

INTERNATIONAL MONETARY FUND

Joint Vienna Institute / IMF Institute for Capacity Development

Course on Macro-econometric Forecasting and Analysis (JV16.12)

Vienna, Austria

May 16 – 27, 2016

PROGRAM¹

Monday, May 16

8:30 a.m. – 9:00 a.m.		Administrative Briefing
9:00 a.m. – 9:30 a.m.		Opening Session <i>Mr. Norbert Funke</i> , Director, JVI; and <i>Mr. Charis Christofides</i> , Senior Economist, European and Middle Eastern (EM) Division, IMF Institute for Capacity Development (ICD)
9:30 a.m. – 10:30 a.m.		Initial Quiz
10:30 a.m. – 12:00 p.m.	L-0	Introductory Lecture: Overview of the Macroeconomic Forecasting course <i>Mr. Sam Ouliaris</i> , Deputy Division Chief, EM Division, ICD <ul style="list-style-type: none">• A short introduction to the design of the course, its main elements, and objectives• Structure of the course, role of participants and counselors• Philosophy of forecasting, caveats, and related issues
12:00 p.m. – 12:30 p.m.		Group photo
	Unit 1	Stationary VARs, structural VARs and their application I: short-run restrictions <i>Mr. Sam Ouliaris</i>
2:00 p.m. – 3:30 p.m.	L-1	<ul style="list-style-type: none">• Introduction to SVAR: identification problem• Choleski decomposition and short-run SVAR restrictions• Impulse responses
4:00 p.m. – 5:30 p.m.	W-1	<ul style="list-style-type: none">• Evaluating effect of monetary policy shocks in “Choleski-ordered” SVARs, SVARs with the “institutionally-implied” short-run restrictions

¹ 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 are from 12:30 p.m. – 2:00 p.m. (Unless otherwise indicated).

Tuesday, May 17

	Unit 2	Modeling of non-stationary variables, forecasting with VECMs <i>Mr. Mikhail Pranovich, Economist, Joint Vienna Institute (JVI)</i>
9:00 a.m. – 12:30 p.m.	L-2	<ul style="list-style-type: none">• Testing variables for integration• Testing for co-integration and estimating VECMs
2:00 p.m. – 5:30 p.m.	W-2	<ul style="list-style-type: none">• Estimating long-run macroeconomic equilibrium relationships. Forecasting with VECMs

Wednesday, May 18

	Unit 3	Structural VARs and their application for policy analysis II: long-run and other restrictions <i>Mr. Sam Ouliaris</i>
9:00 a.m. – 10:30 a.m.	L-3	<ul style="list-style-type: none">• Identifying structural VARs using long-run restrictions• Other restrictions
10:30 a.m. – 12:30 p.m.	W-3	<ul style="list-style-type: none">• An SVAR for evaluating effects of fiscal policy. Studying the effects of supply and demand shocks in an SVAR with long-run restrictions. Identification using sign restrictions.
	Unit 4	State-Space Models and the Kalman Filter <i>Mr. Charis Christofides</i>
2:00 p.m. – 5:30 p.m.	L-4	<ul style="list-style-type: none">• State-space representation• The Kalman filter• Maximum likelihood estimation and Kalman smoothing

Thursday, May 19

	Unit 4 (cont'd)	State-Space Models and the Kalman Filter <i>Mr. Charis Christofides</i>
9:00 a.m. – 12:30 p.m.	W-4	<ul style="list-style-type: none">• Application of state-space models: estimating business condition index, forecasting the yield curve, estimating equilibrium interest rate• Output gap estimation (e.g., HP filter, multivariate filter)
	Unit 5	Factor Models and Factor-Augmented Vars (FAVARs) <i>Mr. Sam Ouliaris</i>
2:00 p.m. – 5:30 p.m.	L-5, W-5	<ul style="list-style-type: none">• Basics of factor models• Small and large scale; selection of number of factors• Estimation, forecasting with FAVAR• Extensions• Unbalanced datasets; I(1) variables; nonlinearities

