



EWEP Algarve 2024

**XVIII EUROPEAN WORKSHOP
ON EFFICIENCY AND
PRODUCTIVITY ANALYSIS
FARO, JUNE 18-21 2024**



CONFERENCE PROGRAMME



UAAlg FE

UNIVERSIDADE DO ALGARVE
FACULDADE DE ECONOMIA

Welcome to EWEPA XVIII

The Organising Committee welcomes you to the Eighteenth European Workshop on Efficiency and Productivity Analysis (EWEPA XVIII), held at the University of Algarve in Faro, Portugal. Following the seventeenth workshop organized in Porto, in the north of Portugal, we now move to the south of the country, to the beautiful city of Faro. The south of Portugal is renowned for its beaches, and the Faro region boasts some of the finest. Indeed, Faro is bordered to the south by the Ria Formosa lagoon, a 19 km long system of barrier islands that connect with the sea through six inlets.

The conference will host more than 240 delegates from around the world. We will start the conference with an early career day dedicated to PhD student presentations and discussions. The conference itself will span 3 days, filled with interesting plenaries, parallel sessions, and specially organized sessions. EWEPA traditionally honours a prominent scholar in our field with the lifetime achievement award. This year, this prize will be attributed to Finn Førsund, one of the giants on whose shoulders the field of efficiency and productivity analysis lies. Some other giants in the field unfortunately passed away, and we have decided to use this moment where we gather together to honour their contributions to the field and share memories of their lives and achievements.

We have also arranged some social events in Faro that we believe will be unforgettable. In particular, we would like to highlight a boat trip to Deserta Island, which, as the name implies, is a deserted island near Faro within the Ria Formosa.

The Organising Committee wishes all participants an enjoyable time in Faro, both in social and research activities, as they immerse themselves in this vibrant community.

Enjoy the conference

Enjoy Faro

Enjoy Portugal

And most of all, Enjoy LIFE

COMMITTEES AND SPONSORS

Organising Committee

Carla Amado, Universidade do Algarve, PORTUGAL (local coordinator)

Sérgio Santos, Universidade do Algarve, PORTUGAL (local coordinator)

Maria Conceição Silva, Católica Porto Business School, PORTUGAL

Ana Camanho, Universidade do Porto, PORTUGAL

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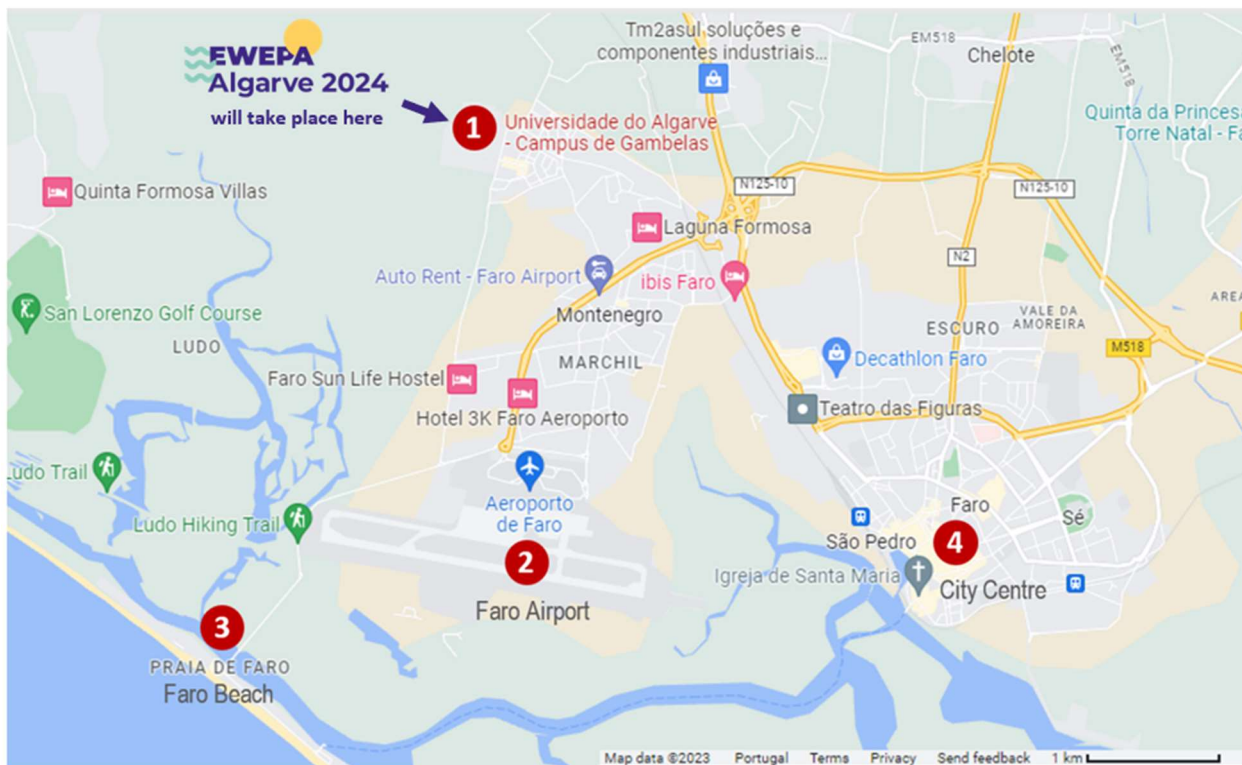
Sponsors



CONFERENCE MECHANICS

The venue

The EWEPA 2024 workshop is taking place at the University of Algarve, Faculty of Economics, located in the Gambelas Campus, as illustrated in the map below.



Map 1 – Location of the University of Algarve, Gambelas Campus (1)

Registration and Plants of Building 8

Registration and most sessions take place in the building of the Faculty of Economics (Building 8) as indicated in Map 2. The Opening Session and Plenary 1, however, will take place in the Grande Auditório (see location in the Map below).



Map 2 – Faculty of Economics and Refectory Location

Registration will be open on June, 18th from 11.00 to 18.00 and on June 19th, 20th and 21st from 8:30 to 17:00 in the foyer on Level -1 of Building 8 (please see Figure 1 below). The registration desk will also be available to help each day throughout the conference.

All sessions and coffee breaks take place in the Faculty of Economics, Building 8, except for the coffee break on the morning of June 19, which will take place in the Hall of the Grande Auditório. The plants of Building 8 below show where the rooms of the plenary and parallel sessions are located as well as some of the toilets nearby.

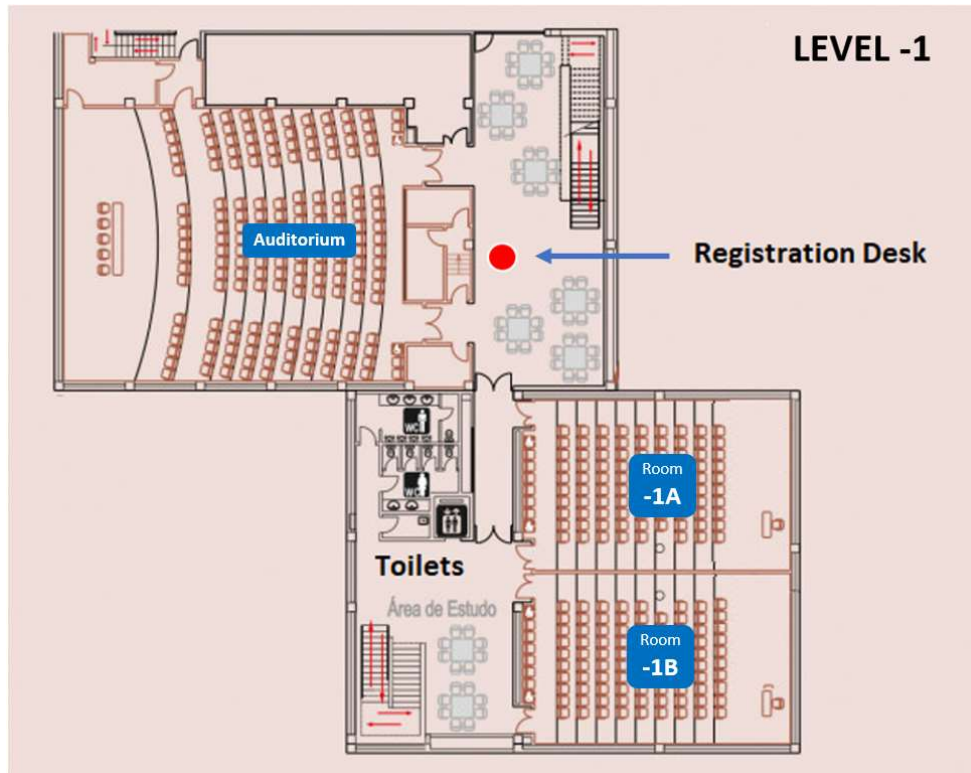


Figure 1 – Plant of Level -1

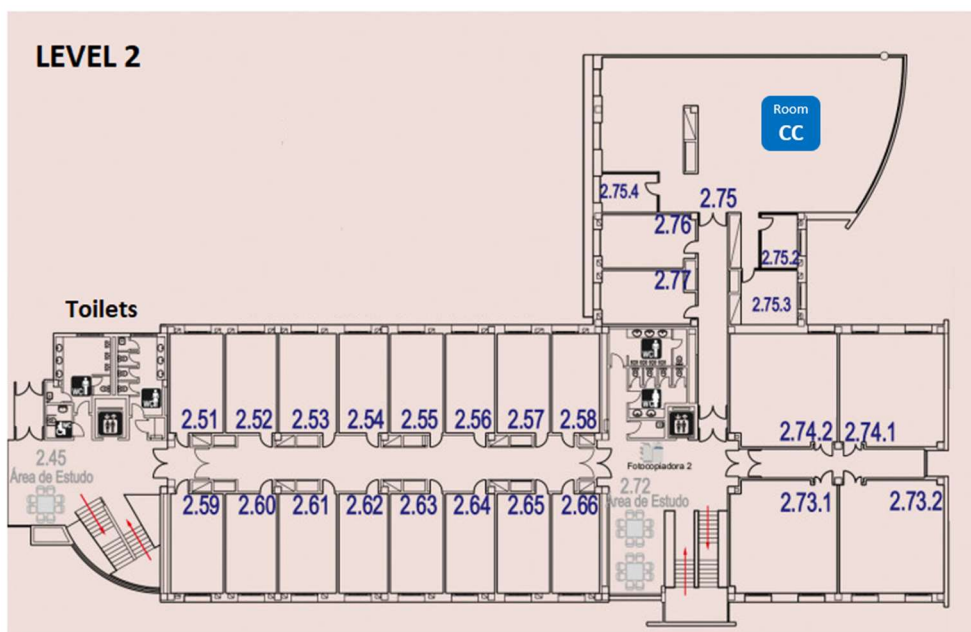


Figure 2 – Plant of Level 2



Figure 3 – Plant of Level 3

Sessions

For most parallel sessions, each paper has been allocated 20 minutes (4 papers in a 1.5-hour session). In some rare cases (sometimes due to last-minute changes to the programme), there will be only 3 papers in a session. In such cases, Chairs are recommended to allocate the same time to the presenters as in the other sessions and use the remaining time for discussion. Please time your presentations accordingly.

The PhD discussion session consists of three papers. We recommend that the 30-minute time for each presentation be distributed between the student and the discussant as follows: 15 minutes for the student's presentation, 10 minutes for the discussant's discussion, and 5 minutes for Q&A.

Parallel sessions will be held in rooms 3B, 3C, 3D, 3E, and SA on Level 3; in room CC on Level 2; and in the Auditorium and room -1A on Level -1. The locations of the rooms are indicated in Figures 1, 2, and 3 above. The Opening Session and Plenary 1 will take place in the Grande Auditório (see Map 2) and the remaining plenary sessions will take place in the Auditorium of the Faculty of Economics (Building 8).

The Chair of each parallel session is, usually, the last presenting author, as indicated in the detailed programme.

Parallel Sessions in this programme are identified using three parameters:

- (i) day (Wed for Wednesday, Thu for Thursday and Fri for Friday);
- (ii) time (09h00-10h30; 11h00-12h30; 14h00-15h30; 16h00-17h30), and
- (iii) rooms where sessions will take place (Aud: Auditorium; -1A: Room -1A; CC: Room CC; SA: Sala de Atos; 3E: Room 3E; 3D: Room 3D; 3B: Room 3B and 3C: Room 3C).

- Presenting authors are identified by the underlined.

Important Information for Presenters

Each conference room is equipped with a computer and an interactive TV/board. Presenters are strongly advised to bring their presentations (PowerPoint or PDF format) on a USB drive and upload them to the room's computer during the break before their session begins. Please ensure your presentation is uploaded at least 5 minutes before the start of your session.

We do NOT recommend using personal computers for presentations, as we cannot guarantee software and hardware compatibility.

Lunches and coffee breaks

Lunches will be served every day between 12:00 and 14:00 in the Refectory. The location of the Refectory is indicated on Map 2. Coffee breaks will be served in Building 8 (level 2 and level 3), in the area near the stairs, except for the coffee break on the morning of June 19, which will be held in the Hall of the Grande Auditório.

