

Rodrigue TIDO TAKENG

Date of birth: January 24, 1993

University of Franche-Comté

CRESE

30 Av. de l'Observatoire, 25030 Besançon,
France

Main building of IUT, 1st floor

+33766815844

✉ rodrigue.tido_takeng@unv-fcomte.fr

✉ rodrigueto@yahoo.fr

🌐 <https://sites.google.com/view/rodrigueto/home>

RESEARCH FIELDS

Game theory, Social choice, Power indices, Inequalities, Multicriteria aid for decision

CURRENT POSITION

Postdoc researcher at the University of Franche-Comté.

EDUCATION

03/02/2022 **CNU qualification in Economics** (Assistant Professor).

2021-2022 **Research and teaching assistant** (ATER) at the University of Caen Normandie.

2018-2021 **PhD in Mathematical Economics**, University of Caen Normandie, France.

Title : « Essays on the sharing of gains in cooperative game: interaction indices, Shapley-Owen value, Myerson value ».

Supervisor : Sébastien COURTIN (University of Caen Normandie).

Committee : Michel GRABISCH (University of Paris 1 Panthéon-Sorbonne, Referee), Sylvain BEAL (University of Franche Comté, Referee), Annick LARUELLE (University of the Basque Country, Examiner), Isabelle LEBON (University of Caen Normandie, President).

Abstract : A cooperative game with transferable utility (TU game) represents any situation where interacting agents have the possibility to communicate freely and make cooperative agreements to share a collective gain. There is a very rich literature on TU games and their extensions. One of the fundamental problems of TU games is the sharing of the gains from cooperation between agents. There are several methods of sharing (called values), among them we have: the pure marginal contribution method (the marginal effect in terms of gain when each agent joins the other agents) and the Shapley value (weighted sum of marginal contributions). Following the organization of the agents, the Shapley value has many extensions such as the Shapley-Owen value and the Myerson value. The values can be generalized by the interaction indices. An interaction index measures the interaction among the agents. The pure marginal contribution method seems to be the natural way to share such gains among agents. This approach was criticized in the literature and the authors illustrated their points of view with the decomposition of the pure marginal contribution and the Shapley value. The pure marginal contribution does not sum up to the worth generated by the grand coalition. Hart and Mas-Colell (Econometrica, 1989) use this fact as a motivation of the potential approach to the Shapley value. Chantreuil and *al.*

(SCW, 2019) also use this fact for the decomposition of the Shapley value *via* the interaction approach. Casajus and Huettner (GEB, 2018) argue that every agent's presence is necessary for generating the pure marginal contribution of any given agent, and therefore the productivity gains reflected in that payoff should be partly attributed to the others. In this thesis, we generalize several results. In Chapter 1, we decompose interaction indices. In the second chapter, we decompose the Shapley-Owen and this allows us to decompose the inequality indices (the goal is to help the decision maker to reduce income inequalities). Our third chapter is devoted to the axiomatization of the Shapley-Owen value (we propose another merits of this value). In our fourth and last chapter, by applying the Myerson value, we focus on the problem of evaluating the productivity of a worker and the organization of workers in an uncertain production environment.

2014-2016 **Master's degree in Applied Mathematics**, University of Yaoundé 1, Cameroon

Dissertation topic : « Game with multiple levels of approval: an axiomatic characterization of the Banzhaf power index ».

Supervisor : Bertrand TCHANCHO (University of Yaoundé 1, Cameroun)

Abstract : Certain axioms like that of the axiom of transfer used to characterize the Shapley-Shubik and Banzhaf indices on simple games was criticized in the literature review. A characterization was obtained by Laruelle and Valenciano (2001) using better apprehended axioms. We generalize these axioms to the game with several level of approval and obtain then a new characterization of the Banzhaf index on this class of game which generalize the class of simple games.

2012-2014 **Master's degree in Mathematics and Teachings**, University of Bamenda, Cameroon

Dissertation topic : « Residue Calculus and applications of contour integral ».

