

Léa Munich

Personal Data

NAME: Léa Munich
BIRTH: 20 janvier 1997, Nancy (France)
CITIZENSHIP: French
EMAIL: lea.munich.pro@gmail.com 
PERSONAL PAGE: sites.google.com/view/lea-munich 

Current Position

Since september 2024 | **Temporary Teaching and Research Assistant**
Full-time
Jean Monnet University, Saint-Etienne, France
Groupe d'Analyse et de Théorie Économique (GATE)

Research Interests

- Cooperative game theory
- Applied Microeconomics
- Operations Research
- Law and Economics

Past Employment

2023–2024 | **Temporary Teaching and Research Assistant**
Full-time
University of Franche-Comté, Besançon, France
Centre de REcherche sur les Stratégies Économiques (CRESE)

Professional Experience

2023–2024 | **Research Contract with La Poste Group**
Paris, France.
Contract from November 2023 to April 2024 involving the development and implementation of research on the new rule for allocating fixed costs for mail carrier routes

04-09/2020 | **Internship at ARCOM**
Paris, France.
Analysis of Spotify listening data
Skills acquired: scraping and coding in Python

06-09/2019 | **Internship at La Poste Group**
Paris, France.
Study of cost allocation in the postal office network using cooperative game theory.
Skills acquired: monitoring methods, regulatory accounting, and cooperative game theory

Education

2020–2024 | **PhD in Economics (CIFRE)**
BETA - University of Lorraine, France
Firm: La Poste Group
Supervisors: Sylvain Béal and Yannick Gabuthy
Thesis title: Cooperative game theory at the service of firms: sharing common costs
Committee: Pierre Dehez (president), Francis Bloch (rapporteur), Agnieszka Rusinowska (rapporteur), Claire Borsenberger (guest member)

2019–2020 | **Master 2 Economics and Market Regulation**
University of Lorraine, Nancy
Honors: good

2018–2019 | **Master 1 Economics and Market Regulation**
University de Lorraine, Nancy
Honors: good


2015-2018 | **Double Degree in Law and Economics**
University of Lorraine, Nancy
Honors: good

Published Papers

Munich, L. (2024) **Schedule situations and their cooperative game theoretic representations.** [European Journal of Operational Research](#), Volume 316, Issue 2, Pages 767-778. [🔗](#) (CNU A)


In this paper, we optimize and allocate the costs of a non-rival common-pool resource among several users. In such a so-called schedule situation the players have different demands given by distinct subsets of periods satisfying their needs. The total costs resulting from shared use of the resource are allocated by natural allocations called Equal Pooling allocations, in which the cost of each needed period is shared equally among the users of this period. The associated schedule game gives, for each coalition of players, the minimal cost of a period configuration satisfying the needs of all its members. We have three main contributions. First, we provide several sufficient conditions for the non-emptiness of the core of a schedule game. Second, we prove that under some of these conditions the Shapley value is in the core and coincides with some Equal pooling allocation. Third, we establish connections with other classes of operational research games. Furthermore, we present an application to the allocation of the common costs of the mail carrier route of La Poste, the french postal operator.

Article under Revision

Lowing, D., Munich, L., Techer, K. (2022) **Allocating the common costs of a public service operator: an axiomatic approach.** [Preprint](#) . Revised and resubmitted - International Review of Law and Economics. (CNU A)

Accurate cost allocation is a challenge for both public service operators and regulatory bodies, given the dual objectives of ensuring essential public service provision and maintaining fair competition. Operators have the obligation to provide essential public services for all individuals, which may incur additional costs. To compensate this, the operators receive state aids, which are determined by an assessment of the net cost associated with these obligations. However, these aids introduce the risk of distorting competition, as operators may employ them to subsidize competitive activities. To avoid this risk, a precise cost allocation method that adequately assesses the net cost of these obligations becomes necessary. Such a method must satisfy specific properties that effectively prevent cross-subsidization. In this paper, we propose a method grounded in cooperative game theory that offers a solution for allocating common costs between activities and obligations in public service provision. We adopt a normative approach by introducing a set of desirable axioms that prevent cross-subsidization. We provide two characterizations of our proposed solution on the basis of these axioms. Furthermore, we present an illustration of our method to the allocation of common costs for a public service operator.

Working Paper

Béal, S., Lowing, D., Munich, L. (2024) **Sharing the cost of cleaning up non-point source pollution.** [Preprint](#)  Working paper CRESE n°2024-13

We address the issue of allocating the costs of cleaning non-point source pollution originating from industrial sites among the firms responsible for these sites. The bilateral liabilities between firms are depicted by an undirected graph. We introduce and axiomatically characterize two cost allocation rules, which are inspired from the Polluter-Pays and Beneficiary-Pays principles commonly referenced in environmental law. The first rule allocates the cleanup costs of a site equally among the firms potentially contributing to the environmental damage. In contrast, the second rule assigns each firm the full cost of cleaning its own production site. Furthermore, we establish links with cooperative game theory to demonstrate the stability of these allocation rules.

