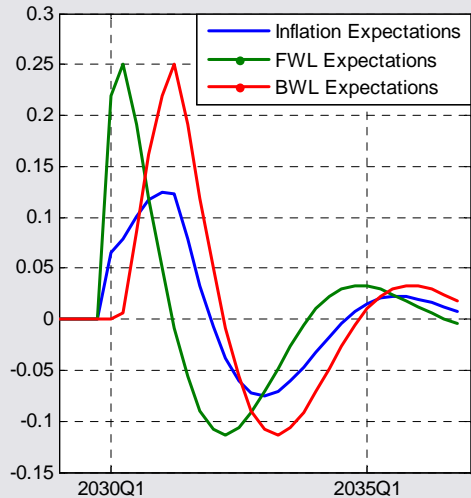
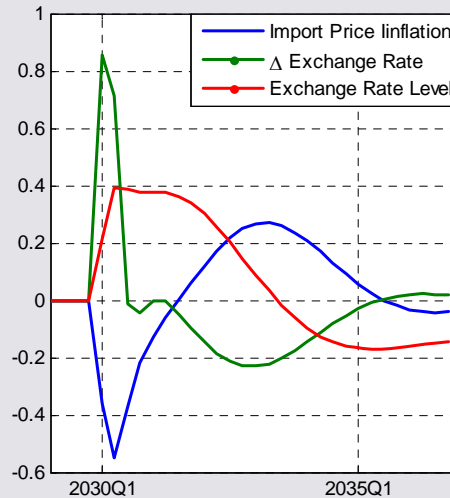
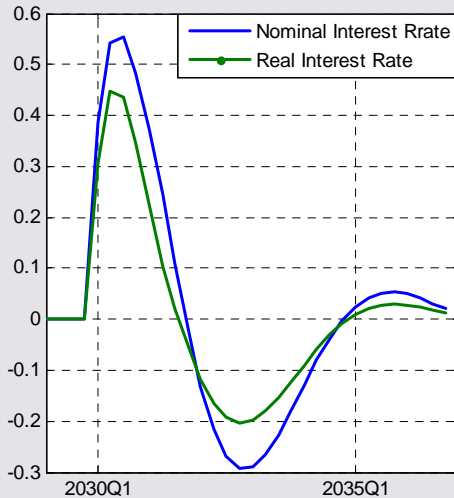
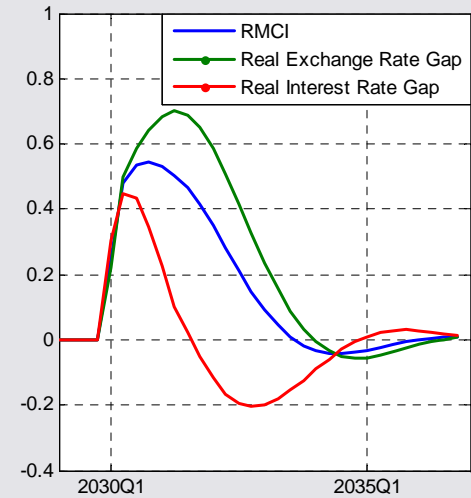
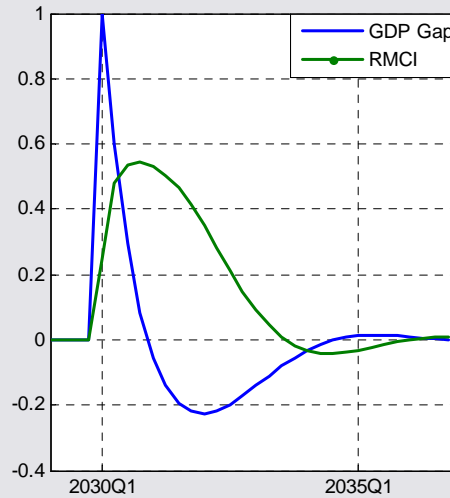
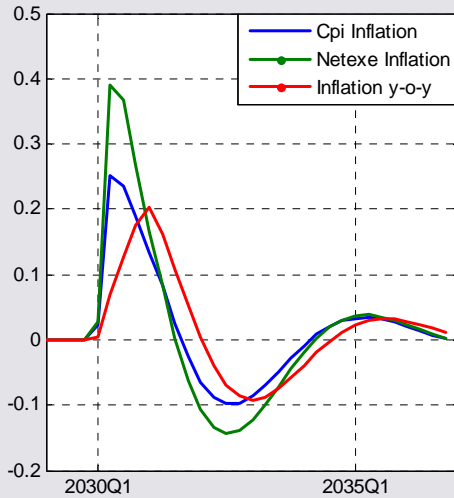