There will be two daily coffee breaks: the first between 10:30 and 11:00, and the second between 15:30 and 16:00. The only exception is on Wednesday, June 19th, as the mid-afternoon coffee break will be replaced by a Welcome Reception on Deserta Island.

How to get to the University of Algarve, Gambelas Campus

There are regular bus services from Faro city centre to the University of Algarve (Gambelas Campus). If you are staying in the city centre you can catch bus number 18 to “Universidade – Gambelas” and also back to the city center (“Terminal Rodoviário”). This is a frequent circular route operated by the company Proximo. You can find the timetable here:

18 T. Rodoviário - Gambelas (via Penha)	
IDA DIAS ÚTEIS	A E A E A E E A E A E A E E A E E A E A E E E E A E
OUTBOUND BUSINESS DAYS	U U
Terminal Rodoviário	7:25 7:45 7:55 8:15 8:30 8:45 9:00 9:30 10:00 10:30 11:00 11:30 12:00 12:15 12:30 13:05 13:15 13:30 14:05 14:30 14:45 15:05 15:30 16:05 16:30 16:45
Universidade - Penha	7:38 7:58 8:08 8:28 8:43 8:58 9:13 9:43 10:13 10:43 11:13 11:43 12:13 12:28 12:43 13:18 13:28 13:43 14:18 14:43 14:58 15:18 15:43 16:18 16:43 16:58
Teatro Municipal / Fórum Algarve	7:45 8:05 8:15 8:35 8:50 9:05 9:20 9:50 10:20 10:50 11:20 11:50 12:20 12:35 12:50 13:25 13:35 13:50 14:25 14:50 15:05 15:25 15:50 16:25 16:50 17:05
Universidade - Gambelas Sul	7:55 8:15 8:25 8:45 9:00 9:15 9:30 10:00 10:30 11:00 11:30 12:00 12:30 12:45 13:00 13:35 13:45 14:00 14:35 15:00 15:15 15:35 16:00 16:35 17:00 17:15
IDA DIAS ÚTEIS	A E A E E A E A E E E E
OUTBOUND BUSINESS DAYS	U U U U U U U U U U U U U U U U
Terminal Rodoviário	17:05 17:30 17:45 18:05 18:30 18:45 19:05 19:45 20:05 21:05 22:05 23:05
Universidade - Penha	17:18 17:43 17:58 18:18 18:43 18:58 19:18 19:58 20:18 21:18 22:18 23:18
Teatro Municipal / Fórum Algarve	17:25 17:50 18:05 18:25 18:50 19:05 19:25 20:05 20:25 21:25 22:25 23:25
Universidade - Gambelas Sul	17:35 18:00 18:15 18:35 19:00 19:15 19:35 20:15 20:35 21:35 22:35 23:35
VOLTA DIAS ÚTEIS	A E A E A E E A E A E E E E A E E A E A E E E E A E
INBOUND BUSINESS DAYS	U U
Universidade - Gambelas Sul	7:55 8:15 8:30 8:40 9:00 9:15 9:30 10:00 10:30 11:00 11:30 12:00 12:35 12:45 13:00 13:20 13:45 14:00 14:35 15:00 15:15 15:35 16:00 16:35 17:00 17:15
Teatro Municipal / Fórum Algarve	8:05 8:25 8:40 8:50 9:10 9:25 9:40 10:10 10:40 11:10 11:40 12:10 12:45 12:55 13:10 13:30 13:55 14:10 14:45 15:10 15:25 15:45 16:10 16:45 17:10 17:25
Universidade - Penha	8:12 8:32 8:47 8:57 9:17 9:32 9:47 10:17 10:47 11:17 11:47 12:17 12:52 13:02 13:17 13:37 14:02 14:17 14:52 15:17 15:32 15:52 16:17 16:52 17:17 17:32
Terminal Rodoviário	8:24 8:44 8:54 9:09 9:29 9:44 9:59 10:29 10:59 11:29 11:59 12:29 13:04 13:14 13:29 13:49 14:14 14:29 15:04 15:29 15:44 16:04 16:29 17:04 17:29 17:44
VOLTA DIAS ÚTEIS	A E A E E A E A E E E E
INBOUND BUSINESS DAYS	U U U U U U U U U U U U U U U U
Universidade - Gambelas Sul	17:35 18:00 18:15 18:35 19:00 19:15 19:35 20:15 20:35 21:35 22:35 23:40
Teatro Municipal / Fórum Algarve	17:45 18:10 18:25 18:45 19:10 19:25 19:45 20:25 20:45 21:45 22:45 23:50
Universidade - Penha	17:52 18:17 18:32 18:52 19:17 19:32 19:52 20:32 20:52 21:52 22:52 23:57
Terminal Rodoviário	18:04 18:29 18:44 19:04 19:29 19:44 20:04 20:44 21:04 22:04 22:59 0:09

A-U | Anual - Dias Úteis | Business Days
 E-U | Escolar - Dias Úteis | School Days - Business Days
 A-S | Anual - Sábados | Saturdays

Bus number 19 (T. Rodoviário to Gambelas via Aboim Ascensão) is also an alternative, but the trip takes longer.

19 T. Rodoviário - Gambelas (via Aboim Ascensão)

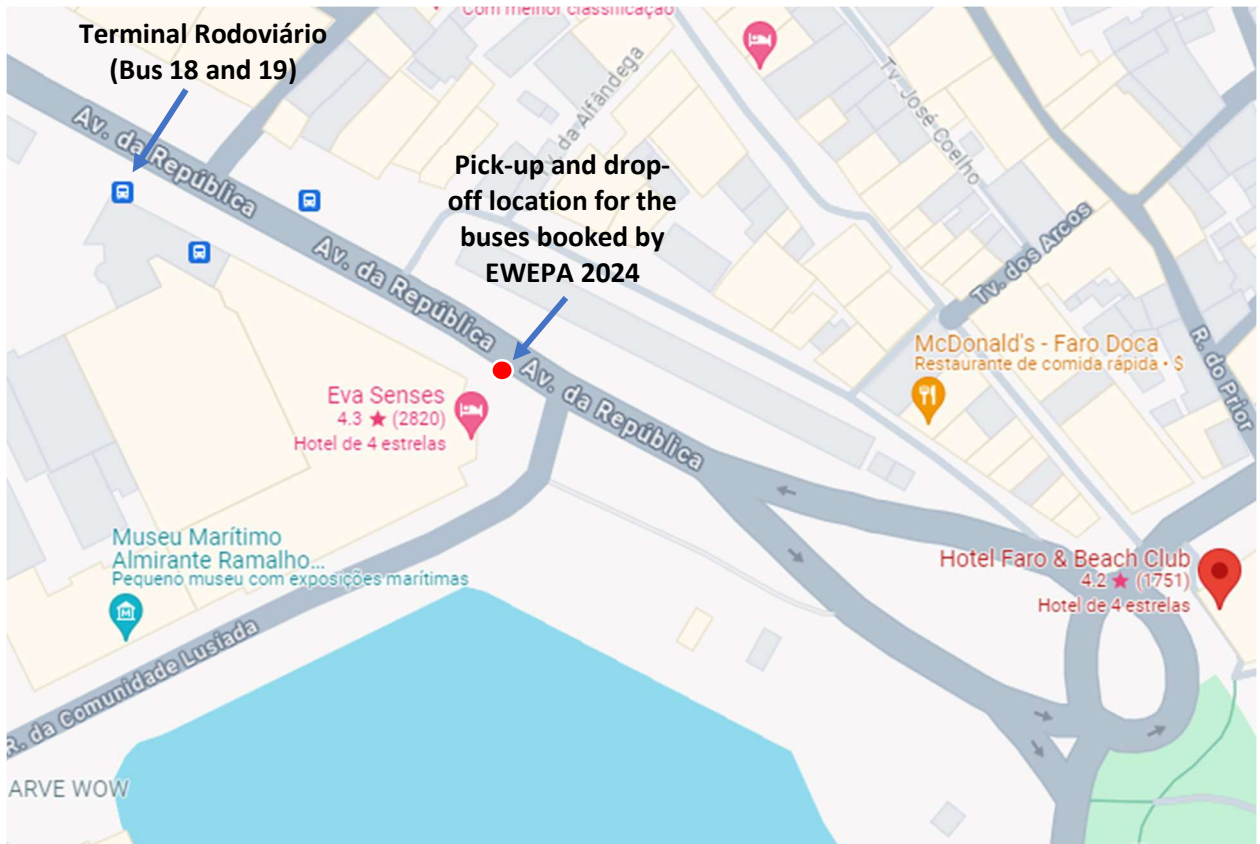
IDA DIAS ÚTEIS OUTBOUND BUSINESS DAYS	A	A	A	A	A	A	A	A	A	E	A	A	A
	U	U	U	U	U	U	U	U	U	U	U	U	U
Terminal Rodoviário	6:25	7:05	7:45	8:50	12:05	12:35	13:20	13:55	16:25	16:50	17:30	18:15	19:15
Teatro Municipal / Fórum Algarve	6:44	7:24	8:04	9:09	12:24	12:54	13:39	14:14	16:44	17:09	17:49	18:34	19:34
Junta de Freguesia	6:53	7:33	8:13	9:18	12:33	13:03	13:48	14:23	16:53	17:18	17:58	18:43	19:43
Universidade - Gambelas Sul	7:00	7:40	8:20	9:25	12:40	13:10	13:55	14:30	17:00	17:25	18:05	18:50	19:50

VOLTA DIAS ÚTEIS INBOUND BUSINESS DAYS	A	A	A	A	A	A	A	A	A	A	A	A	A
	U	U	U	U	U	U	U	U	U	U	U	U	U
Universidade - Gambelas Sul	7:20	7:40	8:20	9:35	12:05	12:40	13:35	13:55	14:30	17:10	17:45	18:50	19:20
Junta de Freguesia	7:24	7:44	8:24	9:39	12:09	12:44	13:39	13:59	14:34	17:14	17:49	18:54	19:24
Montenegro - Terminal	-	7:50	8:30	-	-	-	-	-	-	-	-	-	-
Teatro Municipal / Fórum Algarve	7:35	8:04	8:44	9:50	12:20	12:55	13:50	14:10	14:45	17:25	18:00	19:05	19:35
Terminal Rodoviário	7:46	8:14	8:54	10:01	12:31	13:06	14:01	14:21	14:56	17:36	18:11	19:16	19:45

A-U | Anual - Dias Úteis | Business Days
 E-U | Escolar - Dias Úteis | School Days - Business Days

Taxis and Uber services are also available in Faro.

To facilitate transportation to and from Gambelas Campus, free daily bus services will be available for EWEPA participants, subject to availability, from Faro Marina (in front of the AP EVA Senses Hotel) to the Gambelas University Campus and back. The buses will depart from this location at 8:30 am on June 19, 20 and 21 and at 11:00 am on June 18, and will return participants to Faro city center each day after the last scheduled sessions are finished. Map 3 below indicates the pick-up and drop-off location.



Map 3 – Location of the Terminal Rodoviário (Bus 18 and 19) and of the pick-up and drop-off points for buses booked by EWEPA 2024

Internet Access

If your institution is a member of the Eduroam network, you can connect to the internet using your Eduroam credentials. Alternatively, you can use the Conference Network using the following credentials:

Username: ewepa24

Password: 78569497

SOCIAL PROGRAMME

TUESDAY, JUNE 18TH 2024

18:30 | Welcome drink at the University of Algarve (Campus de Gambelas)

The University of Algarve (Photo 1) is a young state university, located in the southern part of Portugal, one of the most touristic regions of Portugal. The University has four faculties and four schools, offering a range of quality undergraduate and postgraduate courses in beautiful academic settings. The Gambelas Campus, where the welcome drinks and EWEPA 2024 will take place is close to Ria Formosa National Park, about 3 km away from the airport and 5 km away from the city centre of Faro.



