AMENA UROOJ

Position	Assistant Professor, PIDE School of Economics, (Ex-HoD, Department of Econometrics and Statistics, PIDE)
	Pakistan Institute of Development Economics, Islamabad
	Telephone (off): 92-51-9248080

Address: Email: amna@pide.org.pk,

ORCiD ID: 0000-0003-4626-5525

EDUCATION

Academic Degrees

Degree	University	Year	Specialization
PhD	Quaid-e-Azam University, Islamabad	2016	Statistics with Specialization in Econometrics
M.Phil	Quaid-e-Azam University, Islamabad	2005	Statistics
MSc	Quaid-e-Azam University, Islamabad	2002	Statistics
BSc	Punjab University, Pakistan	1999	Statistics, Mathematics, Economics

Professional Degrees

B.Ed.	Allama Iqbal Open University, Islamabad	2003	Education

Computer Skills

R	OX-Metrics	Tableau	EVIEWS	Minitab
STATA	MATHEMATICA	SCA time series package (B34S)	SPSS	MS Office
MATLAB	BlueSky Statistics	Statistical Analysis System (SAS)	JAMOVI	

TEACHING/ RESEARCH POSITIONS

Position	University/Institute	Period
Assistant Professor (Econometrics)	Pakistan Institute of Development Economics, Islamabad	Dec. 2009 till date
Staff Demographer	Pakistan Institute of Development Economics, Islamabad	Feb. 2008 to Dec. 2009
Visiting Faculty (Statistics)	Quaid-i-Azam University Islamabad, Pakistan	Since 2004
Lecturer (Statistics)	FPSC selectee posted in F.G.C.W. F-7/2, Islamabad	Jan. 2005 to Jan. 2008
Subject Specialist (Mathematics)	Bahria College, Islamabad, Pakistan	August 6, 2002 to Jan. 2005

ADMINISTRATIVE RESPONSIBILITIES

Position	University/Institute	Period
Head of Department	Department of Econometrics and Statistics, PIDE	July 01, 2016- November 29, 2019
Acting Head of Department	Department of Econometrics and Statistics, PIDE	December 01, 2014- July 01, 2016
Acting Head of Department	Department of Econometrics and Statistics, PIDE	September 18, 2014- October 16,2014
Thesis/ Course Coordinator for M.Phil (Econometrics)	Department of Econometrics and Statistics, PIDE	April 09, 2012- December 01, 2014
Incharge of Department	Department of Econometrics and Statistics, PIDE	July 05, 2010- July 23, 2010

MEMBERSHIP OF ADMINISTRATIVE BODIES

- Member of Academic Council, PIDE (2014-2019)

- Member of GRMC, PIDE (2014-2019)

- Member of Faculty Council, PIDE (2014-2019)

- Head/Member of Department Council, Department of Econometrics and Statistics, PIDE (2014-2019)

- Member of Department Council, PSE, PIDE (2021)

- Member of PIDE's Team on REPORT on Pay Indexation at Finance Division for Pay and Pension Commission-2020-21

- Member of PIDE's Review Team on the methodology of estimation of SDGs Index, Planning Commission-2020-21

- Member of Comprehensive Exam Committee for PhD Econometrics (2016-21)

- Member of admission committee for PhD Econometrics (2014-21)

- Member of admission committee for M. Phil Econometrics (2011-21)

- Member of admission committee for M.Sc. Econometrics and Statistics (2008-11)

- Member of Programme Team for Self-Assessment of PhD, M. Phil, MSc. Programmes of Department of Econometrics and Economics, QEC, PIDE (2020-21)

- Member of Programme Team for Self-Assessment of PhD, M. Phil, MSc. Programmes of Department of Econometrics and Statistics, QEC, PIDE (2011-2019)

