BRATISLAVA UNIVERSITY OF
ECONOMICS AND BUSINESS

Doctor Honoris Causa



Józef POCIECHA

November 6, 2026





Your Excellencies, Magnificences, Spectabiles, Honorabiles,
Distinguished ladies and gentlemen,

The Bratislava University of Economics and Business expresses its respect and appreciation to distinguished personalities in various ways, including by conferring upon them the honorary degree Doctor honoris causa. It is awarded above all to distinguished personalities from Slovakia and abroad whose work contributes to the development of cooperation between the Bratislava University of Economics and Business and the institutions they represent. In the history of the university, a total of thirty-eight personalities have received the Doctor honoris causa diploma, thirty-one of them from abroad and seven from Slovakia.

It is a great honour for me to welcome to our university today Professor Józef Pociecha of the Cracow University of Economics. He is one of the most distinguished representatives of Polish statistics, econometrics and quantitative methods, and for more than five decades he has devoted himself to the development of statistical and economic sciences.

Today's ceremony also has a special significance for us. Since the 1980s, the name of Professor Pociecha has been closely associated with cooperation between Kraków and Bratislava, particularly with our Faculty of Economic Informatics. Over the years, this cooperation has grown into a long-standing tradition of joint scientific seminars and conferences that continue to bring together researchers from Poland, Slovakia and other countries.

At a time when economic decision-making increasingly relies on data, models and their correct interpretation, we need personalities who combine methodological rigour with critical thinking, openness and a willingness to support younger generations. We are therefore delighted to confer this honorary degree today upon Professor Józef Pociecha. We are confident that it will further strengthen the ties between the academic communities of Kraków and Bratislava, which we have been building together for more than three decades.

Bratislava, November 6, 2026

Prof. Ferdinand Daňo, PhD.
Rector of the Bratislava University
of Economics and Business

LAUDATIO

Your Magnificence, Rector of the Bratislava University of Economics and Business, Professor Ferdinand Daňo, PhD.,
Dear Professor Józef Pociecha,
Your Excellencies, Magnificences, Spectabiles, Honorabiles,
Distinguished ladies and gentlemen, honoured guests,

It is a great honour for me, at this ceremonial meeting of the Scientific Council of the Bratislava University of Economics and Business, extended by the Scientific Council of the Faculty of Economic Informatics, to present Professor Józef Pociecha, upon whom the Bratislava University of Economics and Business is conferring the honorary degree Doctor honoris causa.

Today's ceremony is not only a recognition of Professor Pociecha's outstanding scientific achievements. It is also an expression of respect for a scholar, teacher and academic leader who, throughout more than five decades, has contributed significantly to the development of statistics and economics and has consistently promoted international scientific cooperation and lasting partnerships between universities.

Professor Józef Pociecha is one of the most distinguished representatives of Polish statistics, econometrics and quantitative methods. His professional life has been closely connected with the Cracow University of Economics. He progressed through all stages of an academic career, becoming Professor of Economic Sciences in 1997. He served for many years as Head of the Department of Demography and later the Department of Statistics. He was Dean of the Faculty of Commerce, subsequently Dean of the Faculty of Management, and from 1993 to 1999 served as Vice-Rector of the Cracow University of Economics.

His scientific work covers a remarkably broad spectrum of modern statistics and econometrics, including multivariate statistical analysis, demographic processes, econometric modelling, quantitative methods in auditing, corporate bankruptcy prediction and statistical learning. In recent years, he has also focused on the philosophical and methodological foundations of statistical research.

This remarkable development, from classical multivariate methods and econometrics to statistical learning and the methodological challenges of contemporary statistics, demonstrates both the

breadth of his scholarship and his ability to respond to the changing nature of quantitative research. It is also reflected in the theme of his honorary lecture today, devoted to stochasticity, non-linearity and non-parametricity as fundamental challenges in the study of socio-economic processes.

Professor Pociecha's scholarly reputation extends well beyond Poland. He is a member of the Committee on Statistics and Econometrics of the Polish Academy of Sciences, Chairman of the Commission of Economic Sciences and Statistics of the Polish Academy of Sciences in Kraków, and Chairman of the Commission of Economic Sciences of the Polish Academy of Arts and Sciences. He has also been actively involved in the Polish Statistical Association and the European Association for Population Studies. His international experience includes research stays in the United States and Norway.

