

**Structural Vector Autoregressions and  
Asymptotic Theory for Time Series  
Econometrics  
2011  
Helmut Lütkepohl**

**1 Structural Vector Autoregressions**

**1.1 SVARs (Session 1)**

**The A-Model**

**The B-Model**

**The AB-Model**

Literature: Lütkepohl (2005, Chapter 9), Breitung, Brüggemann and Lütkepohl (2004), Christiano, Eichenbaum and Evans (1999), Amisano and Giannini (1997)

**1.2 SVARs with Long-Run Restrictions (Session 2)**

**Blanchard-Quah Model**

**Structural VECM**

Literature: Lütkepohl (2005, Chapter 9), Breitung et al. (2004), Blanchard and Quah (1989), King, Plosser, Stock and Watson (1991)

**1.3 Further Issues (Session 3)**

**Factor Augmented Models**

**Sign Restrictions**

**Identification via Statistical Data Properties**

Literature: Bernanke, Boivin and Eliasch (2005), Faust (1998), Canova and De Nicoló (2002), Canova (2007), Uhlig (2005), Rigobon (2003), Lanne and Lütkepohl (2008), Lanne and Lütkepohl (2010), Lanne, Lütkepohl and Maciejowska (2010), Fry and Pagan (2007)

## **2 Asymptotic Theory for Time Series Econometrics**

### **2.1 Review of Basic Definitions and Results (Session 4)**

**Multivariate Normal and Related Distributions**

**Concepts of Stochastic Convergence**

**Order in Probability**

**Infinite Sums of Random Variables**

Literature: Lütkepohl (2005, Appendix B, C.1, C.2, C.3)

### **2.2 Laws of Large Numbers and Central Limit Theorems (Session 5)**

Literature: Lütkepohl (2005, Appendix C.4)

### **2.3 Estimation and Testing (Session 6)**

**Maximum Likelihood Estimation**

**Testing Principles**

**GMM Estimation**

Literature: Lütkepohl (2005, Appendix C.5, C.6, C.7), Hamilton (1994, Chapter 14)

### **2.4 Unit Root Asymptotics (Session 7)**

Literature: Literature: Lütkepohl (2005, Appendix C.8.1), Hamilton (1994, Chapter 17)

### **2.5 Multivariate Unit Root Asymptotics (Session 8)**

Literature: Literature: Lütkepohl (2005, Appendix C.8.2), Hamilton (1994, Chapter 18)

## 2.6 OLS Estimation of Cointegrated VAR(1) (Session 9)

Literature: Lütkepohl (2005, Chapter 7)

## 2.7 Other Estimators of Cointegrated VAR(1) (Session 10)

Literature: Lütkepohl (2005, Chapter 7)

## Course Requirements

The grade for the course will be based on a SVAR project and homework assignments for the asymptotic theory part.

## References

- Amisano, G. and Giannini, C. (1997). *Topics in Structural VAR Econometrics*, 2nd edn, Springer, Berlin.
- Bernanke, B. S., Boivin, J. and Elias, P. (2005). Measuring the effects of monetary policy: A factor-augmented vector autoregressive (FAVAR) approach, *Quarterly Journal of Economics* **120**: 387–422.
- Blanchard, O. and Quah, D. (1989). The dynamic effects of aggregate demand and supply disturbances, *American Economic Review* **79**: 655–673.
- 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.
- Canova, F. (2007). *Methods for Applied Macroeconomic Research*, Princeton University Press, Princeton.
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- Christiano, L. J., Eichenbaum, M. and Evans, C. (1999). Monetary policy shocks: What have we learned and to what end?, in J. B. Taylor and

- M. Woodford (eds), *Handbook of Macroeconomics*, Vol. 1A, Elsevier, Amsterdam, pp. 65–148.
- Faust, J. (1998). The robustness of identified VAR conclusions about money, *Carnegie-Rochester Conference Series in Public Policy* **49**: 207–244.
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- King, R. G., Plosser, C. I., Stock, J. H. and Watson, M. W. (1991). Stochastic trends and economic fluctuations, *American Economic Review* **81**: 819–840.
- Lanne, M. and Lütkepohl, H. (2008). Identifying monetary policy shocks via changes in volatility, *Journal of Money, Credit and Banking* **40**: 1131–1149.
- Lanne, M. and Lütkepohl, H. (2010). Structural vector autoregressions with nonnormal residuals, *Journal of Business & Economic Statistics* **28**: 159–168.
- Lanne, M., Lütkepohl, H. and Maciejowska, K. (2010). Structural vector autoregressions with Markov switching, *Journal of Economic Dynamics and Control* **34**: 121–131.
- Lütkepohl, H. (2005). *New Introduction to Multiple Time Series Analysis*, Springer-Verlag, Berlin.
- Rigobon, R. (2003). Identification through heteroskedasticity, *Review of Economics and Statistics* **85**: 777–792.
- Uhlig, H. (2005). What are the effects of monetary policy on output? Results from an agnostic identification procedure, *Journal of Monetary Economics* **52**: 381–419.