- Member of Departmental Operational Guideline Committee-2020
- Member of Course Contents Committee-2020
- Member of Thesis Guideline Committee-2020
- Member of Reception Committees in Annual General Meeting and Conference of PSDE (2016-2017)
- Member of F.B.I.S.E for curriculum and paper setting (Statistics) for Intermediate Classes in 2006-07
- Member of various Committees in Annual General Meeting and Conference of PSDE
- Worked as member of the team for questionnaire development of the Pakistan Household Survey 2009-10
- Reviewer for Journal of Applied Statistics published online by Taylor & Francis (Routledge)
- Reviewer for Applied Economic Letters published online by Taylor & Francis (Routledge)
- Reviewer for Energy Policy published by Elsevier.
- Reviewer for Business and Economic Review published by IM Sciences (Institute of Management Sciences) (Recognized in HEC in Y-Category)
- Reviewer for Journal of Quantitative Methods (JQM) by University of Management and Technology (UMT). (Recognized in HEC in Y-Category)
- Reviewer for Pakistan Economic Review published by Quaid-e-Azam School of Economics, Q.A.U, Islamabad
- Reviewer for Pakistan Journal of Economic Studies (PJES) by Department of Economics, Islamia University of Bahawalpur
- Editor for Research Journal Social Sciences (RJSS) published by Tanzeem -E-Asatiza, Pakistan (SJIF 2018: 4.668)(2015-2019)

FREQUENTLY TAUGHT COURSES

Course	Level
Multivariate Statistics	PhD/MPhil Econometrics
Sampling Design and Analysis	PhD/MPhil Econometrics
Elements of Statistical Learning	PhD/MPhil Econometrics
Data Visualization	PhD/MPhil Econometrics
Data Visualization and Analysis Techniques	MBA(1.5 years)
Research Methodology	MPhil Econometrics
Estimation Techniques for Environmental Economics	MPhil Environmental Economics

Quantitative Foundations for Econometrics	PhD/MPhil Econometrics
Econometric Methods	PhD/M.Phil Econometrics
Time Series Analysis	PhD/M.Phil Econometrics (co-Teacher)
Multivariate Statistics	M.Sc. Econometrics and Statistics
Statistical Methods	M.Sc. Statistics, M.Sc. Econometrics and Statistics
Nonparametric Statistics and Categorical Data Analysis	M.Sc. Econometrics and Statistics
Regression Analysis II	M.Sc Statistics
Statistical Inference-I	M.Sc Statistics
Statistical Inference-II	M.Sc. Statistics
Biostatistics I and II	MPhil Pharmacy
Statistics for Economists	M.Sc. Economics
Introduction to Probability and Statistics	BS Statistics, BS IR
Statistical Inference	BS-Economics
Econometrics	BS-Economics

COURSES/CERTIFICATES/DIPLOMAS/TRAININGS

Course/Certificate/Diploma	Duration	Year	Institution
Impact Evaluation	1 day(June 8)	2022	PIDE
PDHS In-Depth Analysis Workshop	3 days(18-20 December)	2019	National Institute of Population Studies (NIPS)
Analyzing the Poverty-Food Insecurity Nexus	2 days (Oct7-Oct11)	2019	FAO Office Islamabad
Structural Equation Modeling using SmartPLS 3.0	2 days (Sep,18-19)	2019	Bahria University, Islamabad Campus
Spatial Econometrics	1 day (20 August)	2019	SOE, QAU, Islamabad
Data Science	1 year (Dec01 - Dec 31)	2017-18	John Hopkins University(online)
Machine Learning	1 year (Dec01 - Dec 31)	2017-18	University of Washington(online)
Structural Equation Modelling Using AMOS	1 day (May-11)	2017	COMSATS
Biostatistics for Biological and Health Sciences using SAS	2months (May9- July 11)	2017	National Science Information Centre (ICCBS)
Statistical Inference (using R)	4 Weeks (Dec02- Jan 02)	2017	John Hopkins University (online)
Visualization and Exploration of Data: Making Sense of Data	2days (May 09 – 10)	2016	PIDE