Photo 1 – University of Algarve, Gambelas Campus

WEDNESDAY, JUNE 19TH 2024

16:30 – 19:30 | Boat Trip in the Ria Formosa Lagoon and Welcome Reception on Deserta Island

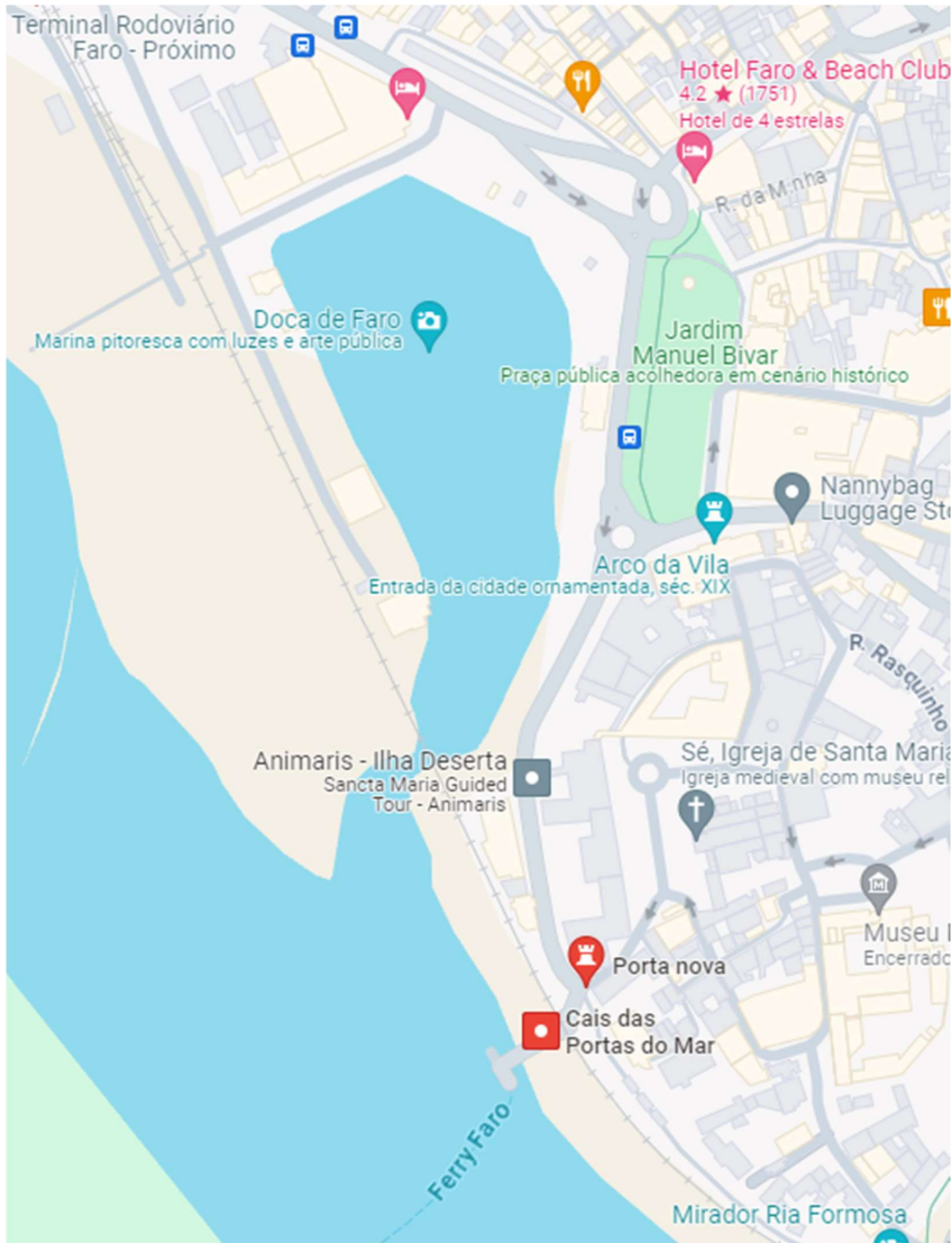
Ria Formosa lagoon is a 19 km long system of barrier islands that communicate with the sea through six inlets. It has one of the richest and most interesting geologies, floras and faunas of Europe. It is also a protected area since 1987, with the status of Natural Park. The Welcome Reception will take place in Restaurant Estaminé (Photo 2), the only restaurant in Deserta Island.



Photo 2 – Estaminé Restaurant (Welcome Reception)

Access to Deserta Island has to be made by ferry. The ferry to go to Deserta Island will depart at 16:30 from “Cais Porta Nova” also known by “Cais das Portas do Mar”. Map 3 indicates its location (in red).

Conference Organizers are providing Bus Services from Gambelas Campus to Faro City for the participants to take the ferry to Deserta Island. The buses will depart from Gambelas Campus at 16:00.



Map 3 – Location of Cais das Portas do Mar

THURSDAY, JUNE 20TH 2024

19:30 | Conference Dinner at Hotel AP Eva Senses

AP Eva Senses Hotel (Photo 3) is nestled by the marina and the stunning landscape of Ria Formosa. It is one of the hotels with the finest location in Faro, boasting a privileged view of the Marina and Ria Formosa Natural Park. The hotel is also conveniently situated near Faro's entertainment venues and the city's most renowned restaurants.



Photo 3 – AP Eva Senses Hotel (Conference Dinner)

CONFERENCE PROGRAMME AT A GLANCE

TIME	TUESDAY 18TH JUNE PRE-CONFERENCE	WEDNESDAY 19TH JUNE	THURSDAY 20TH JUNE	FRIDAY 21ST JUNE
09h00 - 10h30		Opening Session Plenary 1 Kristof De Witte Discussant: Oleg Badunenko	Plenary 2 Barbara Casu Discussant: Ana Lozano-Vivas	Parallel Sessions
10h30 - 11h00		Coffee-break	Coffee-break	Coffee-break
11h00 - 12h30	Check-in	Parallel Sessions	Parallel Sessions	Parallel Sessions
12h30 - 14h00	Lunch	Lunch	Lunch	Lunch
14h00 - 15h30	Welcome & Plenary Pre-conference Antonio Peyrache Discussant: Chris Parmeter	Parallel Sessions	Parallel Sessions	Parallel Sessions
15h30 - 16h00	Coffee-break	Bus Service to Faro	Coffee-break	Coffee-break
16h00 - 17h30	PhD student Discussion Session	Boat Trip and Welcome Reception	Plenary 3 Lifetime achievement award Finn Førsund	Parallel Sessions
17h30 - 18h30				Closing session
18h30	Welcome drink			
19h30			EWEPA Dinner	

DETAILS OF SCIENTIFIC PROGRAMME

	Auditorium	Anf. -1A	Room CC	Sala de Atos	Room 3E	Room 3D	Room 3B	Room 3C
Tue (18th) 14h00-15h30	Welcome & Plenary Pre-Conference							
Tue (18th) 16h00-18h00	PhD Session							
Wed (19th) 09h00-10h30	* Opening Session & Plenary 1 - Kristof De Witte							
Wed (19th) 11h00-12h30	Special Session Office of the Audit Generals		RIEARN I	DEA Methods I	Productivity Analysis I	Electricity Regulation I	Country Analysis	
Wed (19th) 14h00-15h30	Justice	Agriculture I	RIEARN II	DEA Methods II	Productivity Analysis II	Regulation	Sustainability & Eco-efficiency I	Education I
Wed (19th) 16h00-17h30								
Thur (20th) 09h00-10h30	Plenary 2 Barbara Casu							
Thur (20th) 11h00-12h30	Agriculture II	Agriculture III	Sustainability & Eco-efficiency II	Banking & Finance I	Productivity Analysis III	Health I	Water and Sewage	Education II
Thur (20th) 14h00-15h30	Special Session in Honor of Gudbrand Lien	Agriculture IV		Banking & Finance II	Productivity Analysis IV	Health II		
Thur (20th) 16h00-17h30	Plenary 3 - Lifetime achievement award Finn Førsund							
Fri (21st) 09h00-10h30	SFA Methods I	Agriculture V	Gender (in)equality	DEA Methods III	Productivity Analysis V	Electricity Regulation II	Manufacturing I	Education III
Fri (21st) 11h00-12h30	SFA Methods II	Agriculture VI	Sustainability & Eco-efficiency III	Efficiency Methods	Multi-methods	Fishing	Manufacturing II	Education IV
Fri (21st) 14h00-15h30	Special Session in Honor of Mike Tsionas	Agriculture VII		Banking & Finance III	DEA Applications			
Fri (21st) 16h00-17h30	Special Session in Honor of Bob Russell	Agriculture VIII	Climate Impacts on Agricultural Productivity	Sports	SFA Applications			
Fri (21st) 17h30-18h30	Closing Session							

* The Opening Session and Plenary 1 will take place in the Grande Auditório (please, see Map 2 to check for the location).

Plenary Sessions

TUESDAY, JUNE 18

14H00-15H30 | Auditorium

Plenary Early Career Day

Antonio Peyrache, University of Queensland, Australia

Chair/Discussant: Chris Parmeter

Title: "Efficiency and Productivity Analysis from a System Perspective: Historical Overview and Possible Future Developments".

Abstract: The last decade has witnessed an exponential proliferation of studies on Network Data Envelopment Analysis (NDEA) as a tool to measure efficiency and productivity for production systems. Those systems are composed of various layers of decision making (hierarchically organized) and potentially interconnected production processes. The decision makers face the problem of allocating resources to the various production processes in an efficient manner. In this presentation I will present the main ideas behind this approach, its epistemological foundation, some simple models and examples, and prospective future avenues of research.

Short Biography: Antonio Peyrache is a Senior Lecturer at the School of Economics, University of Queensland, Australia; and the deputy director of the Centre for Efficiency and Productivity Analysis (CEPA). Antonio obtained an undergraduate and master's degree in Statistics and Economics from "La Sapienza" University of Rome. He obtained his PhD from the same university in 2008. He has co-authored and published about 18 papers in the field of Efficiency and Productivity analysis. Antonio has been involved in consultancy and research collaborations with several organizations, including, for example, the Asian Productivity Organization (APO) and the Vietnamese Ministry for Science and Technology. In recent years, Antonio has focused his research on activity analysis production models and their application to applied problems of optimal allocation of resources in production organizations. This spurred an interest in the trade-off that several public service providers seem to show between processing times of new cases (patients for hospitals, criminal and civil cases for courts, etc.) and the resources of those production units. Backloads, capacity constraints and rationing by waiting are the key elements of the modelling and applications that have attracted his attention in recent years.

Discussant: Christopher F. Parmeter is an associate professor in the Economics Department. He received his Ph.D. in Economics from the State University of New York at Binghamton. His research focuses on applied econometrics across a broad array of fields in economics including productivity and efficiency analysis, economic growth, microfinance, international trade, and environmental economics. He has published over 100 research articles in internationally recognized peer-reviewed journals including Journal of Economic Growth, Journal of Econometrics, Journal of Applied Econometrics, Economic Journal, and Journal of Environmental Economics and Management, and published the Cambridge University Press book "Applied Nonparametric Econometrics." He is currently vice-editor at Journal of Productivity Analysis and Co-Editor at Environmental and Resource Economics. In addition, he serves as an associate editor at Empirical Economics, Econometrics and Statistics, and Journal of Environmental Economics and Management, while also serving as a member

of the editorial councils of *Advances in Econometrics* and *Journal of the Association of Environmental and Resource Economists*. He was previously an associate editor at the *American Journal of Agricultural Economics* and the *Journal of African Business*.

Focuses on applied econometrics across a broad array of fields in economics including productivity and efficiency analysis, economic growth, microfinance, international trade, and environmental economics. He has published over 100 research articles in internationally recognized peer-reviewed journals including *Journal of Economic Growth*, *Journal of Econometrics*, *Journal of Applied Econometrics*, *Economic Journal*, and *Journal of Environmental Economics and Management*, and published the Cambridge University Press book “*Applied Nonparametric Econometrics*.” He is currently vice-editor at *Journal of Productivity Analysis* and Co-Editor at *Environmental and Resource Economics*. In addition, he serves as an associate editor at *Empirical Economics*, *Econometrics and Statistics*, and *Journal of Environmental Economics and Management*, while also serving as a member of the editorial councils of *Advances in Econometrics* and *Journal of the Association of Environmental and Resource Economists*. He was previously an associate editor at the *American Journal of Agricultural Economics* and the *Journal of African Business*.

WEDNESDAY, JUNE 19

09H00-10H30 | Grande Auditório

Plenary 1

Kristof De Witte, Faculty of Economics and Business at KU Leuven, Belgium

Chair/Discussant: Oleg Badunenko

Title: Multidimensional policy evaluations and the efficiency-enhancing channel

Abstract: This presentation explores the nuances between efficiency and effectiveness in educational systems, starting with the educational production function and utilizing Stochastic Frontier Analysis (SFA) to estimate student under-achievement. We begin by examining how resource constraints can bridge the gap between efficiency and effectiveness. We then review non-parametric methods for evaluating the causal impact of policy changes within a multi-input, multi-output framework, highlighting the advantages of integrating econometric impact evaluation with efficiency analysis. In particular, we address endogeneity issues by introducing a quasi-experimental design within a conditional multi-input, multi-output efficiency framework. This allows for a decomposition of overall efficiency into 'group-specific' efficiency (reflecting internal managerial inefficiency) and 'program' efficiency (indicating the impact of policy interventions on performance). This decomposition facilitates the interpretation of efficiency scores in terms of causality. Finally, we extend this non-parametric framework to an SFA context. The practical application of these methodologies is demonstrated through case studies of secondary schools in Flanders, Belgium, showcasing their utility and effectiveness.

Short Biography: Kristof De Witte is a full professor in Education Economics and Political Economy at the Faculty of Economics and Business at KU Leuven, Belgium, and he holds the chair in 'Effectiveness and Efficiency of Educational Innovations' at United Nations University (UNU-MERIT) at Maastricht University, the Netherlands. Kristof De Witte has more than 100 indexed publications, most in the area of education economics, performance evaluation, and political economy and many in the leading journals from various academic fields, including 'American Sociological Review', 'The Economic Journal', 'Journal of Urban Economics', 'European Journal of Operational Research', 'Government Information Quarterly', 'Economics of Education Review', 'Labour Economics', 'Exceptional Children', 'World Development', and 'Educational Research Review'. Kristof De Witte serves as an expert in the

‘European Commission Expert Group on quality investment in education and training’ and is the recipient of numerous awards and honours, including the ‘2021 Pioneer Award’ of KU Leuven, the ‘2020 Laureate of the Academy’ award from the Royal Flemish Academy of Belgium for Science and the Arts, the ‘2021 CELSA Service to Society Award’ (honorific), two international prizes for his doctoral dissertation, among others.

