Macroeconomic Modelling and Elaboration of the Macro-Econometric Model for the Latvian Economy

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Macroeconomic Modelling in Latvia

- Banks
  - Regular use, but mostly confidential
- Ministries
  - Ministry of Economics and Ministry of Finance, regular use
- Universities and other organisations
  - Mostly analysis of different aspects of economy
Analysis of Macroeconomic Models

Model application options

Purpose and tasks
- Economic analysis
- Forecasting
- Scenario analysis
- Evaluation of influence of "shocks"
- Counterfactual analysis
- Risk analysis
- Other tasks

Application direction
- Managerial decision-making
- Elaboration of fiscal, monetary, energy, social policy
- Planning in government institutions
- Research
- Teaching
- Commercial use
- Other application directions

Application stage
- Use for a particular aim (Principal models)
- Use in a system of models (Assistant models)
- Dual use

Subject or user
- Use relation to model
- Subject’s institutional affiliation
- Model users are model builders
- Model users are not model builders
- Regular use
- Use upon necessity
- Rare use
- State administration
- Central banks
- International organizations
- Scientific organizations
- Commercial organizations
- Other users

Regularity of model use
- Regular use
- Use upon necessity
- Rare use

Forecasting horizon
- Short-term
- Medium-term
- Long-term
Latvia’s Macro-Econometric Model

- Latest developments:
  - Updated database
  - Updated model
  - Portable Dyme and G7
Monograph Contents

1. OVERVIEW OF MACROECONOMIC MODELS IN THE WORLD
   1.1. General Characterization of the Models
   1.2. Theoretical Basis of the Models
   1.3. Application Options of the Models
   1.4. Model Structure
   1.5. Informative and Software Maintenance

2. THE STRUCTURE OF THE LATVIA’S MACRO-ECONOMETRIC MODEL
   2.1. Theoretical Justification of the Model
   2.2. General Structure of the Model
   2.3. GDP Use and Income Section
   2.4. Supply of Goods and Services and Production Factors
   2.5. Prices and Wages
   2.6. Foreign Trade and Balance of Payments
   2.7. Employment and Demographic Indicators
   2.8. Fiscal Sector
   2.9. Energy Sector

3. APPLICATION OF MACROECONOMIC MODELS IN LATVIA
   3.1. Modelling in Latvia
   3.2. Development Scenarios of Latvian Economy
   3.3. Forecasts of Macroeconomic Indicators
Future Prospects

- Modelling of Logistic Systems and Transit
- Product-to-Product Tables for Products of Forestry and Wood
Latvia’s Macro-Econometric Model

Latest developments:

- Updated database
- From 15 industries to 10
- New data on resident population – Population Census 2011
- G7 at last
Latvia’s Macro-Econometric Model

- GDP use and income section,
- supply of goods and services and production factors,
- prices and wages,
- foreign trade and balance of payments,
- fiscal sector,
- employment and demographic indicators,
- energy sector
Time trend

Capital investments in agriculture and fishing

Investment deflator

Price index in agriculture and fishing

Real VA in agriculture and fishing

Capital investments in industry

Real VA in industry

Capital investments in construction

Capital investments in service industries

Share of capital investments in service

Total capital investments

Growth of capital investments
Model in Portable Dyme

- Database
  - Not yet “German efficiency” – hist vs. calc
  - Too many re-runs
Model in Portable Dyme

- Regressions
  - Temporary variables vs. additional variables in data space – problems with different limits (2011/2012)
  - Does the sequence matters in alleqn.reg? How about coefficients?
Latvia’s Macro-Econometric Model

- Export of Goods to Other Countries
- SEE = 0.07  RSQ = 0.9882  RHO = 0.19  Obser = 18 from 1995.000
- SEE+1 = 0.07  RBSQ = 0.9857  DW = 1.62  DoFree = 14 to 2012.000
- MAPE = 0.87

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Model in Portable Dyme

- Model
  - Many things to forget
  - Double information/missing information
Economic Development of Latvia

Real GDP growth (year on year), %

-15 -10 -5 0 5 10 15

2005 2006 2007 2008 2009 2010 2011 2012 2013
Economic Development of Latvia

Capital Investments, mil LVL

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Economic Development of Latvia

Growth of Consumer Prices (year on year), %

[Graph showing the growth of consumer prices from 2009 to 2013.]
Economic Development of Latvia

Gross Wages, LVL

Year:
- 2009
- 2010
- 2011
- 2012
- 2013
Economic Development of Latvia
Economic Development of Latvia
Economic Development of Latvia

**Budget Deficit, % of GDP**

**Government Debt, % of GDP**
Results: Real GDP
Results: Real Capital Investments
Results: Nominal Wages
Results: Current Account, % of GDP
Results: Number of Employees
Results: Total Unemployment Rate
Results: Population

- LZA EI Inert Scenario with Migration, 2012
- LZA EI Active Scenario without Migration, 2012
- IMF, World Economic Outlook Database, April 2013
- UN Population Division, High Fertility Scenario, 2012
- UN Population Division, Low Fertility Scenario, 2012
- V. Ozolina, R. Pocs, 2013
Results: Government Revenues
Results: Government Debt, % of GDP
Results: Electricity Consumption

![Graph showing electricity consumption from 2000 to 2020.
- Daugava's HPPs
- Riga's CHPs
- Other producers
- Electricity deficit (Base scenario)