Module 4	**Data analysis and territorial statistics**
Location	University of Regensburg
Date	March - May 2014
Coordinator	Prof. Joachim Möller, University of Regensburg
Module Description	In standard micro-/macro models, the economy is mostly considered to be a punctual entity. An important aspect of the reality, namely space, is neglected. First, this module show how to capture these spatial interactions by statistical measures. A solid base of econometric techniques and further statistics will enable the student not only to understand quantitative analysis, but also to conduct their own study. As more and more regional data becomes available, the ability to apply econometric techniques is key for the further academic and professional career. Motivated by economic theories of regional economics the next topic of this module will provide a starting point to empirical research in the field of regional science. Another focus of the module will be the empirical of entrepreneurship.
Goal of the Module	This module will introduce the students to data analysis and territorial statistics as part of regional science in economics. Beside theoretical concepts and theories, the module mainly provides practical applications.
Content	• (Big) Data Analysis: A Start from Scratch • Introduction to inferential statistics • Regional Dynamics - Theory and Quantitative Analysis • Entrepreneurship in Global Perspective
Part 1 16 h Pelzel (Regensburg) Linder (Bozen/Bolzano) **04.03.2016** **05.03.2016**	***(*Big) Data Analysis: A Start from Scratch** <u>*Content*</u> The aim of this introductory course is to provide a hands–on understanding of the basics and the important aspects of (Big) Data Analysis / Statistics. This embraces basic concepts of statistical thinking / reasoning as well as discussing the opportunities, pitfalls and threats of a more data-driven society / decision making. The lecture covers the following steps taken in an empirical analysis: • formulating the right research questions, • generating / collecting data, • describing and visualizing data, • concepts and pitfalls of analyzing data, • deriving recommendations for actions based on the results. The theoretical concepts are underpinned/supported/completed with real-world examples. To implement the contents in practice, a very powerful statistical software called "R" is introduced. While working through the basics of the R language and programming in general, the focus lies on handling, visualizing and analyzing data. Examples are introduced on an accessible level and applied to real-world datasets. Please note: You will have to hand in homework about the handling of R. Readings Are provided during the lecture, no prior knowledge of statistics required.
Part 2 10 h Lozar-Manfreda (Ljubljana) **10.03.2016** **11.03.2016**	**Introduction to inferential statistics** <u>*Content*</u> Inferential statistics deals with making inferences based on relations found in the sample to relations in the population. The Introduction to inferential statistics includes basic principles and covers the following topics: - Basics of probability sampling. - Sampling distributions. - Methods of statistical inference: confidence interval for population mean, hypothesis testing for population mean, mean difference and Pearson correlation coefficient (including p-value, significance level, power and type I and type II errors). The methods of statistic inference will be illustrated using Eurostat official statistic data on NUTS regions. Student will enhance ability to develop hypotheses and use common statistical tests to validate their claims. <u>*Readings*</u> Wonnacott, Thomas H.; Wonnacott, Ronald J., Introductory statistics, New York [etc.]: Wiley, 5th ed. 1990.
Part 3 12 h Möller (Regensburg)	**Regional Dynamics - Theory and Quantitative Analysis** <u>*Content*</u> The course offers a deeper insight in recent models of Regional Economics and empirical research. Its theoretical focus lies in the core-periphery-model that is derived formally. From the empirical perspective progress in the measurement and assessment of spatial patterns of specialisation are presented. In standard micro-/macro models, the economy is mostly considered to be a punctual entity. An important aspect of the reality, namely

21.03.2016 **01.04.2016**	space, is neglected. This lecture captures the consequences for economic theory when one includes spatial interactions. With the help of simple models, the optimal choice of price and location for firms in a spatial economy is formalised. In doing so it becomes clear that for many economic problems it is essential to take into consideration distance and transportation costs. In the empiric context, this lecture shows how one can estimate regional market potentials and the influence of economic distance on trade. Recent findings in the field of regional labour market research are presented as well. The lecture will give answer to the following questions: • Regional Disparities? Why? • What causes a favorable local development? • What are the effects of regional policy? • Regional specialization, good or bad for development? • Effects of "culture" on regional development? • Agglomeration: Advantage or disadvantage? • Convergence or divergence? • Regional economic structures, how to describe? • Is migration causes brain drain or brain gain? <u>*Structure*</u> 1. Basic Questions and Basic Facts 2. Example of an Economic "Miracle" 3. Fundamentals of Regional Economics a. Market Potential b. Gravity Model 4. Fundamentals of New Economic Geography a. The Krugman Model 5. Structural Change and Economic Development 6. Regional Labor Markets <u>*Readings*</u> Borjas, G.J. (1999). "The Economic Analysis of Immigration," in *Handbook of Labor Economics*, Volume 3A, edited by Orley Ashenfelter and David Card, North-Holland, pp. 1697-1760. J. Harris und M. Todaro (1970). Migration, Unemployment & Development: A Two-Sector Analysis. *The American Economic Review*, pp. 126-142. Ciccone, Antonio and Robert E. Hall.(1996). "Productivity and the Density of Economic Activity." *The American Economic Review*, pp. 54-70. Krugman, Paul R. (1991). *Geography and trade*. MIT press. Appelbaum, Eileen and Ronald Schettkat (1995). Employment and productivity in industrialized economies. *International Labour Review*. Jacobs, Jane (1970). *The Economy of Cities*. Ottaviano, Gianmarco and Giovanni Peri (2006). The economic value of cultural diversity: evidence from US cities. *Journal of Economic Geography*, 6(1), 9-44.
Part 4 10 h Brixy (Nuremberg) **07.04.2016** **08.04.2016**	***Entrepreneurship in Global Perspective*** <u>*Content*</u> The module will use an interdisciplinary approach to examine the role of entrepreneurship in local development and to deal with specific problems that are important in this perspective. The presentations distinguish different kinds of enterprises and different types and roles of entrepreneurship and pay particular attention to the role of institutions in determining which features prevail. Different measures of entrepreneurial activities are presented and critically scrutinised. Moreover, policies towards fostering entrepreneurial activities are introduced and discussed before the background of different goals in accordance with a nation's level of economic development. <u>*Readings*</u> Audretsch, David. and Max Keilbach. (2004) Entrepreneurship Capital and Economic Performance. *Regional Studies* 38:949—959 Bosma, Niels; Levie, Jonathan (2010): Global Entrepreneurship Monitor, 2009 Global Report. Demirgüç-Kunt, A.; Beck, T.; Honohan, P- (2008): *Finance for all? Policies and pitfalls in expanding access.* The World Bank (ed.), Washington. Dohse, Dirk (2000): Technology policy and the regions - the case of the BioRegio contest. *Research Policy* 29, p. 1111- 1133. Feldman, Maryann P. (2001): The Entrepreneurial Event Revisited: Firm Formation in a Regional Context. *Industrial and Corporate Change, 10, 861-891.*

	Global reports of the 'Global Entrepreneurship Monitor (GEM) for different years available from:: www.gemconsortium.org Minniti, Maria, and William Bygrave. 1999. The Microfoundations of Entrepreneurship. *Entrepreneurship Theory and Practice 23:41-52.* *The Standard textbook in this field is:* Parker, Simon (2012): The Economics of Entrepreneurship. Cambridge, UK. More information on the Global Entrepreneurship Monitor (i.e. addresses of national teams) and the Global Reports for every year: www.gemconsortium.org
Exam	**90-minute written exam** It will take place in May. The exact date will be announced in advance.