Course Package "Econometrics"

Work Package	WP3: Development of Course Materials for the Reformed MA Programmes, Deliverable 3.1
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Document History

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1	02.12.2019	Khachatryan Hakob	Draft 1
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5	29.2.2020	Khachatryan Hakob	Final

Content

1. General information about the course

Title of the course (as specified in the reformed curriculum)	Econometrics
Name of the teacher	Khachatryan Hakob
Novelty of the course (please select as appropriate)	This course has been updated and the curriculum has been revised and discussed in the meetings of The Chair of Finances and management. As the teaching hours of the course of has been enlarged, the course program includes extra several themes, such as Stationary and some important models of Time series analyses.
Year of the course in the curriculum	2019-2020, 2nd course MA
Semester of the course in the curriculum	Fall semester
Language of instruction of the course	Armenian
Number of ECTS credits	3

2. Learning outcomes of the course

LO level	After completing this module, the students are able to:
1 Remembering	select necessary economic indicators for further analysis.
	define explained and explanatory variables.
	state the regression model between variables.
2 Understanding	Describe the correlation between the variables.
	Indicate and explain the coefficients of pair correlation between the dependent and independent variables.
	illustrate the coefficients of regression.

3 Applying	Calculate the dependent variable through the regression model
	Calculate the residuals of regression
4 Analyzing	Diagnose the presence of heteroscedacticy and multicolleniarity of regression model
5 Evaluating	Estimate the significance of the regression model
6 Creating	Develop the predicted values and forcastings

3. Syllabus of the course

Explanation: Please provide a detailed syllabus of the course (broken down in weeks) – maximum 2 pages

Weeks	
1	**The subject of Econometrics**. The origin of Econometrics. The specification of econometric models. The methods of econometric analyses. Endogenous and exogenous variables.
2	**Simple linear regression and correlation.** The LSM for linear regression. Covariance and correlation. The coefficient of elasticity. Gauss-Markov theorem: The statistic assessment of parameters of regression model. T test for parameters of regression model. The confidence intervals for the parameters of regression model.
3	**ANOVA in regression analyses.** The essence of R^2. F test for regression model. The confidence interval for the endogenous variable.
4	**Multiple linear regression analyses.** The LSM for multiple regression model. Beta coefficients. The coefficients of partial elasticity. T test. The confidence interval for the parameters of multiple regression model.
5	**Partial correlation.** The coefficients of partial correlation. The adjusted R^2. F test. The confidence interval for the multiple regression model.
6	**None linear regression** The evaluation of parameters of the none linear regression models. The application of none linear regression models: Demand curve, Philip's curve, Cobb-Douglas production function.
7	**Regression models with dummy variables** The characteristic of dummy variable. Chow test.
8	**Multicollinearity**

		The presence of multicollinearity among the exogenous variables. VIF analyses.
	9	**Heteroscedasticy** The study of heteroscedasticy. Spearmen test, Goldfeld-Quandt test, White test, Glazer's.
	10	**Time series analyses** The main characteristics of time series analyses. The main components of time series. Autocorrelation for none stationary time series. Correlogramm.
	11	**None stationary time series** The tendency of time series. The modelling trend of time series. The forecasting confidence interval for time series. Autocorrelation of residuals. Durbin-Watson test.
	12	**Seasonal and periodic fluctuations in time series** Additive and multiplicative models. The models with fictive variables for time series with seasonal components. Fourier series and its applications.
	13	**Regression analyses for time series** Regression models with first differences. Regression models with residuals. Regression models with time factor.
	14	**Stationary time series analysis** Auto regression of time series (AR models). Moving average in time series (MA models). Autoregression moving average analyses (ARMA models). Autoregression integrated moving average analysis (ARIMA) models.

4. Teaching methodology of the course

Explanation: Please explain the teaching methodology and pedagogical approaches of the course – maximum ½ page

Econometrics is one of the special courses for economists. This course should be thoroughly presented to students and must be explained its application during the professional activity.

During the lectures the teaching materials are presented and explained with the help of PPT. All the contents of the course are uploaded on the University's site for students.Interactive methods of teaching are used also during the course.

During the practical lessons the assignments are explained and instructed to the students. They must do econometric analysis based on the empirical data. After the completion the assignments each of them are presented by students and discussed during the lesson. The students express their opinions and justify their conclusions. The students are free for feedback with E-mail.

Besides during the practical lessons the case studies will be organized either in microeconomics or macroeconomics. During the case studies related with microeconomics the data analysis will be based on the financial data of enterprises. During the case studies related with macroeconomics the data analysis will be based on official data of Statistic Committee of RA about public finance and banking system of country.

2. Labor market relevance of the course

For economists the competitive features in the labor market are the availability of theoretical knowledge and the ability of its implication. Econometrics allows specialists to understand and to analyze the relationship between social-economic phenomena, to evaluate the causes and the consequences in micro and macro sphere of economy. Econometrics is one of the actual method for market analyses as well. Econometric models allow to disclose the regularity of the market factors. Finally, Econometrics allows to make forecasting with the defined confidence.

Particularly the specialists of finance system will apply econometric methods for evaluating the risks in bank, for forecasting the exchange rates of currency and the expected inflation rate etc.

3. Assessmentand grading

The grading is based on credit system. The studying process is divided in several parts which provides the final grade:

1. Attendance - 10%,

2. The readiness during the lessons - 50%,

3. Final exam - 40%.

4. References

1. **"Introduction to econometrics" – Iames H. Stoch, MorkW.Watson, 2005, Pearson Edition**

2. **Jeffrey M. Wooldridge, Introductory of Econometrics, second edition, South Western College pub, 2002**

3. **Green William H. Econometric Analyses, Fifth edition 2000, Prentice Hall**

1. **Walter Enders Applied Econometric Time Series, Second edition, Wiley, 2004**

2. **"Introdiction to econometrics" – Fifth Edition; Christopher Dougherty; April 2016**

3. YeliseevaI.I.; Econometrics; textbook for Master's courses; 2014; M. Edition:YURAIT

4. YeliseevaI.I.; Econometrics:2008; M. YURAIT

5. Vardanyan G.; The basic of econometrics; 2003; Yerevan, Editon:SARVARD

6. Ghushyan L.; Elementary Econometrics; 2003, Yerevan,Edition:ZEST

8. Course assignments

4.1. Assignment 1

Please, through the regression analysis, study the influence of some principle factors on the long-term credits of commercial banks of RA in the period of recent 15 years. The exogenous variables should be selected by you (for example: the annual average interest rate, the volume of deposits of commercial banks of RA, the poverty rate of population of RA..). The source of date is the Statistic committee of RA (www.armstat.am). You can also use the data of individual commercial banks.

4.2. Assignment 2

Please, form the time series with macroeconomic or microeconomic indicators by years and by quarters. According the time series with annual data disclose the main tendency of this indicator and make confidence forecasting interval for upcoming two years. Please, analyze the time series of selected indicator for years by quarters. Analyze this time series as none-stationary series.

Disclose the main seasonal components of time series. Build autoregressive models and calculate the coefficient of autocorrelation. The source of date is the Statistic committee of RA (www.armstat.am).

Annex: Presentation slides

Explanation: Please provide presentation slides for your course (this can be done in a separate document, e.g. Power Point (Minimum: 25 slides)