

Subject card

Subject name and code	Financial Econometrics, PG_00178711						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		7.0		
Learning profile	academic		Assessment form				
Conducting unit	Department of Econometrics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Sabina Nowak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	16.0	16.0	0.0	0.0	40
	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	40		2.0		133.0	175
Subject objectives	Introduce students to essential financial econometric models for forecasting the rates of return on financial instruments and analyzing their volatility and risk.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[liEMU2_U03] The student is able to obtain and verify data from properly selected sources and to collect, process, and visualize it using modern econometrics, informatics or statistics tools.		The student obtains cross-sectional and time-series financial data from databases, verifies their correctness, visualizes them, and uses them to build econometric models.		[SU2] presentation/project/paper/report [SU5] implementation of a problem task		
	[liEMU2_W05] The student possesses advanced knowledge and understanding of informatics, statistics, and econometrics techniques and tools used to acquire, process, or visualise data to aid in decision-making and verify research hypotheses.		The student recognizes appropriate methods for processing financial data at different frequencies to analyze issues related to financial market volatility.		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report		
	[liEMU2_W02] The student comprehends advanced theoretical and practical concepts in econometrics, informatics, or statistics, which are essential for a deeper understanding of economic and social phenomena.		The student identifies and discusses financial econometrics issues related to asset pricing, forecasting rates of return, and risk in the financial market.		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report		
	[liEMU2_U01] The student can creatively and profoundly analyze complex social and economic processes using structured knowledge, econometrics, informatics, or statistics tools.		The student selects and constructs appropriate models from financial econometrics to analyse and interpret phenomena occurring in financial markets.		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written [SU5] implementation of a problem task		

Subject contents	- Prices and rates of return on financial instruments and their properties. Types of price changes, properties of logarithmic rates of return and their rescaled counterparts (stationarity, distribution, autocorrelation, clustering of volatility, calendar effects). Modelling rates of return on various types of financial instruments: statistical description, rates of return models, determining the shape of the distribution tail, modelling the middle part of the distribution, skewness and kurtosis, and distribution of absolute rates of return. - Can rates of return on financial instruments be predicted? The random walk hypothesis and its significance in finance. Empirical analyses of rates of return on various types of financial instruments. Measures of predictability of rates of return. - Transaction rules: moving average, channel, filter, statistical. Empirical analyses of the effectiveness of transaction rules for various financial instruments. - Asset portfolio and its characteristics. Efficient frontier of portfolios for multiple risky assets (and risk-free assets). Optimal portfolio for a risk-averse investor. Portfolio diversification. - Estimating and forecasting the risk of financial instruments and portfolios: value at risk for a single instrument and portfolio, value at risk using simulation and stress testing, and value at risk for a credit portfolio. - Market equilibrium, factor asset pricing models, and problems of specification, estimation, and validation of asset pricing models. - Effectiveness of investing in equity instruments evaluation. Measures of investment effectiveness based on asset pricing models. - Interest rates and their types. Theories of the term structure of interest rates (expectations hypothesis, liquidity preference, market segmentation, preferred habitats). From theory to practice: verification of the expectations hypothesis based on a perfectly predictable spread model, changes in the long-term rate, cointegrated vector autoregressive model.		
Prerequisites and co-requisites	Students should be introduced to market efficiency theory, rational expectations, and asset pricing models. Basic knowledge of dynamic econometrics and practical data exploration skills are essential.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Credit for tutorials: written test	51.0%	40.0%
	Written exam	51.0%	30.0%
	Credit for labs: team project with presentation	51.0%	30.0%
Recommended reading	Basic literature	P. Best, Wartość narażona na ryzyko. Dom Wydawniczy ABC, Kraków 2000. M. Doman, R. Doman, Modelowanie zmienności i ryzyka. Oficyna Wolters Kluwer Business, Kraków 2009. M. Osińska, Ekonometria finansowa. Polskie Wydawnictwo Ekonomiczne, Warszawa 2006.	
	Supplementary literature	K. Cuthbertson, D. Nitzsche, Quantitative Financial Economics. Stocks, Bonds and Foreign Exchange. Wiley, Chichester 2004. H. Levy, The Capital Asset Pricing Model in the 21st Century, Cambridge University Press, 2012. - J.C. Francis, D. Kim, Modern Portfolio Theory: Foundations, Analysis, and New Developments, Wiley, 2013.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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