Discussant: Oleg Badunenko is an Associate Professor at Brunel University London. His research interests are in the economics and applied microeconomics. Oleg’s focus is on efficiency and productivity analysis in various areas of societal life, whereby he both develops and applies best-practice methods, and provides software for practitioners. As such, he investigates real-world phenomena in health, education but also in banking and manufacturing. His research investigates the socio-economic determinants of behavior and efficiency at the school and higher education levels, and determinants of productivity in health care sector. His recent work investigates choices that individuals make trading off security and privacy as well public and private sector employment. He is additionally working on issues related to competition in banking and effects of macroeconomic events on banks' behavior.

THURSDAY, JUNE 20
09H00-10H30 | Auditorium

Plenary2

Barbara Casu, Faculty of Finance at Bayes Business School, City, University of London, UK
Chair/Discussant: Ana Lozano Vivas

Title: Innovating Efficiency: Emerging Themes Transforming Banking

Abstract: The talk will examine how technological advancements, regulatory changes, emerging business models, customer-centric innovations, and sustainability initiatives are transforming banking. We will explore the integration of AI, blockchain, and automation in streamlining operations, the shift towards personalized and multi-channel banking, and the adoption of green financing and ESG practices. By highlighting these emerging themes, we provide insights into new standards for assessing bank efficiency in a rapidly evolving financial landscape.

Short Biography: Professor Barbara Casu is the Head of the Faculty of Finance at Bayes Business School, City, University of London (UK), and the Director of the Centre for Banking Research (CBR). Previously she held the role of Director of the Bayes Executive PhD Programme. Her main research interests are in empirical banking, payment systems, financial regulation, financial innovation, and corporate governance. Barbara has published widely, with over 50 publications in peer reviewed Journals. She has also written the popular textbook “Introduction to Banking” (Pearson FT), which is widely adopted for banking courses across the world. She has recently co-edited the Palgrave Handbook of European Banking. Outside academia, Professor Casu has been a consultant/visiting researcher at several organizations, including the International Monetary Fund (IMF); the European Commission (EC); the South African Reserve Bank (SARB); Centre for European Policy Studies (CEPS); the Building Societies Association (BSA).

Discussant: Ana Lozano-Vivas is a Professor of Economic Analysis at the University of Malaga, Spain, specializing in Efficiency and Productivity, Banking Microeconomics, and Applied Microeconomics. Her research focuses on efficiency and productivity analysis within the banking sector, along with various

aspects of banking microeconomics such as regulation, competition, business models, and risk management, among others.

She has having held visiting researcher positions at Florida State University, Ohio University, and New York University's Stern School of Business. Additionally, she has been actively involved in consultancy roles for organizations like the OECD and the IMF, as well as serving as an external consultant for the Bank of Luxembourg on the PERFILUX Project.

Her contributions extend to policy discussions, including participation in conferences addressing finance for research and innovation. Ana has served as an expert for the Risk Finance Advisory Group of the European Commission. Currently, she acts as an independent advisor to the European Bank of Finance.

THURSDAY, JUNE 20

16H00-17H30 | Auditorium

Plenary 3 - Session in honour of Finn Førsund

Chair: Robin Sickles

Special Guest, "Words to Honor Colleague Lennart Hjalmarsson".

Sverre Kittelsen, "Scale economies and capacity utilization in somatic hospitals in Norway".

Kenneth Løvold Rødseth, "Estimating and decomposing environmental efficiency using a generalized materials balance model: Application to U.S. power plants".

Victor Podinovski, "Scale and marginal characteristics of nonparametric production frontiers".

Rolf Färe and Shawna Grosskopf, "Production under physical constraints" (online participation).

Special Sessions

WEDNESDAY, JUNE 19

11H00-12H30 | Auditorium

Special session: Office of the Audit Generals and Efficiency Analysis

Chair: Jonas Månsson

José Carpinteiro, Tribunal de Contas, Portugal. Approaches to Performance Audit: Experience of the Portuguese Court of Auditors.

Jonas Månsson, Where do National Audit Offices and research meet? – some reflections from spending 15 years at both places?

Tonny Kawukit, Office of the Audit General, Uganda. Audit of Ugandan Custom Stations.

Kristoffer Grønsberg, Office of the Auditor General, Norway. Audit on Norwegian Hospitals.

THURSDAY, JUNE 20

14H00-15H30 | Auditorium

Agriculture session in honor of Gudbrand Lien

Chair: Subal Kumbhakar (online)

Luis Orea, “Who benefits most from knowledge spillovers and technology diffusion? An analysis of dairy farms using a heteroskedastic spatial stochastic frontier”.

Saurav Raj Kunwar, “Shadow prices of agricultural carbon sequestration and greenhouse gas emissions”.

Moritz Hartig, “Talking about the weather – Farm-level inefficiency and climate extremes”.

Maroua Afi, “Integrated Crop-Livestock vs. Specialized Farming Systems in The Great Plains: What Scope for Sustainable Intensification of food production?”

FRIDAY, JUNE 21

14H00-15H30 | Auditorium

Session in honor of Mike Tsionas

Chair: Chris Parmeter

Alecos Papadopoulos, “Two-tier stochastic frontier analysis: heterogeneous error distributions and model selection”.

Ioannis Bournakis, Marwan Izzeldin, Mike Tsionas, Olivier Cardi, “Corporate Social Responsibility (CSR) in the UK: Who Pays the Price?”.

Arne Henningsen, “Bayesian estimation of CES-CET production technology parameters to improve CGE models”.

Kristiaan Kerstens, Oleg Badunenko and Jafar Sadeghi, “Revenue functions are nonconcave in the inputs when the technology is nonconvex: the unbearable lightness of convexification”.

FRIDAY, JUNE 21

16H00-17H30 | Auditorium

Special Memorial Tribute to R. Robert Russell

Chair: Dan Henderson

Dan Henderson, "A Micro Theorists Contribution to Macroeconomics".

Rolf Färe and Shawna Grosskopf, "R.R. Russell: Our Friend in Duality: Professional and Personal".

Robin Sickles, "From Karlsruhe and Newark to Porto: 40 Productive Years Learning from R. R. Russell".

Also with contributions from **Robert Chambers** and **Knox Lovell**.

Details per Day/ Session

TUESDAY, JUNE 18

11:00 – 14:00 - Arrival and Check-in

Tue | 14:00-15:30 | Aud.
Plenary Early Career Day – Antonio Peyrache

Chair/Discussant: Chris Parmeter

15.30-16.00 Coffee break

Tue | 16:00-18:00 | Aud.
PhD student's presentations

Chair: Antonio Peyrache

Anna Rita Dipierro, Pierluigi Toma. ***From terroir to quality: handling the run for efficiency across time and space for Italian agri-food***

Discussant: Mette Asmild

Andrea Rodriguez, Lourdes Trujillo, Ramon Nuñez. ***The Inclusion of CO2 Emissions in Spanish Port Productivity and Efficiency Analysis***

Discussant: Luis Orea

Alexander Ottl, Mette Asmild. ***Profitability Decomposition in Data Envelopment Analysis: Unraveling the 'A Dollar is not a Dollar' Phenomenon in Economic Resource Allocation***

Discussant: Victor Podinovski

WEDNESDAY, JUNE 19

8.00-9.00 - Arrival and Registration

Wed | 09:00-10:30 | Grande Auditório
Plenary 1 - Kristof De Witte

Chair/Discussant: Oleg Badunenko

10.30-11.00 Coffee break

Wed | 11:00-12:30 | Aud.
Special session office of the audit generals and efficiency analysis

Chair: Jonas Månsson

Parallel sessions

Wed | 11:00-12:30 | CC
Agricultural, Food and Natural Resource Productivity Analyses in Ibero-America: Session Organized by the Iberoamerican Network of Agrifood and Natural Resource Economics (RIEARN)
RIEARN I

Chair: Federico Garcia and Boris Bravo-Ureta

THE DETERMINANTS OF THE AGRICULTURAL TFP GROWTH IN THE BRAZILIAN SEMIARID REGION – AN ANALYSIS FOR THE PERIOD 2006-2017, Maria Josiell Nascimento da Silva; Humberto Francisco Silva Spolador

CLIMATE CHANGE, DROUGHT, AND AGRICULTURAL PRODUCTION IN BRAZIL, Steven Helfand; Francisco Cavalcanti; Ajax Moreira

ASSESSMENT OF DEFORESTATION AND CLIMATE CHANGE EFFECTS ON BRAZILIAN AGRICULTURAL PRODUCTIVITY AND EFFICIENCY LEVELS: AN EMPIRICAL APPROACH USING STOCHASTIC FRONTIER ANALYSIS, André Danelon; Silke Hüttel; Stefan Seifert; Humberto Spolador; Subal Kumbhakar

THE EFFECTS OF WEATHER VARIABILITY AND CLIMATE CHANGE ON FARM OUTPUT AND PRODUCTIVITY GROWTH IN LATIN AMERICAN

AND CARIBBEAN COUNTRIES: A STOCHASTIC METAFRONTIER ANALYSIS, [Michée Arnold Lachaud](#); Boris Bravo-Ureta; Eric Njuki; Jason Beckman

Wed | 11:00-12:30 | SA
DEA Method I

Chair: Laurens Cherchye

RATIO-DATA CONVEXITY AND THE FREE DISPOSAL HULL MODEL, [Giovanni Cesaroni](#)

SOME PROBLEMS WITH BENEFIT OF THE DOUBT MODELS, [Paul Rouse](#)

A PAIRWISE-FRONTIER-BASED CLASSIFICATION METHOD FOR TWO-GROUP CLASSIFICATION, [Qianying Jin](#); Kristiaan Kerstens; Ignace Van De Woestyne; Zhongbao Zhou

NONPARAMETRIC IDENTIFICATION OF FACTOR-BIASED AND HICKS-NEUTRAL TECHNICAL CHANGE, [Laurens Cherchye](#); Bram De Rock

Wed | 11:00-12:30 | 3E
Productivity Analysis I

Chair: Léopold Simar

A NEW BIENNIAL TOTAL FACTOR PRODUCTIVITY MALMQUIST INDEX, [Jesús T. Pastor](#)

PERMUTATION TESTS ON COMPARISONS OF PRODUCTION FRONTIERS OVER TIME AND BETWEEN GROUPS IN NONPARAMETRIC MODELS, [Anders Rønn-Nielsen](#); Dorte Kronborg; Mette Asmild

CONICAL FDH ESTIMATORS OF DIRECTIONAL DISTANCES AND LUENBERGER PRODUCTIVITY INDICES FOR GENERAL TECHNOLOGIES, [Simar Léopold](#); Di Leo Simone; Daraio Cinzia

STATISTICAL INFERENCE FOR HICKS–MOORSTEEN PRODUCTIVITY INDICES, [Valentin Zelenyuk](#); Leopold Simar; Shirong Zhao

Wed | 11:00-12:30 | 3D
Electricity Regulation I

Chair: Ørjan Mydland

HANDLING LARGE ELECTRICITY PRICE VARIATION IN REGULATION OF ELECTRICITY DSOs IN NORWAY, [Hilde Marit Kvile](#); Eivind Skjærven; Peder Undeli

INCENTIVIZING THE OPTIMAL LEVEL OF SPARE CAPACITY, [Eivind Skjærven](#); Hilde Marit Elverum Kvile

REGULATION OF ELECTRIC ENERGY DISTRIBUTION IN GERMANY: STATUS QUO AND CONSIDERED CHANGES, [Carolyn Ladda](#); Heinz Ahn; Ana Lopes-Ahn

EFFECTS ON ELECTRICITY DISTRIBUTION COMPANIES DUE TO THE INCREASE IN ELECTRIC VEHICLES IN NORWAY, [Ørjan Mydland](#); Fikru Kefyalew Alemayehu; Subal C. Kumbhakar; Gudbrun Lien

Wed | 11:00-12:30 | 3B
Country Analysis

Chair: Mercedes Sánchez

INTANGIBLE CAPITAL AS DRIVER OF PRODUCTIVITY: A REGIONAL AND SECTORAL APPROACH, [Mercedes Gumbau](#)

EU WASTE RECYCLING TARGETS: WHERE ARE WE AT?. A PERFORMANCE EVOLUTION ASSESSMENT, [Laura Carosi](#); Giovanna D'Inverno; Trinidad Gómez; Maria Molinos-Senante; Giulia Romano

ECONOMIC DEVELOPMENT AND FOOD WASTE: A CROSS-COUNTRY EXAMINATION USING STOCHASTIC FRONTIER ANALYSIS, [Emiliano Lopez Barrera](#)

GREEN SMES STRATEGIES: AN INTEGRATED APPROACH TO RESOURCE EFFICIENCY, GREEN MARKETS AND SUPPORTS IN SMES, Mercedes Sánchez; Consuelo Calafat; Rosa Puertas