However, there is another reason why today's distinction has a special significance for our university.

For several decades, the name of Józef Pociecha has been closely associated with scientific cooperation between Kraków and Bratislava. Since the 1980s, he has actively participated in conferences organised by the Bratislava University of Economics and Business and our Faculty of Economic Informatics. After 1989, he played an important role in strengthening cooperation between the departments of statistics in Kraków and Bratislava. This cooperation led to regular Slovak-Polish scientific seminars, extended in 1996 to include Ukrainian colleagues. In 2026, the seminar was held for the 32nd time, reflecting more than three decades of continuous scientific cooperation between our academic communities.

Professor Pociecha also carried forward the tradition of scientific conferences in Zakopane following the death of Professor Aleksander Zeliaś, who had been awarded the honorary degree Doctor Honoris Causa by our university in 2002. After 2006, he transformed these meetings into the Professor Aleksander Zeliaś International Conference on Modelling and Forecasting of Socio-Economic Phenomena. Today, the conference is a respected meeting place for researchers in quantitative economics and statistics.

His contribution to our Faculty of Economic Informatics has therefore gone far beyond institutional cooperation. It represents decades of personal relationships, joint scientific activities, exchange of knowledge and experience, and support for generations of academics. This cooperation has resulted in joint publications, scientific events, expert reviews and the development of research and education in applied statistics and quantitative methods.

This long-standing relationship with Bratislava gives today's ceremony a special meaning. The honorary degree conferred upon Professor Pociecha is therefore not only a recognition of his outstanding academic achievements, but also an expression of appreciation for his exceptional contribution to the long-standing cooperation between the academic communities of Kraków and Bratislava.

Throughout his career, Professor Pociecha has combined scholarly authority with qualities equally important in academic life – professionalism, responsibility, openness, integrity and willingness to support colleagues and younger researchers. His achievements have been recognised by numerous distinctions, including the Bronze and Gold Crosses of Merit, the Knight's Cross of the Order of Polonia Restituta, the Medal of the Commission of National Education and the Commemorative Medal of the Faculty of Economic Informatics of the Bratislava University of Economics and Business.

Your Excellencies, Magnificences, Spectabiles, Honorabiles,
Distinguished ladies and gentlemen,

Professor Józef Pociecha represents a remarkable combination of scientific excellence, academic leadership, international cooperation and personal integrity. His lifelong work has contributed significantly to the development of statistical and economic sciences, while his exceptional and long-standing relationship with the Bratislava University of Economics and Business represents a lasting value for our academic community.

Based on the distinguished personality and achievements of Professor Józef Pociecha, and following the decisions of the Scientific Council of the Faculty of Economic Informatics and the Scientific Council of the Bratislava University of Economics and Business, in accordance with Article 1, paragraph 2 of the Principles Governing the Conferment of the Title Doctor Honoris Causa at the Bratislava University of Economics and Business and pursuant to Section 28, paragraph 1, letter g) of Act No. 300/2025 Coll. on Higher Education Institutions and on Amendments and Supplements to Certain Acts (Higher Education Act), as amended, the Bratislava University of Economics and Business hereby confers upon

Professor Józef Pociecha
the honorary degree

DOCTOR HONORIS CAUSA

Stochasticity, non-linearity and non-parametricity of socio-economic processes – current challenges for statisticians

Prof. dr hab. Józef Pociecha

Magnificence Rector, venerable members of the Academic Senate, distinguished professors, dear guests of this ceremony. I am very touched to receive an honorary doctorate from the Bratislava University of Economics and Business. I gratefully accept this as an expression of friendship and recognition of the cooperation between the Bratislava University of Economics and Business and my own Cracow University of Economics.

I often associate Slovakia in my life with the first time. The first time I crossed the Polish border at the Łysa Polana-Javorina crossing point, I spent my first night abroad in Poprad. The first time I presented abroad in English my scientific paper at the conference organized by the Bratislava University of Economics and Business, and here I am now receiving my first honorary doctorate title.