Illustration - Reports



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Simulation BASELINE

		2032Q3	2032Q4	2033Q1	2033Q2	2033Q3	2033Q4	2034Q1	2034Q2	2034Q3	2034Q4	2035Q1
Nominal Variables												
Total Inflation q-o-q	% p.a.	2.6	2.0	1.6	1.7	2.1	2.2	2.2	2.2	2.1	2.0	2.0
Total Inflation y-o-y	% p.a.	2.0	2.0	2.0	2.0	1.8	1.9	2.0	2.1	2.1	2.1	2.1
Total Inflation - index	dec2000=100	140.5	141.2	141.7	142.3	143.1	143.9	144.6	145.4	146.2	146.9	147.7
Real variables												
GDP Growth q-o-q	% p.a.	7.3	5.7	5.1	5.0	5.1	5.0	5.0	5.0	5.0	5.0	5.0
GDP Growth y-o-y	% p.a.	5.5	5.5	5.7	5.8	5.2	5.0	5.0	5.0	5.0	5.0	5.0
GDP	mld Sk	258.5	262.2	265.6	268.9	272.3	275.8	279.2	282.7	286.3	289.9	293.5
Potential GDP Growth q-o-q	% p.a.	7.1	5.5	4.8	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Potential GDP Growth y-o-y	% p.a.	5.5	5.5	5.5	5.5	5.0	4.9	4.9	5.0	5.0	5.0	5.0
Potential GDP	mld Sk	259.3	262.9	266.0	269.2	272.6	276.0	279.5	283.0	286.6	290.2	293.8
Interest Rates												
Short Interbank Rate	% p.a.	4.2	4.1	4.2	4.3	4.4	4.5	4.5	4.5	4.4	4.3	4.2
Short Interbank Rate-Policy Neutral	% p.a.	4.5	4.5	4.4	4.5	4.5	4.5	4.5	4.4	4.4	4.3	4.2
Exchange Rate SKK/EUR												
Exchange Rate	SKK/EUR	34.8	34.6	34.3	34.1	33.8	33.6	33.3	33.1	32.8	32.6	32.4
Nominal Appreciation q-o-q	% p.a.	2.6	2.1	3.0	3.0	3.1	3.0	2.9	2.8	2.8	2.9	2.9
Nominal Appreciation y-o-y	% p.a.	3.1	2.8	2.8	2.7	2.8	3.0	3.0	3.0	2.9	2.9	2.9
Exchange Rate end of period	SKK/EUR	34.7	34.5	34.2	34.0	33.7	33.5	33.2	33.0	32.8	32.5	32.3
Exchange Rate USD/EUR												
Exchange Rate	USD/EUR	1.27	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Nominal Appreciation q-o-q	% p.a.	-1.1	-1.1	-1.1	-1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nominal Appreciation y-o-y	% p.a.	-1.5	-1.1	-1.1	-1.1	-0.8	-0.5	-0.3	0.0	0.0	0.0	0.0
Exchange Rate SKK/USD												
Exchange Rate	SKK/USD	27.3	27.1	26.8	26.6	26.4	26.2	26.0	25.8	25.6	25.4	25.2
Exchange Rate q-o-q	% p.a.	3.7	3.2	4.1	4.1	3.1	3.0	2.9	2.8	2.8	2.9	2.9
Exchange Rate y-o-y	% p.a.	4.5	3.9	3.9	3.8	3.6	3.6	3.3	3.0	2.9	2.9	2.9

Legend

all variables are seasonally adjusted in logarithm
quarter-on-quarter growth rates are annualized



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Thank you for your attention

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