
INTERNATIONAL MONETARY FUND

Joint Vienna Institute / IMF Institute for Capacity Development

Course on Macroeconomic Forecasting (JV14.25)

Vienna, Austria

September 1–12, 2014

Objectives

This two-week course aims at providing participants a rigorous foundation of macroeconomic estimation and forecasting through the application of modern econometric techniques of time series analysis. Lectures introduce the underlying theory, followed by workshops where participants apply the techniques introduced using the Eviews software. In a final workshop, participants apply a variety of techniques to a country case study, where they estimate a model, evaluate it, and then use it for forecasting, reporting results in a plenary presentation.

Topics

The building of models from univariate to multivariate specifications is reflected in the following sequence of topics:

- A review of statistics and the classical linear regression model
- The required modifications of estimation and testing of the classic linear regression model when some of its underlying assumptions are violated
- Univariate Box-Jenkins time series analysis
- Analysis on time series non-stationarity and univariate error correction models
- Multivariate time series analyses: VAR and VECM
- Combination forecasts
- Univariate and multivariate ARCH models

Prerequisites

The course is targeted to officials (junior to senior) involved in developing forecasts that are used in the design and implementation of macroeconomic policy. Participants should have an advanced degree in economics or equivalent experience and a basic background in econometrics. They should also be comfortable using software for econometric applications such as EViews. Participants are asked to do the e-learning module on “Introduction to Eviews Time Series Analysis” prior to the start of the course.

References

Participants will be provided access keys to the e-book version of “Applied Econometric Time Series”, 3rd Edition, by Walter Enders, Wiley, 2010.

Performance Evaluation:

Two multiple-choice tests will be given, one at the beginning and one at the end of the course.

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Monday, September 1

8:30 a.m. – 9:00 a.m.		Administrative Briefing
9:00 a.m. – 9:30 a.m.		Opening Session [Mr. Norbert Funke, Director, JVI]; and Mr. Gianni De Nicolò Senior Economist, European and Middle Eastern Division, IMF Institute for Capacity Development (ICD)
9:30 a.m. – 10:15 a.m.		Initial Quiz
10:30 a.m. – 12:30 p.m.	L-1	Review of Statistical Tools and the Classical Regression Model Mr. Gianni De Nicolò
2:00 p.m. – 3:00 p.m.	W-1	Workshop: Introduction to Forecasting Using EViews Mr. Maksym Ivanyna, Economist, Joint Vienna Institute and Mr. Mikhail Pranovich, Economist, Joint Vienna Institute
3:30 p.m. – 5:30 p.m.	L-2	Evaluating Regression Models Mr. Mikhail Pranovich

Tuesday, September 2

9:00 a.m. – 10:00 a.m.	W-2	Workshop: Evaluating Regression Models Mr. Mikhail Pranovich and Mr. Maksym Ivanyna
10:15 a.m. – 12:15 a.m.	L-3	Properties of Time Series Data I: Stationarity, Box Jenkins ARIMA Models Mr. Gianni De Nicolò
2:00 p.m. – 3:00 p.m.	W-3	Workshop: Estimating and Forecasting ARIMA Models using EViews Messrs. Gianni De Nicolò and Mikhail Pranovich

¹ Unless otherwise stated, coffee breaks are held from 11:00 a.m. – 11:30 a.m. and from 4:00 p.m. – 4:30 p.m. lunch breaks will be from 12:30 p.m. – 2:00 p.m.

3:30 p.m. – 5:30 p.m. L-4 **Properties of Time Series Data II: Nonstationarity and Unit Roots**
Mr. Mikhail Pranovich

Wednesday, September 3

9:00 a.m. – 10:00 a.m. W-4 **Workshop: Testing for Nonstationarity using EViews**
Mr. Mikhail Pranovich and Mr. Gianni De Nicolò

10:15 a.m. – 12:15 p.m. L-5 **Cointegration I – Single Equation Estimation, Error Correction Models, and Forecasting**
Mr. Maksym Ivanyna

2:00 p.m. – 3:00 p.m. W-5 **Workshop: Forecasting using Single Equation Estimation Methods and ECM Models**
Mr. Maksym Ivanyna and Mr. Mikhail Pranovich

3:30 p.m. – 5:30 p.m. L-6 **Forecast Uncertainty and Forecast Evaluation**
Mr. Mikhail Pranovich

Thursday, September 4

9:00 a.m. – 10:30 a.m. W-6 **Workshop: Approaches to Forecasting for Policy Analysis**
Messrs. Mikhail Pranovich and Gianni De Nicolò

11:00 a.m. – 12:30 p.m. L-7 **Vector Autoregression (VAR), Structural VAR Models, Impulse Response Functions (IRFs)**
Mr. Gianni De Nicolò

2:00 p.m. – 3:30 p.m. W-7 **Workshop: VAR and IRF Application: UK Money Demand – Part I**
Mr. Maksym Ivanyna and Mr. Mikhail Pranovich

3.45 p.m. – 5:30 p.m. L-8 **Cointegration II: Johansen Methodology**
Mr. Mikhail Pranovich

Friday, September 5

9:00 a.m. – 10:00 a.m. W-8 **Workshop: UK Money Demand – Part II**
Mr. Mikhail Pranovich and Maksym Ivanyna

10:15 a.m. – 12:15 p.m. L-9 **Vector Error Correction Models: Formulation, Hypothesis Testing, and Forecasting**
Mr. Maksym Ivanyna

2:00 p.m. – 3:00 p.m. W-9 **Workshop: Forecasting using a VECM**
Mr. Maksym Ivanyna and Mr. Mikhail Pranovich

3:30 p.m. – 5:30 p.m. L-10 **Combining Forecasts from Different Sources**
Mr. Mikhail Pranovich

Monday, September 8

9:00 p.m. – 10:30 p.m.	L-11	Modeling Strategies and Policy Analysis: Inflation in Australia (Part I) Mr. Maksym Ivanyna
11:00 a.m. – 12:30 p.m.	L-11	Modeling Strategies and Policy Analysis: Inflation in Australia (Part II) Mr. Maksym Ivanyna
2:00 p.m. – 3:30 p.m.	W-10	Workshop: Combining Forecasts Mr. Mikhail Pranovich and Mr. Gianni De Nicolò
4:00 p.m. – 5:30 p.m.	L-12	Forecasting with ARCH models (Part I) Mr. Gianni De Nicolò

Tuesday, September 9

9:00 p.m. – 10:00 a.m.	L-12	Forecasting with ARCH models (part II) Mr. Gianni De Nicolò
10:30 a.m. – 12:30 p.m.	W-11	Workshop: Forecasting with ARCH models Mr. Mikhail Pranovich and Mr. Gianni De Nicolò
2:00 p.m. – 5:30 p.m.	O-1	Preparation for participants presentation

Wednesday, September 10

9:00 a.m. – 11:00 p.m.	L-13	Practical Considerations for Implementing Macro Forecasting Procedures: Conditional Forecasts Mr. Maksym Ivanyna
11:30 a.m. – 12:30 p.m.	O-1	Preparation for Participant Presentations
2:00 p.m. – 5:30 p.m.	O-1	Preparation for Participant Presentations (continuation)

Thursday, September 11

9:00 a.m. – 12:30 p.m.	O-1	Preparation for Participant Presentations (conclusion)
2:00 p.m. – 5:30 p.m.	O-2	Participant Presentations

Friday, September 12

9:00 a.m. – 11:30 a.m.	T-1	Quiz and course evaluations
11:30 a.m. – 12:30 p.m.		Closing Session and Presentation of Certificates