12.30-14.00 Lunch

Parallel sessions

Wed | 14:00-15:30 | Aud. Justice

Chair: Pablo Arocena

EVALUATING SPECIALIZATION AND DIVERSIFICATION ECONOMIES IN JUDICIAL COURTS, Pablo Arocena

THE EFFICIENCY OF DISTRICT COURTS IN NORWAY AFTER THE REFORM: A DEA ANALYSIS, Anatoliy Goncharuk

ECONOMIES OF SCALE IN DISTRICT COURTS, Jonas Månsson

UNDER(MINING) JUDICIAL EFFICIENCY: A DATA-DRIVEN EXPLORATION OF DYNAMICS IN PORTUGAL'S JUDICIAL SYSTEM, Mariana Simões Lopes; Maria Conceição Silva; Miguel Alves Pereira

Wed | 14:00-15:30 | -1A Agriculture I

Chair: Yang Liu

AGRICULTURAL MECHANIZATION SERVICES, ADVERSE SELECTION AND BY-STAGE PRODUCTIVITY OF SMALL FARMS: EVIDENCE FROM WHEAT PRODUCTION IN NORTHERN CHINA, Yu Sheng; Hangyu Sheng; Jiping Ding

PRODUCTIVITY CHANGE OF ESTONIAN DAIRY FARMS FROM 2006-2022: COMPARISON OF TOTAL FACTOR PRODUCTIVITY AND AGRICULTURAL TERMS OF TRADE, Raul Ome

REGIONAL DEVELOPMENT AND INTELLECTUAL CAPITAL: UNVEILING THE INNOVATION-TRADITION DILEMMA, Pierluigi Toma

ASSESSING HOW PRODUCTION TECHNOLOGY DIVERSITY IMPACTS ENVIRONMENTAL TOTAL FACTOR PRODUCTIVITY IN CHINA'S AGRICULTURE AT THE PROVINCIAL SCALE, Yang Liu; Maria Vrachioli; Johannes Sauer

Wed | 14:00-15:30 | CC

Agricultural, Food and Natural Resource Productivity Analyses in Ibero-America: Session Organized by the Iberoamerican Network of Agrifood and Natural Resource Economics (RIEARN) RIEARN II

Chair: Federico Garcia and Boris Bravo-Ureta

EXPLORING AGRICULTURAL PRODUCTIVITY DYNAMICS IN THE BRAZILIAN CERRADO: INSIGHTS FROM VARIED LAND INPUT MEASURES, Pablo Guimarães; Humberto Spolador

DIGITAL FARMING TECHNOLOGY ADOPTION AND TECHNICAL EFFICIENCY OF BRAZILIAN BEEF CATTLE FARMS, Marcelo José Carrer; Marcela de Mello Brandão Vinholis; Hildo Meirelles de Souza Filho; Gabriela dos Santos Eusebio; Letícia Caroline da Silva David

TECHNICAL EFFICIENCY OF COW-CALF SYSTEMS IN PASTURE BASED RANCHES, Federico García-Suárez

TECHNOLOGY ADOPTION AND IMPACTS IN AGRICULTURE PRODUCTION: A SYSTEMATIC REVIEW FROM THE STOCHASTIC FRONTIER APPROACH, Larissa Pagliuca; Marcelo Jose Carrer

Wed | 14:00-15:30 | SA DEA Methods II

Chair: Lars Skage Engebretsen

GROUP DECISION MAKING WITH IMPRECISE DATA ENVELOPMENT ANALYSIS FOR RISK ASSESSMENT, Adel Hatamimarbini; Pegah Khoshnevis; Aliasghar Arabmaldar

DATA ENVELOPMENT ANALYSIS IN MANAGEMENT ACCOUNTING: NEW FRONTIERS EXPLORING INDUSTRY CHARACTERISTICS, [Claire Cui](#); Julie Harrison; Frederick Ng; Paul Rouse

DATA ENVELOPMENT ANALYSIS (DEA) FOR STOCHASTIC DYNAMIC COST-EFFICIENCY ANALYSIS OF INVENTORY CONTROL SYSTEMS: A WINDOW ANALYSIS, CHANCE-CONSTRAINED, AND PRINCIPLES OF OPTIMAL CONTROL THEORY APPROACH, [Paulo Nocera Alves Junior](#); Ali Emrouznejad; Wilfredo Yushimito; Carlos Monardes Concha; Isotilia Costa Melo

PIONEER – MAKING EFFICIENCY ANALYSES EASIER, [Lars Skage Engebretsen](#); Ove Haugland Jakobsen; Aleksander Valberg Eilertsen; Kristoffer Grønsberg

Wed | 14:00-15:30 | 3E
Productivity Analysis II

Chair: Thomas Triebes

THE KOREAN ECONOMY: PRODUCTIVITY, TECHNOLOGICAL CHANGE, AND RD INVESTMENT, [Seogwon Hwang](#); Minji Kang

ANALYZING COMPETITIVENESS IN SMALL OPEN ADVANCED ECONOMIES THROUGH TOTAL FACTOR PRODUCTIVITY: INSIGHTS AND IMPLICATION FOR SWEDEN, [Anupama Unnikrishnan](#); Jonas Månsson

INNOVATION OUTPUT POSSIBILITIES AND PERFORMANCE CHANGE FOR EUROPE AND ITS INTERNATIONAL COMPETITORS, Michela Bello; [Panagiotis Ravanos](#); Oscar Smallembroeck

FIRM SUBSIDIES AND INPUT USE, [Thomas Triebes](#)

Wed | 14:00-15:30 | 3D
Regulation

Chair: David Saal

THE ROLE OF POLITICAL FACTORS AND DEMAND UNCERTAINTY IN THE EXCESS OF CAPACITY FOR LANDLORD PORT AUTHORITIES: AN APPLICATION TO THE SPANISH CASE, [Ramon Nunez-Sanchez](#); Soraya Hidalgo-Gallego; David Miranda

A REGULATORY PERSPECTIVE FOR ROBUST BENCHMARKING OF UTILITIES, [Emil Heesche](#); Mads Frandsen

ECONOMIC ANALYSIS OF WATER MANAGEMENT IN THE EUROPEAN UNION, [Juan Pablo Henao Henao](#); Maria Vracholi; Roberto Villalba; Johannes Sauer

ASSESSING THE PERFORMANCE OF COMPLEX NETWORK SYSTEMS UNDER THE LASSO+DEA FRAMEWORK, Fionn Cliffe; [David Saal](#)

Wed | 14:00-15:30 | 3B
Sustainability & Eco-efficiency I

Chair: Marijn Verschelde

DETERMINANTS OF ECO-EFFICIENCY OF LISTED FOOD AND BEVERAGE FIRMS: THE ROLE OF ENVIRONMENTAL MANAGEMENT, THE BOARD OF DIRECTORS AND SOCIAL PERFORMANCE, [Alan Wall](#); Alfons Oude Lansink; José Antonio Pérez-Méndez

WHEN ONE TONNE IS NOT ONE TONNE: SUSTAINABLE EFFICIENCY OF FIRMS WHEN DECARBONIZATION IS IMPERFECTLY OBSERVED, [Bram De Rock](#); Laurens Cherchye; Marijn Verschelde

MEASURING AND MANAGING (UN)SUSTAINABLE WORKLOAD UNDER DIGITIZATION: A FRONTIER-BASED JOB DEMANDS-RESOURCES MODEL, [Ahmed-Youssef Oukassou](#); Raluca Parvulescu; Marijn Verschelde

FROM OUTLIER TO SUSTAINABILITY IDENTIFICATION IN NONPARAMETRIC FRONTIER ANALYSIS, Ahmed-Youssef Oukassou; Raluca Parvulescu; Nicky Rogge; [Marijn Verschelde](#)

Wed | 14:00-15:30 | 3C

Education I

Chair: Lori Taylor

POLICY RESPONSES TO COVID-19 AND THE EFFICIENCY OF ITALIAN UNIVERSITIES, Gaetano Francesco Coppeta; Tommaso Agasisti; Alice Bertoletti

MEASURING TECHNOLOGICAL CHANGE IN THE SPANISH UNIVERSITY SYSTEM (2013-2020), Gemma Perez-Lopez; Victor Gimenez; Diego Prior; Jose Luis Zafra-Gomez

TO FEED OR NOT TO FEED: TEXAS SCHOOLS' PARTICIPATION IN CEP, Kathy Hayes; Shawna Grosskopf; Laura Razzolini; Lori Taylor

15.30-16.00 Bus Service to Faro – Boat Trip

THURSDAY, JUNE 20

**Thu | 09:00-10:30 | Aud.
Plenary 2 – Barbara Casu**

Chair/Discussant: Ana Lozano Vivas

10.30-11.00 Coffee break

Parallel sessions

**Thu | 11:00-12:30 | Aud.
Agriculture II**

Chair: Hervé Dakpo

THE ROLE OF AND EXTENSION PROGRAM FOR DIFFERENT CROPS: A STOCHASTIC METAFRONTIER PERSPECTIVE, Roberto Jara-Rojas; Miss Monica Maldonado

THE ROLE OF TECHNOLOGY AND TECHNICAL EFFICIENCY IN ITALIAN DAIRY FARMING ACROSS ALTITUDES: A STOCHASTIC META-FRONTIER ANALYSIS, Claudia Stefania Gondos; Elena Castellari; Alan Wall; Boris E. Bravo-Ureta

TECHNICAL AND ENVIRONMENTAL PRODUCTIVITY OF SWISS DAIRY FARMS: A BY-PRODUCTION STOCHASTIC FRONTIER ANALYSIS, Iordanis Parikoglou

EXAMINING THE COMPETITIVENESS PRESSURE OF WINE PRODUCTION IN EU NATIONS: A LATENT CLASS BOUNDED INEFFICIENCY MODEL, Hervé Dakpo; Laure Latruffe; Yann Desjeux

Thu | 11:00-12:30 | -1A

Agriculture III

Chair: Miguel Alves Pereira

EFFICIENCY ANALYSIS IN THE AGRICULTURAL SECTOR: HETEROGENEITY MATTERS IN THE LAND OF MILK AND HONEY, Ludwig Lauwers; Elizabeth Ahikiriza; Guido Van Huylenbroeck; Jef Van Meensel; Wim Verbeke

ANALYSING WEATHER'S IMPACT ON TECHNICAL EFFICIENCY: A STUDY OF CROP FARMS IN NORWAY, Habtamu Alem

FRONTIER ANALYSIS TECHNIQUES TO DERIVE ELIGIBLE CONTACT FARMS FOR TARGETED EXTENSION: EMPIRICAL EVIDENCE FROM UGANDAN DAIRY FARMING, Elizabeth Ahikiriza; Guido Van Huylenbroeck; Ludwig Lauwers

FROM GRAPES TO THE GLASS: A NETWORK DEA SIMULATION APPROACH FOR UNVEILING WINE SUPPLY CHAIN EFFICIENCY, Miguel Alves Pereira; António Vieira; Rui Fragoso; José Rui Figueira

Thu|11:00-12:30|CC
Sustainability & Eco-efficiency II

Chair: Barnabe Walheer

UNDESIRABLE FACTORS IN THE RAW MATERIAL FLOW PROCESS: A COMPARISON BETWEEN INVERSE TRANSFORMATION APPROACHES, Ali Emrouznejad; Maria Michali; Gholam Reza Amin

PERFORMANCE-BASED CARBON EMISSION ABATEMENT ALLOCATION, Li-Hsueh Chen; Li-Ching Chen

ASSESSING SOCIOECONOMIC IMPACTS OF RENEWABLE ENERGY EXPANSION: A REGIONAL ANALYSIS IN BRAZIL, Aline Veronese da Silva; Cleiton José Carneiro Júnior

A SEQUENTIAL BENEFIT-OF-THE-DOUBT COMPOSITE INDICATOR, Barnabe Walheer

Thu|11:00-12:30|SA
Banking & Finance I

Chair: David Sherman

SENSITIVITY OF PORTFOLIO PERFORMANCES TO THE RANDOM NATURE OF THE DATA, Anne Vanhems; Leopold Simar; Ariane Szafarz; Marie Briere

RISK-AVERSION VERSUS RISK-LOVING PREFERENCES IN NONPARAMETRIC FRONTIER-BASED FUND RATINGS: A BUY-AND-HOLD BACKTESTING STRATEGY, Tiantian Ren; Kristiaan Kerstens; Saurav Kumar

SUSTAINABLE PERFORMANCE OF BANK BUSINESS MODELS IN ARGENTINA: A COST FRONTIER APPROACH, Ana Lozano-Vivas; Claudia Peretto; Alan Wall

DEA AS AN AUDIT TOOL TO IDENTIFY ABNORMAL FINANCIAL TRANSACTIONS FOR REVIEW AND VALIDATION, H. David Sherman; Joe Paradi

Thu|11:00-12:30|3E
Productivity Analysis III

Chair: Christopher O'Donnell

UNDERSTANDING THE IMPACT OF ENVIRONMENTAL FACTORS ON PRODUCTIVITY: INTRODUCING THE CONDITIONAL ORDER-M MALMQUIST INDEX, Marc Aliana-Cervera; Diego Prior; Emili Tortosa-Ausina

