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Course Number: Data Analysis
Semester: Spring, 2011/2012
Instructor: Branimir Jovanovic (branimir.jovanovic@uniroma2.it)
Credits:
Contact hours: 20 hours
Learning hours:
Class Hours:
Prerequisite:

Books:

Books used in this course:

1. Brooks, Chris (2008), *Introductory Econometrics for Finance*, 2nd edition, Cambridge University Press
2. Stock, James and Mark Watson (2006), *Introduction to Econometrics*, 2nd Edition, Pearson/Addison-Wesley
3. Wooldridge, M. Jeffrey (2002) *Introductory Econometrics: A Modern Approach*, 2nd edition, South-Western.
4. Hill, Griffiths and Lim (2008) *Principles of Econometrics*, 3rd Edition, John Wiley and Sons
5. Levitt, Steven and Stephen J. Dubner (2005), *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*, William Morrow/HarperCollins.

Another textbook you may find useful:

6. Vogelpang, Ben (2005) *Econometrics. Theory and application with EvIEWS*, Pearson Education Limited

Papers:

Required reading:

1. Acemoglu Daron, Simon Johnson and James A. Robinson (2001) The Colonial Origins of Comparative Development: An Empirical Investigation, *The American Economic Review*, Vol. 91, No. 5 (Dec., 2001), pp. 1369-1401.
2. Barro, Robert J. (1991). Economic Growth in a Cross Section of Countries. *The Quarterly Journal of Economics*, Vol. 106, No. 2. (May, 1991), pp. 407-443.

Interesting papers you may wish to read one day:

3. Levitt, Steven D. (2004) Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six that Do Not, *Journal of Economic Perspectives—Volume 18, Number 1—Winter 2004—Pages 163–190*
4. Angrist, Joshua and Alan Kruger (1991) Does Compulsory School Attendance Affect Schooling and Earnings? *The Quarterly Journal of Economics*, Vol. 106, No. 4 (Nov., 1991), pp. 979-1014
5. Liu, Feng, Ning Zhang, Kai-Wen Cheng and Hua Wang (2010) Reduced smoking and rising obesity: Does smoking ban in the workplace matter?, *Economics Letters* 108 (2010) 249–252
6. Pascali, Luigi (2012) Banks and development: Jewish communities in the Italian Renaissance and current economic performance, *Economics Working Papers 1274*, Department of Economics and Business, Universitat Pompeu Fabra, revised Mar 2012.
7. Stock, James and Mark Watson (2001) Vector Autoregressions, *Journal of Economic Perspectives*, 15(4): 101–115.– VAR

Course description:

This module is an extension of Econometric Analysis. It is heavily applied, and its primary aim is to teach students to apply econometric techniques to every-day topics, or, put differently – to analyze data. Towards that end, students should first understand that “economics is everywhere”, i.e. that the economic way of thinking lies underneath many every-day issues, and that the econometric techniques of analysis can be applied to any data. After this becomes clear, students will be made familiar with the most popular free on-line data sources. Then, through examples, which will be replications of important existing studies, students will learn how to analyse data rigorously. The exercises will be mainly from macroeconomics, and all major aspects of applied econometrics (both cross-section and time-series) will be covered. Finally, with the homework and the final assignment students will gain first-hand experience in doing a small applied-econometrics research independently.

Learning objectives:

- To understand that the economic way of thinking is everywhere, i.e. can be applied to many every-day problems;
- To understand that the econometric techniques of analysis are not limited to the field of economics, but can be applied to any data;
- To become able to find relevant data on a certain topic;
- To become able to do a preliminary descriptive analysis of some data;
- To become able to independently do a small econometric research on a given topic.

Learning outcomes:

By the end of this course it is expected that the student will be able to:

1. Identify the economic reasoning behind every-day occurrences;
2. Find relevant data on certain topics;
3. Do a descriptive analysis on any data, in order to identify potential causal links;
4. Independently conduct a small applied-econometrics research on a given economic topic.