At this point, I would like to thank the Rector Magnificus, Prof. Ing. Ferdinand Daňo, PhD. and the Scientific Council of the Bratislava University of Economics and Business for their kind consideration of the application, and Prof. Mgr. Erik Šoltés, PhD. the Dean of the Faculty of Economic Informatics and Assoc. Prof. Ing. Mária Vojtková, PhD., the Head of the Department of Statistics for taking the initiative and submitting an application for this high distinction.

Now I return to the title of my speech at this assembly, "Stochasticity, non-linearity and non-parametricity of socio-economic processes„, as current challenges for statisticians. My more than 50 years of research experience in the field of statistical analyses of socio-economic processes allow the formulation of the following remarks on the current challenges facing statistics: they are stochastic, non-linear and non-parametric nature of socio-economic processes. When we conduct such research, it is also necessary to reflect on the philosophical and methodological foundations of this type of research. An important question thus arises whether it is possible to arrive at the truth by statistical means? Statisticians believe that it is possible. Generally speaking, statistics is a method of learning from experience and making decisions under conditions of uncertainty. In this view, the truth can be understood as a judgment, with an acceptable probability (error), consistent with reality.

The surrounding reality is manifested through phenomena that are a source of impressions. We can observe these phenomena with greater or lesser accuracy and thus, only approximate the studied reality. Socio-economic processes are stochastic in nature, so the most general statistical method of searching for the truth about the reality is the stochastic approximation method.

Throughout the history of human thought, the initial philosophical position was determinism, which assumed that all events in nature are predetermined. However, Werner Heisenberg demonstrated that in a world of the smallest material particles, causal conditioning does not exist, pointing to the 'free will of the electron'. The shift from physics to philosophy, proved the existence of indeterminism in nature. Thus, the deterministic approach, which was the original philosophical position regarding the understanding of the world, has been replaced by its indeterministic counterpart, which is the dominant modern scientific view. In biology, the theory of evolution is based on indeterministic behaviour. Social indeterminism is a philosophical and sociological view that denies the existence of strict, necessary laws governing social phenomena. It is based on the belief that events in society are not strictly determined by the conditions that precede them, emphasising the role of chance, free will and other factors in shaping human behaviour. Indeterminism in economics is based on the assumption that economic events are not strictly determined by previous causes and their course is influenced by many unpredictable factors, including the free will to make decisions by market participants. This means that even under identical initial conditions, different business results may be achieved. In the light of the above statements the challenge for statisticians is to balance uncertainty and the related risk measurement with the discovery of the course of past processes and forecasting their course in the future. From a mathematical point of view, it involves optimising the stochastic approximation of the studied socio-economic reality.

Learning about socio-economic processes can only be a better or worse way to get closer to the socio-economic reality that surrounds us. Therefore, it is necessary to formulate general criteria for this approximation to be satisfactory. Such criteria are based on probabilistic foundations. Therefore, approximation remains the most general method of the cognition of reality, as human cognition is inherently its simplification. The most important contemporary challenges concerning stochasticity of socio-economic processes are as follows:

- The shift from discovering the regularity of the course of socio-economic processes to analysing the stochastic structure of the models constructed to represent them. This will allow a more precise determination of the uncertainty about their future course and thereby, the risk

of developmental anomalies;

- Emphasizing that statistical or econometric modelling is only a form of approximation of the studied socio-economic reality, where the acceptable accuracy of the approximation is up to us.

The concept of approximation is commonly known as a mathematical term. It means replacing 'true' function f(x) by a simpler function F(x), defined in the same area, whose values depend on a certain number of parameters. An approximated function, also called an approximate, is replaced by a function called an approximant. The approximant brings us closer to an unknown primary function. Approximation is used in situations where we do not know or there is no analytical form of the approximate which would allow us to determine the value for any of its arguments; at the same time, the values of this unknown function are known for a certain set of its arguments. The approximation of an approximate by a selected approximant is always associated with the risk of approximation errors. The estimated magnitude of these errors is the criterion for choosing the best approximation method. If the set on which we measure the approximation error is discrete, then we speak of point approximation; however, if a set is specified on a range of real numbers, then we speak of integral approximation. The actual approximated function usually is not known, but only its values in a finite number of points called nodal points. However, if the considered variable is treated as a random variable, then its approximation is called stochastic approximation. A random variable is a function that assigns numbers to elementary events, i.e. a function that allows for a mapping that transfers probability studies from an inconvenient probabilistic space to a well-known Euclidean space. In stochastic approximation, the approximation error is also random.