TECHNICAL EFFICIENCY AND PRODUCTIVITY GAINS IN 38 OECD COUNTRIES 1995-2019. A STOCHASTIC PRODUCTION FRONTIER ANALYSIS, Mateusz Wojniak; Marta Zieba

SUSTAINABLE PRODUCTIVITY INDICATORS: PRIVATE OR SOCIETAL PERSPECTIVE?, Arne Henningsen; Frederick Ang; Herve Dakpo; Moriah Bostian; Maria Vrachioli

GHG EMISSIONS AND PRODUCTIVITY CHANGE IN SELECTED SECTORS OF THE AUSTRALIAN ECONOMY, Christopher O'Donnell

Thu|11:00-12:30|3D
Health I

Chair: Minyan Zhu

EFFICIENCY OF ADDRESSING COVID-19 PANDEMIC BY THE STATES OF INDIA IN THE PRE-AS WELL AS POST VACCINATION PERIODS AND DIFFERENTIAL IMPACT ON EFFICIENCY OF UNION'S AND STATES' POLITICAL PARTY ALIGNMENT, Trishit Bandyopadhyay

ASSESSMENT OF CONTAINMENT PERFORMANCE POLICIES AGAINST COVID-19 USING A BENEFIT-OF-THE-DOUBT APPROACH, Roxani Karagiannis; Giannis Karagiannis

QUANTIFYING THE TRADE-OFF BETWEEN CAPACITY UTILISATION AND PATIENT WAITING TIME: THE CASE OF AMBULANCE SERVICES IN THE UK, Minyan Zhu; Antonio Peyrache

Thu | 11:00-12:30 | 3B

Water and Sewage

Chair: Ana camanho

WATER WASTE: A PRODUCTIVITY ANALYSIS OF THE WATER SUPPLY IN PORTUGAL, [Isotilia Costa Melo](#); Francisco Silva Pinto; Paola Ravelojaona

HOW DOES THE PLANT LEVEL FRAGMENTATION IN SEWAGE TREATMENT INFLUENCE MUNICIPAL LEVEL ECONOMIES OF SCALE?, [Tomohiro Kitamura](#); David Saal; Takuya Urakami; Pablo Arocena

BENCHMARKING ANALYSIS IN THE BRAZILIAN WATER AND SEWAGE SECTOR: A DIRECTIONAL BENEFIT-OF-THE-DOUBT APPROACH, [Andréia May](#); [Carlos Ernani Fries](#); Hermílio Vilarinho; Ana S. Camanho

EVOLUTION OF PERFORMANCE IN THE WATER AND SEWAGE SECTOR IN BRAZIL: A ROBUST DIRECTIONAL BENEFIT-OF-THE-DOUBT ASSESSMENT OF MUNICIPALITIES FROM SANTA CATARINA STATE, [Andréia May](#); [Hermilio Vilarinho](#); Carlos Ernani Fries; Ana Camanho

Thu | 11:00-12:30 | 3C

Education II

Chair: Oleg Badunenko

MEASURING OPTIMAL TUITION IN TAIWAN USING A STOCHASTIC FRONTIER HEDONIC FUNCTION APPROACH, [Ya-Yun Fu](#); Wei-Hsin Kong

PERFORMANCE TRENDS IN EDUCATIONAL EQUITY IN THE OECD: AN INTERNATIONAL ASSESSMENT USING MALMQUIST INDICES, [Giovanna D'Inverno](#); Cristina Polo; Gabriela Sicilia; Rosa Simancas

EXAMINING LABOR PRODUCTIVITY GAPS IN DIFFERENT EDUCATIONAL SYSTEMS: A COMPARATIVE ANALYSIS OF SPANISH REGIONS, Jose M. Cordero; [Oleg Badunenko](#)

12.30 - 14.00 Lunch

Thu | 14:00-15:30 | Aud.

Special session in honour of Gudbrand Lien

Chair: Subal Kumbhakar

Parallel sessions

Thu | 14:00-15:30 | -1A

Agriculture IV

Chair: Raluca Parvulescu

MEASURING THE SUSTAINABILITY EFFICIENCY OF DAIRY FARMS IN MEXICO: A PRODUCTIVE EFFICIENCY APPROACH, [Bouali Guesmi](#); José Luis Jaramillo Villanueva; Benigna Gonzalez Ortiz; Amer Ait Sidhoum; José María

HOW CAN AGRICULTURAL PRODUCTION BE RECONCILED WITH ENVIRONMENTAL PRESERVATION: 'LAND SPARING' VERSUS 'LAND SHARING'?, [Salomé Kahindo](#)

ENVIRONMENTALLY ADJUSTED EFFICIENCY OF RAIN-FED AND IRRIGATED ENTERPRISES IN THE SAN SALVADOR BASIN, URUGUAY, [Tihó Ancey](#); Francisco Rosas; Moriah Bostian

BALANCING PROFITABILITY, PROTEIN PRODUCTION, AND PESTICIDE REDUCTION: WHAT ARE THE LEVERS FOR ACTION FOR FRENCH ARABLE FARMS?, [Raluca Parvulescu](#); Jean-Philippe Boussemart; Salomé Kahindo; Maé Guinet; Nicolas Munier-Jolain

Thu | 14:00-15:30 | SA

Banking & Finance II

Chair: Robin Sickles

ISLAMIC BANKS, SQUARE PEG IN A ROUND HOLE? EVIDENCE FROM MENA REGION USING METAFRONTIER DIRECTIONAL DISTANCE FUNCTIONS, [Ben Jemaa Mekki](#)

A MULTIDIMENSIONAL ASSESSMENT OF FINTECH COMPANIES: FINANCIAL INDICATORS, ACHIEVEMENT OF SUSTAINABILITY GOALS AND THE USE OF NEW

TECHNOLOGIES, Victor Giménez; Isabel Narbón Perpiñá; Diego Prior; Josep Rialp

REVISITING THE IMPACT OF BANKING COMPETITION WITH NONCOVEX TECHNOLOGY, Oleg Badunenko; Jérémie Bertrand; Kristiaan Kerstens; Paul-Olivier Klein

DIRECT AND INDIRECT IMPACTS OF NATURAL DISASTERS ON BANKS: A SPATIAL FRAMEWORK, Robin Sickles

Thu | 14:00-15:30 | 3E
Productivity Analysis IV

Chair: Emili Grifell-Tatjé

U.S. FIELD CROP FARM PRODUCTIVITY: CLIMATIC EFFECTS, TECHNOLOGY, AND FARM PRACTICES, Sun Ling Wang; Ryan Olver; Daniel Bonin; Ryan William

ENVIRONMENTAL REGULATION AND LABOR EFFICIENCY, Moriah Bostian; Hanna Lindstrom; Tommy Lundgren; Mattias Vesterberg;

ARTIFICIAL INTELLIGENCE AND FIRM PRODUCTIVITY, Iulia Siedschlag; Juan Duran Vanegas

WHAT POLICY LEVER TO PULL?: ANALYSIS OF DIRECTED TECHNICAL CHANGE FOR IDENTIFYING EFFICIENT CONFIGURATIONS OF ENTREPRENEURIAL ECOSYSTEMS, Emili Grifell-Tatjé; Esteban Lafuente

Thu | 14:00-15:30 | 3D
Health II

Chair: Camilla Mastromarco

EFFICIENCY AND FINANCIAL SOLIDITY OF HEALTHCARE SERVICE PROVIDER INSTITUTIONS (IPS) IN COLOMBIA, Ligia Melo

PURCHASE PRODUCTIVITY IN DUTCH YOUTH CARE: LOCALLY LEAST SQUARES FRONTIER

METHOD APPLIED TO MUNICIPALITY DATA, Blank Jos; Van Heezik Alex

PERFORMANCE OF ITALIAN HOSPITALS, 2015–2019, Camilla Mastromarco

15.30-16.00 Coffee break

Thu | 16:00-17:30 | Aud.
Plenary 3 – Session in honour of Finn Førsund

Chair/Discussant: Robin Sickles

FRIDAY, JUNE 21

Parallel sessions
Fri | 09:00-10:30 | Aud.
SFA Methods I

Chair: Alex Stead

THE DOUBLE HURDLE STOCHASTIC FRONTIER MODEL WITH ORDERED MULTIPLE CHOICES, Yi-Wun Chen

A BAYESIAN, SEMI-PARAMETRIC APPROACH TO INEFFICIENCY HETEROGENEITY IN SFA, Michael Wiper; Helena Veiga; Yaguo Deng

ESTABLISHING A LINK BETWEEN QUANTILE REGRESSION AND THE MAXIMUM LIKELIHOOD ESTIMATION IN STOCHASTIC FRONTIER ANALYSIS, Zangin Zeebari

A ROBUST ESTIMATION APPROACH TO SOLVING THE 'WRONG SKEW' PROBLEM, Alexander Stead; Phill Wheat; William H. Greene

Fri | 09:00-10:30 | -1A
Agriculture V

Chair: Stefen Seifert

INVESTIGATING PESTICIDE-SPECIFIC USE INEFFICIENCY IN THE PRESENCE OF

ENVIRONMENTAL SPILLOVERS, Emmanuel Ahovi; Jaap Sok; Alfons Oude Lansink

CAN WE OBSERVE RELATION BETWEEN ENVIRONMENTAL SUBSIDIES, BIODIVERSITY AND ECONOMIES OF SCOPE IN CZECH AGRICULTURE?, Lukas Cechura

LAND FRAGMENTATION AND FARM PERFORMANCE: THE CASE OF AUSTRIAN CROP FARMS, Eder Andreas

ALGORITHMS KILLED THE TRIAL CONDUCTOR: A PROPOSAL FOR A FRONTIER APPROACH TO DIGITALIZE THE SEED VARIETY ADMISSION, Stefan Seifert; Maria Gerullis; Andreas Beel

Fri | 09:00-10:30 | CC
Gender (in)equality

Chair: Antonio Alvarez

MEASURING TOTAL GENDER PAY GAP WITH HICKS-MOORSTEEN INDEX, Dumas Audrey; Vega Poleth

LOOKING FOR UNITY IN EQUALITY: EVALUATING FEMALE DISADVANTAGE AND ACHIEVEMENT IN EU REGIONS, Nicky Rogge

GENDER DIFFERENCES IN PRODUCTIVITY IN THE BANKING SECTOR, Maria J. Perez Villadoniga; Ana Rodriguez-Alvarez; David Roibas; Raul Garcia de Vega

MEASURING THE GENDER WAGE GAP USING STOCHASTIC FRONTIERS: SOME MODELLING ISSUES, Antonio Alvarez; Graziella Bonanno

Fri | 09:00-10:30 | SA
DEA Methods III

Chair: Antonio Peyrache

A SINGLE-STAGE SOLUTION PROCEDURE WITHOUT A SMALL EPSILON, Grammatoula Papaioannou; Victor Podinovski

DECOMPOSITION WEIGHTS AND STAGE EFFICIENCIES IN THE ADDITIVE NETWORK DEA MODEL WITH SHARED RESOURCES, Giannis

Karagiannis; Stavros Kourtzidis; Nickolaos G. Tzeremes

THE PARALLEL MULTI-COMPONENT NETWORK DEA WITH VARIABLE RETURNS TO SCALE, Giannis Karagiannis; Stavros Kourtzidis

HOMOTHETIC DATA GENERATED PRODUCTION METATECHNOLOGIES, Antonio Peyrache

Fri | 09:00-10:30 | 3E
Productivity Analysis V

Chair: Hideyuki Mizobuchi

LEVERAGING INNOVATION FOR IMPROVED SERVICE PRODUCTIVITY: INSIGHTS FROM STOCHASTIC FRONTIER MODELS WITH ENDOGENEITY, Fikru Alemayehu; Kai Sun; Subal Kumbhakar

HOW DOES RURAL GENTRIFICATION AFFECT FARMING EFFICIENCY? APPLYING RENT GAP THEORY TO AGRICULTURE, Bazyli Czyzewski; Jakub Staniszewski; Lukasz Kryszak; Aleksander Grzelak; Michal Borychowski

A THEORETICAL MODEL OF EFFICIENCY DISTRIBUTIONS, Jaap Bos; Stefan Weiland

LASPEYRES-PAASCHE BOUNDS FOR PRODUCTIVITY INDEX, Hideyuki Mizobuchi; Valentin Zelenyuk

Fri | 09:00-10:30 | 3D
Electricity Regulation II

Chair: Kjartan Rasmussen

HOW DOES THE CEO'S GENDER AFFECT PUBLIC UTILITIES' ECONOMIC DECISIONS?, Kristofer Månsson

A COMPARISON OF DATA ENVELOPMENT ANALYSIS, STOCHASTIC FRONTIER MODELS AND MODEL COMBINATION APPROACHES USING PANEL DATA, Toni Duras; Scott Hacker; Kristofer Månsson; Pär Sjölander; Magnus Söderberg

