

# **Econometric Methods - Part II, WS 2016/17**

## **Multiple Time Series Analysis**

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Lectures: Fridays 9:00-12:30, Dulles Room at DIW, starting on 6 January 2017

TA sessions: Mondays 9:00-11:00, Dulles Room at DIW, starting on 9 January 2017

## **1 Review of Univariate Time Series Analysis**

### **1.1 Stationary and Integrated Stochastic Processes**

### **1.2 ARIMA Processes**

### **1.3 Estimation of ARIMA Models**

### **1.4 Model Specification**

### **1.5 Model Diagnostics**

### **1.6 Forecasting**

### **1.7 ARCH/GARCH Processes**

Literature: Lütkepohl (2004), Hamilton (1994, Ch 3-5, 17)

## **2 Vector Autoregressive Models**

### **2.1 VAR Processes**

### **2.2 Forecasting**

### **2.3 Granger-causality Analysis**

### **2.4 Impulse Response Analysis**

### **2.5 Estimation of VAR Models**

#### **2.5.1 OLS/GLS/ML Estimation of VARs**

#### **2.5.2 Bayesian Estimation**

### **2.6 Specification of VAR Models**

### **2.7 Model Diagnostics**

### **2.8 Uses of Estimated VARs**

Literature: Lütkepohl (2005, Chapters 2-5)

## 3 Cointegrated VAR Processes

### 3.1 Cointegration

### 3.2 VECMs

### 3.3 Estimation of VECMs

### 3.4 Specification of VECMs

### 3.5 Model Diagnostics

### 3.6 Forecasting

### 3.7 Granger-causality Analysis

### 3.8 Impulse Response Analysis

Literature: Lütkepohl (2005, Chapters 6-8)

## 4 Structural Vector Autoregressive Analysis

Literature: Lütkepohl (2005, Chapter 9), Breitung, Brüggemann and Lütkepohl (2004)

## References

- Breitung, J., Brüggemann, R. and Lütkepohl, H. (2004). Structural vector autoregressive modeling and impulse responses, *in* H. Lütkepohl and M. Kräzig (eds), *Applied Time Series Econometrics*, Cambridge University Press, Cambridge, pp. 159–196.
- Hamilton, J. D. (1994). *Time Series Analysis*, Princeton University Press, Princeton, New Jersey.
- Lütkepohl, H. (2004). Univariate time series analysis, *in* H. Lütkepohl and M. Kräzig (eds), *Applied Time Series Econometrics*, Cambridge University Press, Cambridge, pp. 8–85.
- Lütkepohl, H. (2005). *New Introduction to Multiple Time Series Analysis*, Springer-Verlag, Berlin.

## Course Requirements

The grading is based on the assignments (20%) and an exam (80%) at the end of the term. FU MA students can choose this part of the course as 'Topics in Time Series Econometrics'.