Course delivery:

Class lectures will be supported by hands-on computer sessions aiming to collect certain data, analyze that data descriptively in spreadsheet software (like MS Excel) and in econometric software (like Eviews). The course will be more practical than other courses, i.e. there will be more time for applied work and exercises. There will be 2 (easy) homeworks, related to finding and analyzing some data. Lecture slides and handouts will be distributed to students in electronic form (possibly in hard-copy, as well). Students may be asked to read certain texts before (or during) the lectures.

Instructor's expectations from students:

- Attend class regularly.
- Participate interactively in the classes.
- Read assigned materials.
- Collaborate with the colleagues during the class exercises and with their team-mates for the final assignment.
- Be constructive during the classes, i.e. avoid disturbing other students or the teacher.
- Avoid anti-social behavior in College and anti-academic behavior in the classroom (i.e. plagiarism, cheating, etc.)
- Impose a self – discipline regarding Colleges rules and procedures.

Assessment:

Homework 1 – 25%;

Homework 2 – 25%;

Final assignment on econometric analysis of a relevant issue – 50% (teams of 2 people).

Programme

Day 1: Understanding that economics is everywhere and that econometrics can be applied to any data

- Film: Freakonomics
- Small homework on data collection, as a preparation for the next class. Every student will have to find data on inflation, GDP and unemployment for some country.

Study material: Levitt and Dubner (2005): Introduction (to read before the class)

Day 2: Introduction to most common data sources and basic tricks in applied econometrics

Data sources

- National statistical offices (Eurostat for the EU).
- Central banks.
- International Financial Statistics (IFS) of the IMF.
- Directions of trade statistics (DOTS) of the IMF, UN comtrade, UNCTAD, OECD.
- World Development Indicators (WDI) of the World Bank.
- Doing Business (DB) and Worldwide Governance Indicators (WGI) of the World Bank
- IMF commodity price data
- FRED Database
- Yahoo finance
- Micro data (Households) – UK BHPS, US PSID
- Firm-level data – World Bank enterprise survey
- Health data - Behavioral Risk Factor Surveillance System (US)

Tricks

- Logarithms, %'s of GDP
- Seasonal adjustment, stationarity, de-trending
- Correlation/causation, serial correlation, white noise

Example - Descriptive analysis of Macedonian trade

- Collect aggregate exports and imports data
- Are they stationary? Seasonal patterns? Correlated?
- Can they be causally connected?

Homework - Exports/imports to Germany, GDP and exchange rate

Study material: Lecture notes

Day 3: OLS – from theory to application

- Assumptions needed for OLS to be BLUE
- Serial correlation, heteroskedasticity, normality, functional form, multicollinearity, exogeneity, structural breaks – how to detect them, how to test for them, what are their implications, how to “correct” them
- Interpretation of regression coefficients
- Exercise 1 – do a regression from scratch (the exports/imports case that was for homework)
- Exercise 2 – Barro (1991): get to know IDEAS/REPEC; find data (on WDI); construct the variables; inspect the data; do a regression in Eviews and investigate it.
- Exercise 3 – (if there is time; if not – for day 4) - replication of the OLS part of Acemoglu et al. (2001) - illustration how to find data on existing paper and how to replicate it.

Study material: Brooks – Chapter 4 (until section 4.13; only parts that are not in yellow) and Barro (1991) (just the first 3 pages)

Day 4: Endogeneity, i.e. what if the error term is correlated with some regressors?