How to Teach Elementary Descriptive Statistics: An HEC Workshop for Teachers of Statistics	5days (August 23-27)	2016	PIDE & HEC
Applied Regression Analysis	1 month(Apri15-May15)	2015	Ohio State University (online)
Open Data Workshop	1 day (May-18)	2015	World Bank Group
Thesis Writing Using LaTeX	1 day (May-19)	2015	PIDE
Moving from MDG's to SDG's: options and challenges for Pakistan	2days (June 9-10)	2015	PIDE &HEC
Applied Research methods for Economics and Finance	5days (September7-11)	2015	PIDE & HEC
Thesis writing workshop	1 day (Dec-10)	2015	PIDE
Postgraduate Research Tools	2days (January29-30)	2014	PIDE & RCTD
Data Analysis and Statistical Inference	1month(March29-April29)	2014	Duke University (online)
Thesis Writing Skills, EndNote X7 &Stata	4days (May29-June 02)	2014	PIDE
Data Analysis with Excel-Advance	2days (June9-10)	2014	PIDE
5day workshop on Applied Economics Using Software	5 days (August 5-9)	2014	School of Economics, QAU
The Data Scientist's Toolbox	1 month (July7-August7)	2014	John Hopkins University(online)
R Programming	July19-August19	2014	John Hopkins University(online)
Regression Models	August10-September10	2014	John Hopkins University(online)
Sampling Issues for Surveys	2days (May 16-17)	2012	The World Bank
Gender Sensitive Project Planning skills	4days (October 27-30)	2008	PIDE & UNDP
ICT for ALL	1 week(25June-02July)	2005	Microsoft IT Academy for Junior Developers
Computer basics(E00)	1month	2000	All Tech Computer Corner

RESEARCH

➤ **Journal Articles**

- Shahid, H., Urooj, A. and Asghar, Z. (Accepted), "Impact of Seasonal Level Shift on Seasonal Adjustments and Forecasts" Romanian Journal of Economic Forecasting.

- Hina, H., Ali, R., Urooj, A."Hybrid Modeling of ARIMA, ANN and SVM for Macro Variables Forecasting in Pakistan". (Under review by Journal of Quantitative Methods)

- Zehra, A., Urooj, A. (accepted). A Bibliometric Analysis of the Developments and Research Frontiers of Agent-Based Modeling in Economics. *Economies*

- Khan,F., Urooj, A., Khan, S.A., Khosa, S. K., Muhammadullah, S., Almaspoor, Z., (2022). "Evaluating the Performance of Feature Selection Methods Using Huge Big Data: A Monte

Carlo Simulation Approach", Mathematical Problems in Engineering, vol. 2022, Article ID 6607330, 10 pages, 2022. https://doi.org/10.1155/2022/6607330

- Muhammadullah, S., Urooj, A., Mengal, M.H., Khan, S.A., Khalaj, F. (2022) "Cross-Sectional Analysis of Impulse Indicator Saturation Method for Outlier Detection Estimated via Regularization Techniques with Application of COVID-19 Data", Computational and Mathematical Methods in Medicine, vol. 2022, Article ID 2588534, 11 pages, 2022. https://doi.org/10.1155/2022/2588534

- Muhammadullah, S., Urooj, A., Khan, F., Alshahrani,M.N., Alqawba,M., and Al-Marzouki, S., (2022). "Comparison of Weighted Lag Adaptive LASSO with Autometrics for Covariate Selection and Forecasting Using Time-Series Data," Complexity, vol. 2022, Article ID 2649205, 10 pages, 2022. https://doi.org/10.1155/2022/2649205.

- Khan, F., Urooj, A., Muhammadullah, S. (2021) An ARIMA-ANN Hybrid Model for Monthly Gold Price Forecasting: Empirical Evidence from Pakistan. Pakistan Economic Review, Volume: 4, Issue: 1, Pages: 61-75

- Khan,F., Urooj, A., Ullah,K., Alnssyan, B., and Almaspoor, Z., (2021). "A Comparison of Autometrics and Penalization Techniques under Various Error Distributions: Evidence from Monte Carlo Simulation," Complexity, vol. 2021, Article ID 9223763, 8 pages, 2021. https://doi.org/10.1155/2021/9223763.

- Khan,F., Urooj, A., Khan, S.A., Alsubie, A., Almaspoor, Z., and Muhammadullah, S., (2021). "Comparing the Forecast Performance of Advanced Statistical and Machine Learning Techniques Using Huge Big Data: Evidence from Monte Carlo Experiments", Complexity, vol. 2021, Article ID 6117513, 11 pages. https://doi.org/10.1155/2021/6117513

- Muhammadullah, S., Urooj, A., & Khan, F. (2021). A revisit of the unemployment rate, interest rate, GDP growth and Inflation of Pakistan: Whether Structural break or unit root?. IRASD Journal of Economics, 3(2), 80-92. https://doi.org/10.52131/joe.2021.0302.0027. (HEC RECOGNISED: Y)