An important approximation method is the mean-square approximation. It is used when the approximated function f(x) is known only on the discrete set of its n arguments. So, the most well-known approximation function is the regression function. The regression function is nothing more than an approximation function, so in the theory of regression and correlation, the basic theorems and some calculation methods provided by the theory of approximation can be used.

Statistical regression is one of the forms of the approximation of real relations occurring in socio-economic processes. When approximating this reality, it is necessary to determine tolerance Δ that we accept, i.e. the acceptable discrepancy between the actual relationship between the variables we define and its approximant we choose. The approximation approach to regression indicates that the approximation function chosen on the basis of the sample is only one of many possible regression

functions belonging to the set of approximation functions. What is more, the individual functions belonging to this set are indistinguishable in terms of the accepted level of tolerance. In econometric modelling, stating that a given model 'wins' simply because others are within an acceptable tolerance range is inappropriate.

When we go to the second current challenge facing statistics - non-linearity of socio-economic processes – we can see that they do not develop in a continuous and linear manner, but tend to be disrupted and shaped by sudden changes in the economic and political situation. This is due not only to macroeconomic factors, but also to people's decisions and emotional behaviours, which are not always rational. The analysis of such processes cannot rely solely on simple, linear models, but their complexity, dynamics and unpredictability need to be considered as well. The linearity of the course of socio-economic processes is not a rule, but a special case of their course. Process non-linearity is revealed in time series analysis through stochastic modelling. According to Clive Granger, the world is almost certainly non-linear. Despite significant advancements in financial economics and econometrics associated with the modelling of non-linear socio-economic processes, improving the tools for detecting and describing the non-linearity of the studied processes remains a challenge for statisticians.

The third challenge facing statistics is non-parametricity of socio-economic processes. Statistical description and parametric modelling of non-linear economic processes are computationally complex and require several restrictive assumptions. The non-parametric approach is a viable alternative; it does not require the assumption of a specific analytical form of the distribution in the population; instead, it relies on the shape of the data distribution in the sample or training set. It allows the structure of the model to be determined based on the data. Non-parametric modelling is thus an important segment of statistical methods, especially useful when the distribution of the data is non-normal or unknown, and when the studied characteristics are measured on weak, ordinal or nominal scales. Non-parametric methods, particularly non-parametric regression, represent a significant step towards the development of multivariate statistical methods based on artificial intelligence. Despite their increased flexibility, these methods are not free from limitations that affect model adequacy and interpretability, including their sensitivity to the quality of the data in the training sets. Measurement errors, data gaps or outliers can significantly distort the model. The lack of restrictive assumptions can only be apparent, as they can be transferred to a lower, 'technical' level. Moreover, as the complexity of statistical learning models grows, problems with their substantive interpretation intensify.

To conclude my short lecture I maintain that the rapid development of statistical learning methods should be based on a philosophical foundation, containing axioms concerning the stochastic, non-linear and non-parametric nature of socio-economic processes, effectively modelled by stochastic approximation methods.

At the end of my speech, I would like to thank all my friends from the Bratislava University of Economics and Business, and especially from the Department of Statistics. I am very grateful to Doc. Ing. Eva Sodomová, PhD. and Prof. RNDr. Viera Pacaková, PhD. for over 30 years of cooperation, including the creation and organization of the Polish-Slovak-Ukrainian Seminars on statistical methods in socio-economic research.

My scientific and organizational achievements would not have been possible without the support of my closest family, especially my wife Anna, who shared with me a friendly cooperation with the Slovaks.

Once again, I thank you all very much.