- Omitted variable bias - Mozart effect example (from Stock and Watson, 2006), education and learning (Angrist and Krueger, 1991)

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- Reverse causality – Finance and growth example (Pascali 2011), Institutions and growth example (Acemoglu et al 2001)
 - Solution? IV and 2SLS
 - Exercise 1 – replication of Acemoglu et al (2001), the IV estimation
 - Exercise 2 – replication of Angrist and Krueger (1991) - education and earnings
 - Problems with IV – Scary regression (Stock and Watson, 2006)
 - Other examples – Liu et al (2010) – smoking and obesity

Study material: Stock and Watson (2006), only several pages that will be distributed, and Acemoglu et al. (2001), the whole paper, to be read before the class

Day 5: Difference-in-Differences (DID)

- Alternative way to control for endogeneity
- Example from Wooldridge (2002) – Chapter 13, section 13.2

Homework 2 – to be decided

Study material: Wooldridge (2002), Chapter 13, section 13.2

Day 6: Time Series: VARs and introduction to cointegration

VARs

- VAR – basics, estimation, reduced form and structural form, shocks
- Lag length selection, exogenous variables
- Granger causality, impulse responses, variance decomposition
- Different identification schemes
- Uses – forecasting, inference, policy analysis
- 2 examples with Macedonian data – is monetary policy in Macedonia effective (identification with Cholesky decomposition) and forecasting Macedonian GDP and inflation with a VAR

Cointegration

- Stationarity and unit roots
- Spurious regression and cointegration
- Cointegration and Error Correction
- Engel-Granger approach to cointegration – intuition, with maybe a simple example – bond prices, i.e. gains from diversification (Brooks, Ch. 7)
- Just mention the Johansen approach and the ARDL approach to cointegration

Study material: Brooks, Ch. 6, Hill, Griffiths, Lim, Ch. 13 (One of them, to be decided)

CPC Coverage in terms of hours

- 1) Functional area
 - A Marketing – 0 hour
 - B Business finance – 0 hours
 - C Accounting – 0 hours
 - D Management – 0 hours
- 2) The Business environment
 - A) Legal environment of Business – 0 hours
 - B) Economics – 9 hours
 - C) Business ethics – 0 hour
 - D) Global dimensions of Business – 0 hours
- 3) Technical skills
 - A) MIS/IT computing – 2 hour
 - B) Statistics/Quantitative techniques – 9 hours
- 4) Integrative areas
 - A) Business policy – 0 hours
 - B) Internship – 0 hours

Class Conduct:

It is very impolite to use mobile phones during classes, for whatever reasons, and you wouldn't like to appear impolite, would you? The class starts promptly at the scheduled time, so if you are late, you may miss something important. Participation in the class is highly encouraged – feel free to interrupt the teacher at any time, if you have some question or a comment. This does not mean, however, that you can talk with other students all the time during the lectures - this is not just disruptive to your colleagues and the lecturer, but you can miss something important that the teacher has said. The language of instruction is English, so all our conversation into the class must be in English. After each session students are expected to study all the relevant material, read all the associated exercises and prepare assignment for the next class, when given.

Cheating and plagiarism in any form will result immediately in the grade F.

Grading:

C- or better is required to use a course either as a prerequisite or as a major requirement.

G.P.A. (Grade Point Average): is computed for each student using the quality points earned for each course taken. A G.P.A of at least 2.0 is required for transfer and to graduate from ACS.

I wish you an interesting and creative academic semester.

Academic Honesty

The American College Skopje has its personal integrity, which is presumed to be sufficient assurance in academic matters one's work is performed honestly and without unauthorized assistance. Plagiarism and cheating are serious offences and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the faculty. Individuals are prohibited from selling or being paid for taking notes in any form (written, electronic, or otherwise) during this course to or by any person or commercial firm without the express written permission of the professor teaching this course.

Late Work:

There is NO PROVISION for late work on any assignment (i.e., late work is not accepted). It is strongly recommended you to have backup systems in place so that you can have all work completed on schedule. Having your work completed on schedule is a key to early success in your business career.

Late submissions are not accepted. Partial credit will NOT be given for late work.

Make-up tests are given in exceptional circumstances.

Approved by: Marjan Petreski

Date: 05/2012