



Subject card

Subject name and code	Econometrics, PG_00050164						
Field of study	Economics						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Michał Pietrzak					
	Teachers	dr Piotr Paradowski dr hab. Jerzy Ossowski dr inż. Sabina Szymczak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	45	8.0		47.0		100
Subject objectives	Construction, estimation, statistical analysis and interpretation of the econometric model						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W07] has the knowledge of basic quantitative and qualitative methods used in economic sciences	The student recognizes the methods used to estimate and verify econometric models			[SW1] Assessment of factual knowledge		
	[K6_U04] can properly analyse the causes and course of specific socio-economic processes and phenomena	The student analyzes causal relationships in economic processes			[SU2] Assessment of ability to analyse information		
	[K6_K02] can assess the validity of criteria and tasks in the projects implemented	The student assesses the validity of the assumptions for the implemented economic projects			[SK2] Assessment of progress of work		
[K6_U11] has the ability to understand, analyse and evaluate economic processes and phenomena using quantitative and qualitative methods	The student estimates and verifies cause-effect econometric models and interprets them			[SU4] Assessment of ability to use methods and tools			
Subject contents	Econometric model and its components. The method of least squares (LSM) of linear econometric model estimation - cases of simple and multiple regression. Numerical and stochastic properties of the OLS estimator. Verification of the estimated model - a measure of the degree of model fit and the significance of structural parameters. Multiplicative models - properties. Autocorrelation and heteroscedasticity of the random component of the model - measurement, testing and determining and removing causes. Removing the effects of autocorrelation and heteroscedasticity - GLS estimation procedures. Models of development tendency with seasonality. Econometric forecasting. Cause-effect dynamic model - assumptions, interpretation, estimation and verification. Cause-effect wage models. Cause-effect models of inflation, Cause-effect models of production and labor productivity. Cause-effect model of labor demand.						
Prerequisites and co-requisites	mathematics, macroeconomics, microeconomics, statistics						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		55.0%	51.0%
		55.0%	49.0%
Recommended reading	Basic literature	Maddala G.S.: Introduction to Econometrics John Wiley&Sons,LTD, New York, 2002,	
	Supplementary literature	Maddala G.S.: Introduction to Econometrics John Wiley&Sons,LTD, New York, 2002,	
	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27846 - ecourse Adresy na platformie eNauczanie:	

Problem 2

Based on $n=24$ annual observations, the following model was estimated:

$$y_t = B_0 p_t^{b_1} p_m^{b_2} p_e^{b_3} \exp t$$

where:

y_t - supply of pork in thous. tonnes in year t ,

p_t - purchase price of pork in PLN/kg in year t ,

p_m - feed price (cereal mix) in PLN/kg in year t ,

p_e - electricity price in PLN/KWh in year t

The estimation results of the linearized form of the considered model are as follows:

$$\ln \hat{y}_t = 0.05 + 0.25 \ln p_t - 0.3 \ln p_m - 0.1 \ln p_e$$

The average parameters estimation errors are as follows:

$$S(b_1)=0.05 \quad S(b_2)=0.1 \quad S(b_3)=0.05$$

The standard deviation of the residuals, the coefficient of determination, and the value of the **DW statistic** are:

$$Se=0.0125 \quad R^2= 0.985 \quad DW=1.725$$

The critical values of the relevant statistics at the significance level $\alpha=0.05$ are as follows:

$$(t_\alpha = 2.086) \text{ and } (d_l = 1.1010; d_u = 1.6565)$$

Do the following and complete the sentences:

2.1 Based on the estimated standard deviation, we will say that...

2.2. Based on the estimated coefficient of determination, we will say that....

2.3 Based on the estimated version of the model, we will say that if the buying-in price of meat in a given year

will increase by .. then, with other conditions unchanged, the supply of pork meat.....

2.4 Based on the estimated version of the model, we say that if the price of feed in a given year

will increase by .. then, other conditions unchanged, the supply of pork

2.5 Based on the estimated version of the model, we say that if the price of electricity in a given year

other things being equal, the supply of pork will increase by that...

In order to examine the significance of the impact of the purchase price of meat and the price of feed on the supply of meat, I verify

the following null hypothesis: $H_0: b_1, b_2, b_3 = 0$... against the alternative hypothesis: $H_1: b_1, b_2, b_3 \neq 0$.

2.6. In the case of the purchase price of meat, the null hypothesis (I reject/do not reject) in favor of the hypothesis

alternative because

2.7, therefore the parameter b_1 statistically significantly (differs/does not differ) from zero.

2.8 in the light of the above, the variable p_t statistically significantly (affects/does not affect) the supply of meat.

1.9. In the case of feed price, the null hypothesis (I reject/do not reject) in favor of an alternative hypothesis

Because

2.10, therefore the parameter b_2 statistically significantly (differs/does not differ) from zero.

2.11 in the light of the above, the p_{mt} variable has a statistically significant (affects/does not affect) meat supply.

2.12. In the case of the price of electricity, the null hypothesis (I reject/do not reject) in favor of the hypothesis

alternative because

2.13, therefore the parameter b_3 statistically significantly (differs/does not differ) from zero.

2.14 in the light of the above, the p_{et} variable has a statistically significant (affects/does not affect) meat supply.

2.15. In order to assess autocorrelation, I verify:

the following null hypothesis: $H_0: \rho_1 = 0$ against the alternative hypothesis: $H_1: \rho_1 > 0$. . .

Due to the fact that . . . in the case of the model in question:

- I lean towards the hypothesis,

- I am not in favor of any of the hypotheses put forward.

which means, that.....

2.16. Based on the DW, I find that the approximate value of the autocorrelation of the first-order residuals is:.....

Work placement

Not applicable