Friday, May 20

	Unit 5	Factor Models and Factor-Augmented Vars (FAVARs)
	(cont'd)	<i>Mr. Sam Ouliaris</i>
9:00 a.m. – 12:30 p.m.	L-6, W-6	<ul style="list-style-type: none">• Estimating FAVARs on several macro-financial datasets (monthly industrial production; quarterly GDP growth; monthly inflation). Examples from both industrial and emerging economies.
	Unit 6	Conditional forecasting with VARs in small open economies
		<i>Mr. Charis Christofides</i>
2:00 p.m. – 3:30 p.m.	L-7	<ul style="list-style-type: none">• Conditional forecasting using VARs• Incorporating external forecasts and scenario analysis
4:00 p.m. – 5:30 p.m.	W-7	<ul style="list-style-type: none">• Conditional forecasting and scenario analysis with a VAR model for a small open economy

Monday, May 23

	Unit 7	Bayesian Models and Bayesian VARs (BVARs)
		<i>Mr. Mikhail Pranovich</i>
9:00 a.m. – 12:30 p.m.	L-8	<ul style="list-style-type: none">• Introduction to Bayesian econometrics, estimation of linear regression models• Activity: exercise on Bayesian estimation of moments of normal distribution• Estimating BVARs with analytical Minnesota and DSGE-VAR priors• Review of empirical results on BVARs forecasting performance
2:00 p.m. – 5:30 p.m.	W-8	<ul style="list-style-type: none">• Estimating BVARs with Minnesota, Normal-Wishart priors and DSGE-VAR priors. Forecasting macroeconomic variables with BVARs

Tuesday, May 24

	Unit 8	Forecast Combinations
		<i>Mr. Mikhail Pranovich</i>
9:00 p.m. – 10:30 a.m.	L-9	<ul style="list-style-type: none">• Motivation for combining forecasts• Implementation issues• Methods to assign weights
10:30 a.m. – 12:30 p.m.	W-9	<ul style="list-style-type: none">• Application of combination techniques to forecasting of macroeconomic variables
	Unit 9	Univariate and multivariate models of volatility and their application
		<i>Mr. Charis Christofides</i>
2:00 p.m. – 5:30 p.m.	L-10	Estimating univariate volatility models (ARCH, GARCH) and their descendants (TARCH, EGARCH) <ul style="list-style-type: none">• Estimating multivariate volatility models• Background for the workshop: Value-at-Risk analysis

Wednesday, May 25

Unit 9 (cont'd) Univariate and multivariate models of volatility and their application

Mr. Charis Christofides

- 9:00 a.m. – 10:30 a.m. W-10
- Estimation of univariate and multivariate GARCH models. Forecasting with GARCH models, application of MVGARCH to Value-at-Risk analysis
 - Volatility impact on first moment prediction

Unit 10 Final Project: application of models for policy analysis and forecasting in selected countries

All Counselors

- 10:30 a.m. – 5:30 p.m. O-1
- Projects: Participants will be provided (and encouraged to bring their own) datasets for a number of selected countries from the region and apply models taught in the course to forecast inflation or another key macro variable (single equation, factor, Kalman Filter, combination, etc.)
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Thursday, May 26

Unit 10 (cont'd) Final Project: application of models for policy analysis and forecasting in selected countries

All Counselors

- O-1
- Projects: Participants will be provided (and encouraged to bring their own) datasets for a number of selected countries from the region and apply models taught in the course to forecast inflation or another key macro variable (single equation, factor, Kalman Filter, combination, etc.).
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Friday, May 27

Unit 10 (final) Final Project: application of models for policy analysis and forecasting in selected countries

All Counselors

- O-2
- Project presentations: groups present and discuss results of their projects in a plenary session

11:30 a.m. – 1:00 p.m. **Final Test and Course Evaluation**