- Khan, F., Khan, F.U., and Urooj, A. (2020). Factors Affecting Economic Growth: A Comparative Analysis of Democratic and Non-Democratic Eras of Pakistan, iRASD Journal of Economics, Volume 2, Number 2, 2020, Pages 61–71. (HEC RECOGNISED: Y)

- Urooj, A., & Asghar. Z. (2020). Evaluation of test statistics for detection of outliers and shifts, Journal of Quantitative Methods, 4(2), 54-75. https://doi.org/10.29145/2020/jqm/040203. (HEC RECOGNISED: Y)

- Urooj, A., and Asghar. Z. (2017), "Analysis of the performance of test statistics for detection of outliers (additive, innovative, transient, and level shift) in AR (1) processes", Communications in Statistics - Simulation and Computation, 46:2, 948-979, DOI:10.1080/03610918.2014.985383 (2017 Impact Factor: 0.501)

- Asghar, Z. and Urooj, A. (2017), "Analysis of Seasonal Level Shift (SLS) detection in SARIMA Models", Communications in Statistics - Simulation and Computation. 46:9, 7264-7318, DOI: 10.1080/03610918.2016.1236952. (2017 Impact Factor: 0.501)

- Urooj, A. (2016). *Performance of Time Series Models under Structural Discontinuities and Discordant Observations*. [Unpublished Ph.D. thesis]. Quaid-i-Azam University.

- Asghar, Z. and Urooj, A. (2012), "Structural Breaks, Automatic Model Selection and Forecasting Wheat and Rice Prices for Pakistan" Pakistan Journal of Statistics and Operation Research, Vol 8. No. 1, Pp:1-20. (Emerging Sources Citation Index (ESCI))

- "Bayesian Analysis of the Glenn-David Model For Paired Comparisons" (M.Phil thesis)

- Aslam, M. and Urooj, A. (2010), "Bayesian Analysis of Glenn-David Model for Paired Comparisons", Journal of Statistical Theory and Applications. ISSN No:1538-7887. Vol :9, Pp.: 595-614(Emerging Sources Citation Index)

- Asghar, Z. Attique, N. and Urooj, A. (2009), "Measuring Impact of Education and Socio-economic Factors on Health for Pakistan" The Pakistan Development Review, Vol 48, No.4, Pp 653-673.(HEC RECOGNISED; X)

- Arif, G.M. and Urooj, A. (2008), "Absorption of growing labour force in Pakistan: Actualizing the full potential of demographic dividend" Policy recommendations of Population Council.

- Urooj, A. (2005). *Bayesian Analysis of Glenn-David Model for Paired Comparisons*. [Unpublished M.Phil. thesis]. Quaid-i-Azam University.

- ➢ **Other Research**
    - ▪ *PIDE Monograph*
        - Gas and Petroleum Market Structure and Pricing, PIDE Monograph Series 2021. Chapter: Energy Market Structure Oil and Gas, by Afia Malik, Amena Urooj, Uzma Zia, Saba Anwar, and Saud Ahmad Khan
    - ▪ *COVID-19 Newsletter*

- Data Analyst in 41 Issues- March - July 2020
  - *Blogs*
    - Is Pakistan Doing Taxes the Right Way During Pandemic? (DECEMBER 14, 2020)
    - "Pay Indexation in Pakistan" May 21, 2021.
  - *Webinar Briefs*
    - ENERGY INNOVATIONS; Webinar Brief No. 16:2020
  - *Newspaper article*
    - Needed: Innovative Response To Overcome Energy Crisis. published in: Naya Daur (January 10, 2021)
    - Is Pakistan dealing with taxes the right way during Pandemic? published in: The Nation (December 10 2020)
  - *P&R Magazine Contributions*
    - Trust Deficit and Low Investment Levels in Pakistan PIDE-P&R-Issue2
    - Infographic on Pakistan's Major Economic Indicators - P&R-Issue2
    - Projections to Silver lining: Economy on Recovery Alley" P&R Volume 2, Issue 7

➢ **Project**

- Assessing Data Requirements for SDGs: through Key Informant Interviews and Surveys, PI: Zahid Asghar, Co-PI: Amena Urooj. (2016-17). National Research Program for Universities (NRPU) Project Funded by Higher Education Commission