Curriculum vitae – Józef Pociecha

HIGHER EDUCATION

1965 – 1969	Wyższa Szkoła Ekonomiczna w Krakowie (Higher School of Economics in Cracow), Master of Economics

SCIENTIFIC DEGREES

1997	Professor of economic sciences
1986	Habilitation
1976	Doctor of Economics

ACADEMIC POSITIONS

2006 – 2017	Head of the Department of Statistics, Cracow University of Economics
2005 – 2009	Dean of the Faculty of Management, Cracow University of Economics
2000 – 2002	Rector of Higher School of Insurance (private control)
1996 – 1999	representative of Cracow University of Economics at Danaube Rectors' Conference
1996 – 1999	Vice-Rector for General Affairs, Cracow University of Economics
1993 – 1996	Vice-Rector for Education, Cracow University of Economics
1992 – 1993	Dean of the Faculty of Management, Cracow University of Economics
1990 – 1992	Dean of the Faculty of Commerce, Cracow Academy of Economics
1988 – 2005	Head of the Department of Demography at the Institute of Statistics, Econometrics and Computer Science, Cracow University of Economics
1991	professor of statistics, demography and economics at the Cracow Academy of Economics
1987 – 1991	associate professor
1976 – 1987	assistant professor

1970 – 1976 assistant at the Department of Statistics, Cracow Academy of Economics

1969 – 1970 trainee assistant in the Department of Statistics of the Institute of Economic Calculation Methods of the Higher School of Economics in Cracow

LONG-PERIOD SCHOLARSHIP ABROAD

1978 Grand Valley State University, Allendale (MI) USA

1987 Oslo University and School of Business Administration Bergen, Norway.

STATE DECORATIONS

1979 Bronze Cross of Merit

1985 Gold Cross of Merit

1998 Knight's Cross of the Order of Polonia Restituta

MAJOR MEDALS

2000 Medal of the Commission of National Education – 2000,

2008 Commemorative Medal of the Faculty of Economic Informatics of the University of Economics in Bratislava on the occasion of the 40th anniversary of the founding of the Faculty

2012 Jubilee Medal of Polish Statistical Association – 2012

MEMBERSHIP AND FUNCTIONS IN SCIENTIFIC ORGANIZATIONS AND SOCIETIES

since 1993 elected member of the Committee on Statistics and Econometrics of the Polish Academy of Sciences,

1993 – 1999 Scientific Secretary of the Committee on Statistics and Econometrics of the Polish Academy of Sciences

1996 – 2017 elected member of the Committee on Demographic Sciences of the Polish Academy of Sciences

since 1990 member of the Commission of Economic Sciences and Statistics of the Polish

Academy of Sciences, Branch in Krakow, since 2015 – President

since 2004 member of the Commission of Economic Sciences of the Polish Academy of Arts and Sciences, since 2016 – President

- member of the European Association for Population Studies

- member of the Polish Statistical Association

1989 – 1993 chairman of the Taxonomic Section of the Polish Statistical Association

2013 – 2018 chairman of the Classification and Data Analysis Section of Polish Statistical Association

MAIN BOOKS

1. Metody taksonomiczne w badaniach społeczno-ekonomicznych (Statistical Methods in Socio-Economic Researches), PWN, Warszawa 1988, pp.262, co-author,
2. Metody wielowymiarowej analizy porównawczej w badaniach rozwoju demograficznego (Multivariate Comparative Analysis Methods of Demographic Development), Monografie i opracowania nr 336, SGH, Warszawa 1991, pp.134, co-author,
3. Metody statystyczne w badaniach marketingowych (Statistical Methods in Marketing Research), PWN, Warszawa 1996, pp.214.
4. Ekonomiczne konsekwencje osiągania wieku emerytalnego przez generacje powojennego wyżu demograficznego (Economic consequences of reaching retirement age by post-war baby boom generations), Wydawnictwo AE w Krakowie, Kraków 2003, (editor and co-author), pp. 160.
5. Statystyczne metody prognozowania bankructwa w zmieniającej sie koniunkturze gospodarczej (Statistical methods of bankruptcy prediction in a changing economic situation), Wydawnictwo Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2014, pp. 170.
6. Filozoficzne i metodologiczne podstawy współczesnych analiz statystycznych (Philosophical and methodological foundations of contemporary statistical analyses), Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, Kraków 2023, pp. 172.

AREAS OF RESEARCH INTERESTS

- cluster analysis and multivariate comparative analysis methods,

- demographic analysis,
- econometric modelling,
- quantitative methods in auditing,
- bankruptcy prediction methods,
- statistical learning methods,
- philosophical foundations of statistical investigations.

