

## **Forecasting workshop III.**

### **Up-to-date Approaches to Economic Growth Modelling and Export and Import Forecasting: International Experience**

This workshop will cover three different, nevertheless, strongly interrelated topics of macroeconomic forecasting. The first block will give an insight into cutting edge techniques and international best practices in forecasting short and medium term economic activity. After familiarizing with the theory of these approaches, participants will receive hands-on training on the application of the mixed-frequency Bayesian vector autoregression. The second block will provide a detailed overview on trade forecasting, covering a wide range of approaches from single country time series techniques to multi country models. The final block will focus on the challenges and tools of macroeconomic forecasting in crisis times. Besides providing a literature review focusing on the recent developments in the area, we will present how standard forecasting techniques can support macroeconomic analysis and projection in economic downturns.

#### **Proposed tentative course schedule (Armenia time, GMT+4)**

##### **Day 1.**

12.30-14.00 Methods for real and short term forecasting of economic activity (1.5 hours)

- Survey based judgmental forecasts, pure time series models
- Bridge equations
- Mixed-frequency dynamic factor models
- Mixed-frequency vector autoregressions
- Mixed Data Sampling (MIDAS) models, MIDAS VARs
- Advantages/Disadvantages of the different methods
- Pooling individual forecasts

14.00-14.15 Coffee break

14.15-15.15 Methods for medium-term forecasting of economic activity (1 hour)

- General equilibrium models, DSGE
- Econometric models with explicit long-term equilibrium
- Single-equation error correction models
- Advantages of using structural macroeconomic models
- Model used for supporting fiscal planning and forecasting (international experiences)

15.15 – 15.30 Coffee break

15.30 – 17.00 Hands on training on mixed-frequency Bayesian vector autoregression (1.5 hours)

- State-space modeling to handle missing observations
- Model selection, choice of priors
- Estimation of mixed-frequency BVARs

## **Day 2.**

12.30-14.00 Trade forecasting: drivers of trade and survey based approaches (1.5 hours)

- Drivers of export and import: the role of the exchange rate, competitiveness, domestic and foreign demand
- Survey based export forecasts
- Import Climate approach (forecasting import using the export climate of trade partners)

14.00-14.15 Coffee break

14.15-15.45 Single country model based approaches for forecasting trade (1.5 hours)

- ARIMA, VAR and VEC models for export and import forecasting
- Dynamic factor models for export and import
- Bayesian artificial neural network
- Advantages and disadvantages of the different approaches (depending on the characteristics of economy and general considerations)

15.45 – 16.00 Coffee break

16.00 – 17.00 Global Vector Auto-Regression (GVAR) model (1 hour)

- Modeling exports and imports jointly in a multi-country model
- Advantages and disadvantages of GVAR models

## **Day 3.**

12.30-13.30 Anatomy of a crisis and failure of standard macroeconomic models (1 hour)

- Role of financial shocks linked to the re-pricing of risk, asset prices and financing costs
- Globalization, international trade and financial linkages
- Loss of confidence and uncertainty, non-linearities
- Criticism of mainstream macro models: assumptions of perfect information and rational expectations; lack of financial intermediation, financial frictions and non-linear dynamics

13.30-13.45 Coffee break

13.45-15.15 Standard macroeconomic models including financial intermediation, credit market factors and occasional financial crises (1.5 hours)

- The concept of financial accelerator
- Modelling financial frictions: balance sheet channel, credit market frictions, heterogeneity among agents, etc.
- Risk and scenario analysis around baseline projections

15.15 – 15.30 Coffee break

15.30 – 17.00 Analysis of COVID-19 shock in standard macroeconomic models – a case study (1.5 hours)

- The anatomy of the COVID-19 shock
- Short term impact of the crisis (supply side expert judgment based approaches, social accounting matrix, computational general equilibrium model)
- Short and medium term impact of the crisis: Semi-structural (QPM) and Structural (DSGE) models of the business cycle