TRAINER/ RESOURCE PERSON

- Resource person (ETS and Stats portion) Refresher course (30th August 2021-17th September 2021)
- Resource person for Trade Session at KRL on "Artificial Intelligence and Data Science Workshop" (02 Nov 2020)
- Resource person (ETS and Stats portion) LE-101 refresher course (14th -26th September 2020)
- Resource Person for STATA training on food insecurity workshop at FAO Islamabad October 8, 2019.
- Trainer of STATA at Capacity Building Training Workshop on Analyzing the Poverty-Food Insecurity Nexus on October 7-11, 2019 at FAO Islamabad, Office

SUPERVISION

Class	Student Name	Status	Dissertation Title	Advisory Status

M.Phil.	Hayat Shahid	Completed	Analysis of Seasonal Level Shift in Seasonal Adjustments and Time Series Forecasts	Supervisor
M.Phil.	Sara	Completed	High dimensional data analysis comparison of OLS Post LASSO with SCAD, MCP under different criteria	Co-Supervisor
M.Phil.	Nauman Ahmed	Completed	Predicting House Price Determinant by using Semi-Parametric Regression Hedonic Price Model: A Case study of Pakistan	Co-Supervisor
M.Phil.	Sharia Iqbal	Completed	Multivariate Change Point detection in correlation structure	Supervisor
M.Phil.	Fatima	Completed	Forecasting Multivariate time series	Supervisor
M.Phil.	Hamid Khan	Completed	Comparison of Covariate Selection Techniques: Adaptive Elastic Net and Elastic SCAD	Supervisor
M.Phil.	Fareed Khan	Completed	Exploring the Determinants of Worker's Remittances: An Application of Encompassing Technique and LASSO	Co-Supervisor
M.Phil.	Hanzalla Zulfiqar	Completed	Comparison of Density Forecasts Tests: Application in Finance and Macroeconomics	Co-Supervisor
M.Phil.	Rizwan Ali	Completed	Hybrid Modeling of ARIMA, ANN and SVM for Macro Variables Forecasting in Case of Pakistan	Co-Supervisor
M.Phil.	Sidra Bibi	Completed	A Multivariate Approach for Outlier Detection in Time Series Data	Supervisor
M.Phil.	Aquib	Completed	Cointegration Analysis of Twin-Deficit: An Indicator Saturation Approach	Supervisor
M.Phil.	Shazia Akram	Completed	Impact of demographic and socio-economic variables on total expenditure; ARDL and ARIMA approach	Supervisor
M.Phil.	Ayesha Ramzan	Completed	Financial Inclusion and Monetary Policy Effectiveness: A Comparison of Developed and Under-developed Countries	Supervisor
M.Phil.	Shumail Tahir	Completed	Corporate Social Responsibility and Financial Transparency: Evidence from Pakistan	Supervisor
M.Phil.	Muhammad Aslam	Completed	Socioeconomic and Agriculture Productivity: Impact of Sabakzai Dame	Supervisor

			A Case study of Baluchistan, Pakistan	
M.Phil.	Muhammad Abdullah Asrar Mirza	In progress	Prevalence of Malnutrition in Children; Economic Perspective and Policy Analysis	Supervisor
M.Phil.	M. Adil	In progress	Opting for C-Section vs Natural Delivery: Understanding Factors, Influencing Choices, Practices and Cost	Supervisor
M.Phil.	Urwa Zainab	In progress	Undesired Child Nexus Poor Health Condition: An Application of Machine Learning	Supervisor
M.Phil.	Zarak Jamal Khan	In progress	Nexus of Climate Change and Health Correlation for A Better Government Intervention: A Machine Learning Approach	Supervisor
PhD	Ayesha-Tuz-Zehra	In progress	Agent Based Modelling for Monetary Policy Decisions	Supervisor
PhD	Sara	In progress	Structural Break Detection and Model Selection: Comparison of Regularization Techniques with Autometrics	Supervisor
PhD	Faridoon Khan	In progress	Evaluating the Performance of Variable Selection and Forecasting Methods using Big Data: A Monte Carlo Simulation Approach	Supervisor
PhD	Zulfiqar Ali Mir	proposal	Detecting Causal Discovery from Non-Experimental Data: A Monte Carlo Simulation Experiment	Supervisor
PhD	Shahzad Iqbal	proposal	DSGE Model with Heterogeneous Households: Pakistan's FPAS Model	Supervisor
PhD	Rameez	proposal	Working on literature review	
PhD	Mohammad Nauman	proposal	Working on literature review	