Conferences

- European Meeting on Game Theory conference (SING 19), Besançon, France, July 8-10, 2024
- 72th Conference of Association Française de Science Economique (AFSE), Bordeaux, France, June 17-19, 2024
- Public Economic Theory conference (PET), Santiago, Chili, January 11-12, 2024
- Society for the Advancement of Economic Theory conference (SAET), invited by Stéphane Gonzalez and Federica Ceron, Santiago, Chili, January 8-10, 2024
- Workshop, New developments in Games and Social Choice, Besançon, France, November 30 - December 1, 2023
- CRESE's day, Besançon, France, October 2023
- European Meeting on Game Theory conference (SING 18), Messina, Italia, June 26-28, 2023
- 71th Conference of Association Française de Science Economique (AFSE), Paris, France, June 14-16, 2023
- Workshop, Cooperative Models in Games and Social choice, Besançon, France, November 24-25, 2022
- CRESE's day, Besançon, France, October 2022
- 30th Conference on Postal and Delivery Economics, Rimini, Italia, mai 25-27, 2022
- 29th Conference on Postal and Delivery Economics, Gdansk, Poland, September 1-3, 2021

Seminars

- GATE Seminar, Jean Monnet University, Saint-Etienne, invited by Oussama Ben Atta, November 19, 2024
- Discrete Mathematics, Optimization, Decision (MDOD) Seminar, Paris 1 - Panthéon Sorbonne University, invited by Alexandre Skoda, November 5, 2024
- Café Research Seminar of the Interdisciplinary Applied Research Laboratory in Economics-Management and Health (LIRAES), Paris Cité University, invited by Bertrand Chopard, June 7, 2024
- Game Theory and Social Choice Seminar, University of Angers, invited by Florian Navarro, May 4, 2023
- PhD Seminar of BETA, Nancy, France, October 5, 2021

Teaching

- **Thematic Workshop (21 hours)**
Bachelor 1 Economics, Jean Monnet University, Saint-Étienne
Supervision of 3 student groups in the preparation of a summary document on a question of inequality
- **CM Graph Theory and Its Applications to Problems of Society (21 hours)**
Master 1 Economics, Jean Monnet University, Saint-Étienne
Preliminaries, optimal paths, project scheduling
- **TD Decision Theory (60 hours)**
Bachelor 1 Computer Science, Jean Monnet University, Saint-Étienne
Binary relations, logical reasoning
- **TD Operations Research (24 hours)**
Bachelor 3 Economics-Management, University of Franche-Comté, Besançon
Properties of graphs, applications to economics and management of optimal paths, project scheduling, flow problems, coloring
- **TD Microeconomics (72 hours)**
Bachelor 1 Economics-Management, University of Franche-Comté, Besançon
Budget constraint, preferences, optimal choice, consumer demand
- **TD Macroeconomics (36 hours)**
Bachelor 1 Economics-Management, University of Franche-Comté, Besançon
GDP, unemployment, inflation, money, national accounting
- **TD Descriptive Statistics (54 hours)**
Bachelor 1 Economics-Management, University of Franche-Comté, Besançon
Basic concepts, distributions with one variable, distributions with two variables
- **TD Cooperative Game Theory (6 hours)**
Master 1 Economics, University of Franche-Comté, Besançon
Negotiation problems, cooperative games with transferable utility, allocation rules
- **TD Microeconomics (36 hours)**
Bachelor 1 AES, University of Franche-Comté, Besançon
Perfect competition, cost concepts, the consumer, the producer

- **TD Microeconomics (18 hours)**

Bachelor 2 Economics, University of Lorraine, Nancy

Monopoly, oligopoly, duopoly

- **Regulation Workshop (6 hours)**

Master 2 Market Regulation, University of Lorraine, Nancy

Cost constraints in a regulated market

- **Training on Cost Allocation Rules (4 hours)**

Ministry of Posts and Telecommunications of Morocco in Rabat

Cost allocation rules based on managerial accounting, cost allocation rules based on cooperative game theory

Teaching and Scientific Activities

- Member of the Advisory Board of the Master's in Economics, specializing in Economics and Market Regulation, 2024 and 2025, University of Lorraine, Nancy
- Member of the organizing committee of the SING conference, Besançon, 2024
- Member of the organizing committee of the workshop, New Developments in Games and Social Choice, Besançon, 2023

Languages and Tools

- French (native), English (fluent), German (elementary), LaTeX, Python.