CROSSING NON-PARAMETRIC AND PARAMETRIC TECHNIQUES FOR MEASURING THE EFFICIENCY: EVIDENCE FROM THE IBERIAN GAS DISTRIBUTION SYSTEM OPERATORS, Vítor Marques; Diogo Bárbara, Rui Rita, Patrícia Rainha; Victor Moutinho

TIME-VARYING AND TIME-INVARIANT EFFICIENCY AMONG THE ELECTRICITY DISTRIBUTION COMPANIES IN SCANDINAVIAN COUNTRIES – A PANEL DATA STOCHASTIC FRONTIER APPROACH, Kjartan Rasmussen; Jonas Månsson

**Fri | 09:00-10:30 | 3B
Manufacturing I**

Chair: Mohsen Afsharian

TECHNICAL AND STRUCTURAL EFFICIENCY IN ENERGY USE IN INDIAN MANUFACTURING: AN INTER-STATE ANALYSIS, Subhash Ray; Kankana Mukherjee

DIGITALIZATION AND FIRMS MARKUPS: EVIDENCE FROM SPANISH MANUFACTURING FIRMS, Juan A. Sanchis

LEVERAGING BENCHMARKING FOR DEMAND PREDICTION AND PRODUCT EVALUATION IN SUPPLY CHAIN MANAGEMENT, Mohsen Afsharian; Peter Bogetoft

**Fri | 09:00-10:30 | 3C
Education III**

Chair: Dimitrios Sotiros

INCORPORATING PERCENTAGES IN THE ASSESSMENT OF SCHOOL EFFICIENCY: AN EMPIRICAL STUDY, Junlin Wu; Nikolaos Argyris; Victor Podinovski

THE EFFECTS OF HIGHER EDUCATION SYSTEMS' EFFICIENCY IN REGIONAL ECONOMIC GROWTH AND INEQUALITY REDUCTION: THE CASE OF THE MEXICAN STATES, Herberto Rodríguez; Emili Tortosa-Ausina; Victor Gimenez; Javier Ordóñez

A GENERALIZED COMPOSITION APPROACH IN NETWORK DATA ENVELOPMENT ANALYSIS FOR COMPLEX STRUCTURES: AN APPLICATION TO HIGHER EDUCATION INSTITUTIONS IN POLAND, Dimitrios Sotiros; Julia Zoladkiewicz; Gregory Koronakos; Dimitrios Despotis

10.30-11.00 Coffee break

Parallel sessions

**Fri | 11:00-12:30 | Aud.
SFA Methods II**

Chair: Christopher Parmeter

THE MOTIVATION FOR APPLICATION OF ROBUST STOCHASTIC FRONTIER ANALYSIS IN REGULATORY BENCHMARKING, Phill Wheat

THREE-WAY RANDOM EFFECTS STOCHASTIC FRONTIER MODEL, Levent Kutlu; Robin C. Sickles

LASSO+SFA AND XISTENCE OF INEFFICIENCY, Christopher Parmeter, Artem Prokhorov, Valentin Zelenyuk

INFERENCE IN THE NONPARAMETRIC STOCHASTIC FRONTIER MODEL, Christopher Parmeter, Leopold Simar, Ingrid Vankeilegom, Valentin Zelenyuk

**Fri | 11:00-12:30 | -1A
Agriculture VI**

Chair: Orlando Rodriguez

IMPACTS OF DEFORESTATION ON BRAZILIAN AGRICULTURAL PRODUCTIVITY, Adauto Rocha Junior

TOWARDS FOSSIL-INDEPENDENT AGRICULTURE? USE EFFICIENCY OF FOSSIL-BASED INPUTS IN SWEDISH AGRICULTURE, Vivian Wei Huang

EXPLANATION OF PERSISTENT AND TRANSIENT EFFICIENCY IN THE PRESENCE OF

ENDOGENEITY – A ONE STEP APPROACH WITHOUT DISTRIBUTIONAL ASSUMPTION, [Lajos Baráth](#); Lukáš Cechura Cechura

EFFICIENCY WITHIN HETEROGENOUS TECHNOLOGIES FOR SUSTAINABLE COFFEE PRODUCTION: A LATENT CLASS FRONTIER MODEL IN COLOMBIA, [Orlando Rodriguez](#); Maria Vrachioli; Johannes Sauer

Fri | 11:00-12:30 | CC
Sustainability & Eco-efficiency III

Chair: Magdalena Kapelko

ESTIMATING ECO-EFFICIENCIES OF FOOD RETAILERS – A BILEVEL OPTIMIZATION PROBLEM, [Andreas Dellnitz](#)

AN ANALYSIS OF SUSTAINABLE WASTE EFFICIENCY AT EUROPEAN LEVEL, [Simone Di Leo](#); Idiano D'Adamo; Cinzia Daraio; Léopold Simar

MEASURING ENVIRONMENTAL INEFFICIENCY THROUGH MACHINE LEARNING TECHNIQUES, [Magdalena Kapelko](#); Maria Guillen; Juan Aparicio; Miriam Esteve

Fri | 11:00-12:30 | SA
Efficiency Methods

Chair: Daniel J. Henderson

A FAST METHOD FOR IMPLEMENTING HYPOTHESIS TESTS WITH MULTIPLE SAMPLE SPLITS IN NONPARAMETRIC MODELS OF PRODUCTION, [Paul W. Wilson](#); Léopold Simar

REGULATING MULTIPLE RELATED EXTERNALITIES, [Mette Asmild](#); Trine Krogh Boomsma; Frank Jensen; Rasmus Nielsen

COMBINING BI-LEVEL OPTIMIZATION WITH DEA TO HANDLE PROFIT MAXIMIZATION AND EFFICIENCY EVALUATION UNDER A STOCHASTIC FRAMEWORK, Andreas C. Georgiou; Eleni-Maria Vretta; Konstantinos Kaparis; [Kyriakos Bitsis](#); George Paltayan; Fenia Mavrodi; Emmanuel Thanassoulis

LABOR INCOME TAX SHOCKS AND LARGE FIRMS' RD, [Daniel Henderson](#); Soroush Ghazi; Alexandra Soberon; Taining Wang

Fri | 11:00-12:30 | 3E
Multi-methods

Chair: Thyago Nepomuceno

COMBINING MARKOVIAN AND DATA ENVELOPMENT ANALYSIS MODELLING IN MANAGING THE EVOLUTION OF POPULATION COHORTS, [Andreas Georgiou](#); Emmanuel Thanassoulis; George Tsaples; Konstantinos Kaparis

CAUSAL EFFECTS OF POLICY INTERVENTIONS ON PRODUCTIVE PERFORMANCE: INTEGRATING SYNTHETIC CONTROL METHODS INTO THE NONPARAMETRIC APPROACH, [Xun Zhou](#)

EVALUATING PONDS AS NATURE-BASED SOLUTIONS: EFFECTIVENESS VS EFFICIENCY, [Pietro Sala](#); Maria Vrachioli; Fabian Frick; Johannes Sauer

MULTICRITERIA METHODS AND DIRECTIONAL DISTANCES IN PUBLIC ADMINISTRATIONS: STATE OF THE ART WITH A NEW APPROACH, [Thyago Nepomuceno](#); Cinzia Daraio

Fri | 11:00-12:30 | 3D
Fishing

Chair: Kenneth Løvold Rødseth

DISENTANGLING TWO DECADES OF INEFFICIENCY TRENDS AND DYNAMICS IN THE GERMAN BROWN SHRIMP FISHERY BY PANEL STOCHASTIC FRONTIER ANALYSIS, [Tim Knöpfel](#)

IMPACT OF PRODUCTION ENVIRONMENT ON THE PRODUCTIVITY GROWTH OF NORWEGIAN TRAWLERS, [Thanh Viet Nguyen](#)

GREEN SCENARIOS FOR THE FISHING INDUSTRY: USING NON-PARAMETRIC PRODUCTION ANALYSIS TO MODEL

STRATEGIC RENEWAL OF THE NORWEGIAN FISHING FLEET, [Kenneth Løvold Rødseth](#)

Fri | 11:00-12:30 | 3B
Manufacturing II

Chair: Alfons Oude Lansink

FIRMS' DIGITALIZATION AND TFP PERFORMANCE FOR SPANISH MANUFACTURING, [Dolores Añon Higón](#); Juan A. Máñez; Amparo Sanchis; Juan Sanchis

EFFICIENCY ANALYSIS UNDER CYBER THREAT: THE CASE OF EUROPEAN FOOD MANUFACTURERS, [Frederic Ang](#)

RISK AND RETURN EFFICIENCY OF MANUFACTURING FIRMS: INTEGRATING CORPORATE SOCIAL RESPONSIBILITY PERFORMANCE, [Alfons Oude Lansink](#)

Fri | 11:00-12:30 | 3C
Education IV

Chair: Audrone Jakaitiene

A BENEFIT-OF-THE-DOUBT MODEL FOR COUNTRY PERFORMANCE ASSESSMENT AND TARGET SETTING ALIGNED WITH THE EUROPEAN UNION 2030 EDUCATION AND TRAINING STRATEGY, [Fernando Osório](#); Flávia Barbosa; Giovanna D'Inverno; Ana Camanho

BENCHMARKING IN EDUCATION: IMPROVING PERFORMANCE TOWARD THE DEFINED GOALS INSTEAD OF (RE)PRODUCING SOCIAL CATEGORIES OF WINNERS AND LOSERS, Dovile Stumbriene; Jose L. Ruiz; Inmaculada Sirvent

DOES ACHIEVEMENT GAP CORRELATE WITH AVERAGE PERFORMANCE? CASE OF PIRLS, [Audrone Jakaitiene](#); Laura Ringiene; Gabriele Stupuriene; Rita Dukynaite; Rimantas Zelvys

12.30-14.00 Lunch

Fri | 14:00-15:30 | Aud.
Special session in honour of Mike Tsionas
Chair: Chris Parmeter

Parallel sessions

Fri | 14:00-15:30 | -1A
Agriculture VII

Chair: Simone Russo

LAND RENTAL AND ARABLE FARMERS' ECO-EFFICIENCY IN CHINA, [Jiajun Zhou](#)

DOES COMPENSATION FOR REDUCED NITROGEN LEAKAGE AFFECT ECO-EFFICIENCY: EVIDENCE FROM SWEDISH CROP FARMS, [Zhen Chen](#); Vivian Wei Huang

SOCIAL CAPITAL AND SMALLHOLDERS' OIL PALM PRODUCTION IN COSTA RICA, [Gabriela Enma Carbajo Alvarez](#); Bernhard Brümmer

DOES INSURANCE INCREASE THE PERSISTENT AND TRANSIENT TECHNICAL EFFICIENCY OF FARMS? EVIDENCE FROM ITALY, [Simone Russo](#); Lukáš Cechura; Cristina Salvioni; Subal Kumbhakar

Fri | 14:00-15:30 | SA
Banking & Finance III

Chair: Takayoshi Nakaoka

PERFORMANCE MEASUREMENT OF EUROPEAN MUTUAL FUNDS UNDER THE SUSTAINABLE FINANCE DISCLOSURE REGULATION, [Albane Tarnaud](#); Alfons Oude Lansink

DYNAMICS OF OPERATIONAL EFFICIENCY IN CREDIT LENDING AND RECOVERY OF STRESSED ASSETS: AN ALTERNATIVE APPROACH WITH UNDESIRABLE BY-PRODUCTS, [Gargi Sanati](#); Anup Kumar Bhandari

OPERATIONAL EFFICIENCY IN THE PRESENCE OF UNDESIRABLE BYPRODUCTS: AN ANALYSIS OF INDIAN BANKING SECTOR UNDER TRADITIONAL AND MARKET-BASED BANKING FRAMEWORK, [Anup Kumar Bhandari](#); Gargi Sanati

ANALYZING THE EFFECTS OF QUANTITATIVE EASING POLICY ON PRODUCTIVITY CHANGE UNDER CAPITAL ADEQUACY CONSTRAINT: EVIDENCE FROM JAPANESE BANKING INDUSTRY, Takayoshi Nakaoka; David Saal; Pablo Arocena

Fri | 14:00-15:30 | 3E
DEA Applications

Chair: Charles-Henri Dimaria

OPTIMIZING BUILDING DESIGN USING FRONTIER ESTIMATION, Dag Fjeld Edvardsen

SETTING GOALS FOR CASE RESOLUTION TIMES OF POLICE FORCES IN BRAZIL: A STUDY OF THE EFFICIENCY OF PERNAMBUCO STATE POLICE, Lucio Silva; Josenildo Ferreira da Silva Junior; Ednael Francisco Vieira da Silva; Thyago Celso Cavalcanti Nepomuceno; Flavia Barbosa; Ana Maria Camanho

GROUP- AND METATECHNOLOGY EFFICIENCIES AND TECHNOLOGY GAP OF AIRLINES: A UNION METAFRONTIER DYNAMICS NETWORK DEA FRAMEWORK, Ming-Miin Yu

LET'S ALL GET PESSIMISTIC WITH ILL-BEING, DiMaria, Charles-Henri

15.30-16.00 Coffee break

Fri | 16:00-17:30 | Aud.
Special session in honour of Bob Russell
Chair: Dan Henderson