Doctor Honoris Causa

of the Bratislava University of Economics and Business

(1993 – 2025)





prof. Ing. Vladimír KRÁLIČEK, Drsc.
21. 10. 1993



Dr. Gerald HINTEREGGER
30. 03. 1994



prof. Dr. Cornelis Johannes RIJNVOS
10. 10. 1995



Dkfm. Dr. Franz VRANITZKY
10. 04. 1996



prof. Klaus SCHWAB
04. 11. 1996



Dr. Hans VONTOBEL
04. 11. 1996



prof. Michael NOVAK
06. 02. 1997



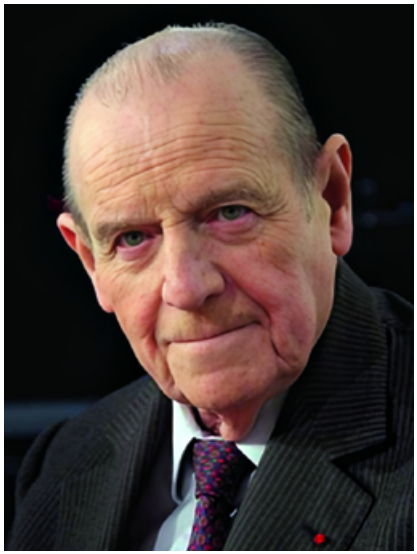
prof. Dr. hab. Leszek BALCEROWICZ
08. 12. 1999



prof. Ing. RCDr. Václav HOFFMANN
08. 12. 1999



prof. Ing. Radim VLČEK, CSc.
08. 12. 1999



Dr. h. c. prof. Raymond BARRE
18. 05. 2000



Donald James JOHNSTON
18. 06. 2001



Dr. h. c. prof. Hermann SCHNABEL
05. 09. 2001



Dr. h. c. prof. hab. Jerzy ALTKORN
05. 09. 2001



Dr. h. c. prof. Dr. hab. Aleksander ZELIAŚ
16. 10. 2002



Dipl. volkswirt. Wolfgang ROTH
23. 01. 2003



Dr. h. c. prof. Ing. Václav KLAUS, csc.
07. 10. 2004



Georgios S. ZAVVOS
06. 12. 2004



prof. Dr. Heiko STEFFENS
08. 02. 2006



prof. Dr. Ralf Michael EBELING
18. 10. 2006



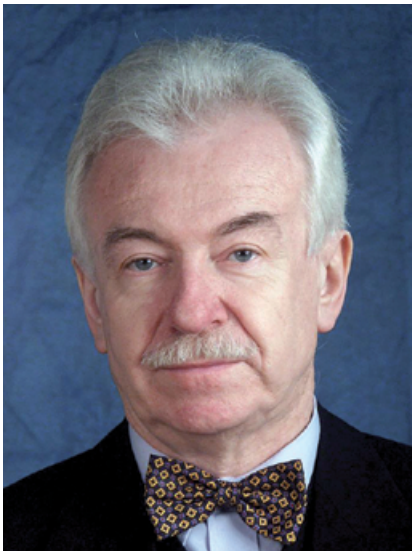
prof. emeritus Alexandre LAMFALUSSY
18. 01. 2007



Dkfm. Rainer FRANZ
19. 04. 2007



prof. zw. dr hab. Stanisław LIS
23. 10. 2007



prof. Ing. Richard HINDLS, CSc.
19. 11. 2008



prof. Dr. Claude MARTIN
09. 03. 2010



Dr. Herbert STEPIC
27. 05. 2011



Dr. Günter GEYER
05. 03. 2012



José Angel GURRÍA TREVIÑO
06. 12. 2012



Ing. Ján KUBIŠ
10. 10. 2013



José Manuel DURÃO BARROSO
28. 04. 2014



Ing. Michal KOVÁČ, CSc.
03. 12. 2014



doc. Ing. Peter MIHÓK, CSc.
03. 12. 2014



Prof. UEK dr hab. inż. Andrzej CHOCHÓŁ
25. 06. 2015



prof. Ľuboš PÁSTOR, PhD.
27. 09. 2016



Professor Dr. Andreas WÖRGÖTTER
16. 10. 2018



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26. 10. 2021



Ing. Richard FARKAŠ, PhD.
26. 10. 2021



Ing. Elena KOHÚTIKOVÁ, PhD.
10. 11. 2025

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Doctor honoris causa of the Bratislava University of Economics and Business
upon Professor Józef Pociecha.