Parallel sessions

Fri | 16:00-17:30 | -1A
Agriculture VIII

Chair: Gaofei Yang

ASSESSING THE COST-EFFECTIVENESS OF PROMOTING MIXED AGRICULTURAL REGIONS IN EUROPE, Murilo de Almeida Furtado; Miranda P. M. Meuwissen; Frederic Ang

ECO-EFFICIENCY AND ENVIRONMENTAL EFFICIENCY IN FARMING: QUANTITATIVE SYSTEMATIC SYNTHESIS AND META-REGRESSION ANALYSIS, Olha Halytsia; Maria Vrachioli; Johannes Sauer

SUSTAINABLE POLICY IMPACT ON AGRICULTURAL PRODUCTIVITY AND GREENHOUSE GAS EMISSIONS IN CHINA?, Gaofei Yang; Maria Vrachioli; Johannes Sauer

Fri | 16:00-17:30 | CC
Climate Impacts on Agricultural Productivity

Chair: Eric Njuki

CLIMATE CHANGE COULD BRING DOWN GLOBAL AGRICULTURAL YIELDS AND RESHAPE FOOD MARKETS IN THE NEAR TERM, Simone Pieralli; Ignacio Pérez-Domínguez; Christian Elleby

RD NEEDS TO OFFSET CLIMATE CHANGE IMPACTS ON US AGRICULTURAL PRODUCTIVITY, Ariel Ortiz-Bobea

CLIMATE, AND WEATHER IMPACTS ON AGRICULTURAL TOTAL FACTOR PRODUCTIVITY, Eric Njuki; Noé Nava; Boris Bravo-Ureta

Fri | 16:00-17:30 | SA
Sports

Chair: Gabriel Villa

DO FOOTBALL TEAMS INVEST INEFFICIENTLY IN PLAYERS WHEN COMPETITIVE BALANCE IS LOWER?, Dejan Trifunovic; Željko Jovic; Đorđe Mitrović

EVALUATING THE RELATIONSHIP BETWEEN ON-COURT PERFORMANCE AND SALARY CREATION OF NBA PLAYERS USING A TWO-STAGE NETWORK DEA MODEL, [Pin-Hsuan Sung](#); Tsu-Tan Fu

A STONEZD ANALYSIS OF FOOTBALL TEAMS WAGES, [Gabriel Villa](#); Sebastian Lozano

Fri | 16:00-17:30 | 3E
SFA Applications

Chair: Araceli Ortega

EXPLORING THE ROLE OF GOVERNANCE AND AGRICULTURAL INTENSIFICATION IN LAND USE CHANGE, [Gabriel Rosero](#); Jessie Lin

ARE SMART TOURIST DESTINATIONS MORE PRODUCTIVE EFFICIENT?, [David Boto Garcia](#); Jose Francisco Baños Pino; Ines Sustacha; Eduardo Del Valle

GROWTH, CO2 EMISSIONS AND CONVERGENCE: AN ENHANCED HYPERBOLIC DISTANCE FUNCTION APPROACH, [Roberto Balado-Naves](#); Jose Baños-Pino; Ana Rodriguez-Alvarez

EVALUATION OF THE PROGRAM "PRODUCCIÓN PARA EL BIENESTAR" USING A STOCHASTIC PRODUCTION META-FRONTIER, [Araceli Ortega-Diaz](#)

17.30–18.30 Closing Session

PARTICIPANTS (Alphabetically ordered by surname)

First Name	Last (Family) Name	Organisation/Institution	Country
Abdul-Baaki	Adedokun	Universidade do Algarve, FEUAlg	Portugal
Maroua	Afi	University of Nebraska Agricultural Economics	USA
Mohsen	Afsharian	Leibniz FH, University of Applied Sciences	Germany
Elizabeth	Ahikiriza	<u>Makerere University</u>	Uganda
Heinz	Ahn	Technische Universität Braunschweig	Germany
Emmanuel	Ahovi	Wageningen University and Research	Netherlands
Habtamu	Alem	Norwegian Institute of Bioeconomy Research (NIBIO)	Norway
Fikru	Alemayehu	Inland Norway University of Applied Sciences	Norway
Antonio	Alvarez	Univ. of Oviedo	Spain
Inmaculada	Álvarez	Universidad Autónoma de Madrid	Spain
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Tiho	Ancev	University of Sydney	Australia
Jasmine	Anceva	University of Sydney	Australia
Frederic	Ang	Wageningen University	Netherlands
Dolores	Añón Higón	Universitat de València	Spain
Pablo	Arocena	Public University of Navarre	Spain
Mette	Asmild	University of Copenhagen	Denmark
Oleg	Badunencko	Brunel University London	United Kingdom
Roberto	Balado-Naves	University of Oviedo	Spain
Trishit	Bandyopadhyay	TST Training and Research Service	India
Lajos	Baráth	HUN-REN KRTK	Hungary
Diogo	Bárbara	ERSE	Portugal

Mohamed	Ben Jemaa	University of Carthage	Tunisia
Bárbara	Bender	Universidade do Porto	Portugal
Anup	Bhandari	Indian Institute of Technology Madras	India
Kyriakos	Bitsis	University of Macedonia	Greece
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Moriah	Bostian	Lewis & Clark College, Centre for Environmental and Resource Economics (CERE), Umeå University	USA
A.J.	Bostian		USA
David	Boto Garcia	University Of Oviedo	Spain
Ioannis	Bournakis	SKEMA Business School	France
Boris	Bravo-Ureta	UCONN	USA
Margarita	Brugarolas	Asociación Española de Economía Agroalimentaria	Spain
Ana	Camanho	University of Porto	Portugal
Gabriela E.	Carbajo Alvarez	University of Göttingen	Germany
Laura	Carosi	University of Pisa	Italy
Marcelo	Carrer	Federal University of São Carlos - Brazil	Brazil
Lourdes	Castellano	Universidad de Las Palmas de Gran Canaria	Spain
Barbara	Casu	City, University of London	United Kingdom
Lukas	Cechura	Czech University of Life Sciences Prague	Czech Republic
Marc	Cervera	Universitat Autònoma de Barcelona	Spain
Giovanni	Cesaroni	Universitas Mercatorum	Italy
Bob	Chambers	University of Maryland	USA
Li-Hsueh	Chen	Fo Guang University	Taiwan
Zhen	Chen	Swedish University of Agricultural Sciences	Sweden
Yi-Wun	Chen	National Chung Cheng University	Taiwan

Laurens	Cherchye	KU Leuven	Belgium
Luís	Coelho	Universidade do Algarve	Portugal
Gaetano Francesco	Coppeta	Politecnico Di Milano	Italy
Isotilia	Costa Melo	CEREFIGE, University of Lorraine	France
Claire	Cui	the University of Auckland	New Zealand
Aline	da Silva	UNICAMP	Brazil
Hervé	Dakpo	INRAE - PSAE	France
André	Danelon	University of Göttingen & University of São Paulo	Brazil
Murilo	de Almeida Furtado	Wageningen University & Research (WUR)	Netherlands
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Kristof	De Witte	KU Leuven	Belgium
Andreas	Dellnitz	Leibniz FH, University of Applied Sciences	Germany
Simone	Di Leo	Sapienza University of Rome	Italy
Charles-Henri	DiMaria	STATEC Research	Luxembourg
Giovanna	D'Inverno	University of Pisa	Italy
Anna Rita	Dipierro	University of Salento	Italy
Lucas	Dorninger	Agência Nacional de Energia Elétrica - ANEEL	Brazil
Andreas	Eder	BOKU University	Austria
Dag	Edvardsen	Catenda	Norway
Rolf	Färe	Oregon State University	USA
Ana Catarina	Feteira Inácio	SU ELETRICIDADE	Portugal
Finn	Førsund	University of Oslo	Norway
Mads	Frandsen	The Danish Water Regulatory Authority	Denmark
Carlos	Fries	Universidade Federal de Santa Catarina	Brazil
Yun	Fu	Soochow University Taiwan	Taiwan
Zaira	García Tórtola	Universitat Jaume I	Spain

Federico	García-Suárez	UDELAR	Uruguay
Andreas	Georgiou	University of Macedonia	Greece
Anatoliy	Goncharuk	NLA Høgskolen	Norway
Claudia	Gondos	Università Cattolica del Sacro Cuore, Piacenza, Italy	Italy
Emili	Grifell-Tatjé	Universitat Autònoma de Barcelona	Spain
Kristoffer	Grønsberg	Riksrevisjonen	Norway
Shawna	Grosskopf	Oregon State University	USA
Andrea	Guerrero Jiménez	EQUIDE	Mexico
Bouali	Guesmi	CREDA	Spain
Pablo	Guimarães	UFRRJ	Brazil
Mercedes	Gumbau	University of Valencia	Spain
Scott	Hacker	Jönköping International Business School	Sweden
Olha	Halytsia	Technical University of Munich	Germany
Moritz	Hartig	University of Göttingen	Germany
Adel	Hatamimarbini	University of Huddersfield	United Kingdom
Kathy	Hayes	Southern Methodist University	USA
Emil	Heesche	The Danish Water Regulatory Authority	Denmark
Steven	Helfand	University of California, Riverside	USA
Juan Pablo	Henao	Technical University of Munich (TUM)	Germany/Colombia
Daniel	Henderson	University of Alabama	USA
Arne	Henningsen	University of Copenhagen	Denmark
Vivian Wei	Huang	Swedish University of Agricultural Sciences	Sweden
Seogwon	Hwang	STEPI	South Korea
Audrone	Jakaitiene	Vilnius University	Lithuania
Qianying	Jin	Nanjing University of Aeronautics and Astronautics	China
Salomé	Kahindo	IESEG School of Management	France

Magdalena	Kapelko	Wroclaw University of Economics and Business	Poland
Giannis	Karagiannis	University of Macedonia	Greece
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Tonny	Kawuki	Office Of the Auditor General Uganda	Uganda
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Anthony	Kimuli	Office of the Auditor General Uganda	Uganda
Tomohiro	Kitamura	Fukuyama University	Japan
Sverre	Kittelsen	Frisch Centre	Norway
Tim David	Knöpfel	DARE - University of Göttingen	Germany
Stavros	Kourtzidis	University of Dundee	United Kingdom
Dorte	Kronborg	Copenhagen Business School	Denmark
Subal	Kumbhakar	Binghamton University State University of New York	USA
Saurav	Kunwar	University of Illinois at Urbana Champaign	USA
Levent	Kutlu	University of Texas Rio Grande Valley	USA
Hilde Marit	Kvile	Norwegian Energy Regulatory Authority	Norway
Michee	Lachaud	Florida A&M University	USA
Carolin	Ladda	Technische Universität Braunschweig	Germany
Ludwig	Lauwers	Ghent University	Belgium
Yang	Liu	Technical University of Munich	Germany
Mariana	Lopes	IST, Universidade de Lisboa	Portugal
Mariana	Lopes	Instituto Superior Técnico	Portugal
Ana Lucia	Lopes-Ahn	Lopes-Ahn Consultancy Company	Brazil
Emiliano	Lopez Barrera	Texas A&M University	USA
Sebastián	Lozano	University Of Seville	Spain
Ana	Lozano-Vivas	University of Malaga	Spain
Jonas	Månsson	Industrial Ec. Blekinge Institute of Technology	Sweden

Kristofer	Månsson	Jönköping University	Sweden
Camilla	Mastromarco	University of Calabria	Italy
Janet	Meininger		USA
Ligia	Melo	Central Bank - Colombia	Colombia
Maria	Michali	University of Bristol	United Kingdom
Hideyuki	Mizobuchi	Doshisha University	Japan
Kankana	Mukherjee	Babson College	USA
Ørjan	Mydland	Inland Norway University of Applied Sciences	Norway
Takayoshi	Nakaoka	Doshisha University	Japan
Christine Lugoloobi	Nankanja	Office of the Auditor General Uganda	Uganda
Isabel	Narbón-Perpiñá	Universitat Autònoma de Barcelona	Spain
Grace	Natukunda	Office of the Auditor General Uganda	Uganda
Thyago	Nepomuceno	Federal University of Pernambuco	Brazil
Thanh	Nguyen	University of Akureyri	Iceland
Eric	Njuki	ERS-USDA	USA
Paulo	Nocera Alves Junior	Universidad Católica del Norte (UCN)	Chile
Ramón	Núñez-Sánchez	Universidad de Cantabria	Spain
James	Odeck	Molde University College	Norway
Christopher	O'Donnell	University of Queensland	Australia
Raul	Omel	University of Tartu	Estonia
Luis	Orea	University of Oviedo	Spain
Araceli	Ortega	EQUIDE-UIA	Mexico
Ariel	Ortiz-Bobea	Cornell University	USA
Fernando	Osório	INESC TEC, FEUP	Portugal
Alexander	Öttl	University of Copenhagen	Denmark
Alfons	Oude Lansink	Wageningen University	Netherlands

Youssef	Oukassou	KU LEUVEN / IESEG	France
Larissa	Pagliuca	UFScar, Brazil	Brazil
Alecos	Papadopoulos	Athens Univ. of Econ. and Bus.	Greece
Grammatoula	Papaioannou	Loughborough Business School	United Kingdom
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