2009-2012 **Bachelor degree in applied mathematics and computer science**, University of Dschang, Cameroon

2008-2009 **"Baccalauréat C" (GCE Mathematics and Physics)**, Collège de la Réunification de Bafoussam, Cameroon

TEACHING EXPERIENCE (in french)

2021-2022 **Research and teaching assistant, University of Caen Normandie** (196h equivalent to tutorial)

- Undergraduate Macroeconomics (Second year students of « Economie-Gestion », Tutorial, 36h)
- Undergraduate Statistics (First year students of « Economie-Gestion », Tutorial, 36h)
- Undergraduate Computer science (Second year students of « Economie-Gestion », Tutorial, 48h)
- Undergraduate Macroeconomics (First year students of « Economie-Gestion », Tutorial, 36h)
- Undergraduate European economics (First year students of AES, Course, 24h)

2018-2021 **Teaching assistant**, University of Caen Normandie (162h)

- Undergraduate Microeconomics (First year students of « Economie-Gestion », Tutorial, 108h)
- Undergraduate Macroeconomics (First year students of « Economie-Gestion », Tutorial, 54h)

2016-2018 **Teaching assistant at Maths department**, Advanced Teachers' Training College, University of Yaoundé 1, Cameroon (40h)

- Undergraduate Maths 1 for Physics (First year students of Physics, Tutorial, 10h)

- Undergraduate Maths 2 for Physics (First year students of Physics, Tutorial, 10h)
- Undergraduate Maths 1 for Chemistry (First year students of Chemistry, Tutorial, 10h)
- Undergraduate Maths 2 for Chemistry (First year students of Chemistry, Tutorial, 10h)

RESEARCH

Publications

- R. Tido Takeng, A. C. Soh Voutsas., and K. Fourrey. Decompositions of inequality measures from the perspective of the Shapley-Owen value. 2022. *Theory and Decision* (<http://dx.doi.org/10.1007/s11238-022-09893-w>).
- A. Casajus and R. Tido Takeng. Second-order productivity, second-order payoffs, and the Owen value. 2022. *Annals of Operation Research* (Forthcoming).
- R. Tido Takeng. Uncertain production environment and communication structure. 2022. *Journal of Mathematical Economics* (<http://dx.doi.org/10.1016/j.jmateco.2022.102744>).

Working Papers

- S. Courtin, R. Tido Takeng, and F. Chantreuil. Decomposition of interaction indices : alternative interpretations of cardinal-probabilistic interaction indices. *International Journal of Game Theory* (Under review).
- A. Casajus and R. Tido Takeng. Second-order productivity, second-order payoffs, and the Banzhaf value.

Work in progress

- Second-order productivity, second-order payoffs, and the Owen's modification of Banzhaf value (with A. Casajus).
- Uncertain production environment with probabilistic graphs (with S. Béal and R. Pongou).

SCHOLARSHIP

2018-2021 **Doctoral fellowship awarded by Normandie region**

CONFERENCES AND WORKSHOPS

- | | |
|-----------|---|
| June 2019 | Conference on economic design , « Naive individualism and decomposer function », Corvinus University of Budapest, Hongrie, 12 to 14 June 2019 :
https://drive.google.com/file/d/1_uJbJlt7FHQ6dhCcaikFNZQmikNA9G3v/view |
| June 2019 | Summer School: Preferences, decisions and games , « Naive individualism and decomposer function », University of Paris Sorbonne, 24 to 28 June 2019 :
https://decisionschool.lip6.fr/program-2/ |
| Dec. 2019 | Workshop of Centre de Recherche en Economie et Management (CREM) «Politiques Publiques Vote et Démocratie», Poster «Naive individualism and decomposer function », Caen, France |
| June 2021 | 37ième Journée de Microéconomie Appliquée (JMA) , «Decompositions of inequality measures from the perspective of the Shapley-Owen value», Annecy, France, 03 to 04 June 2021 : https://jma2021.sciencesconf.org/program/details |
| June 2022 | Conference on economic design , « Uncertain production environment and communication structure: the Bayesian Myerson value», University of Padova, Italy, 09 to 11 June 2022 |

June 2022 **French Economic Association (AFSE)**, « Uncertain production environment and communication structure: the Bayesian Myerson value», Laboratoire d'Economie de Dijon, University of Bourgogne, France, 14 to 16 June 2022

SEMINARS

- July 2019 **Centre de Recherche en Economie et Management (CREM)**, « Naive individualism and decomposer function », Unicaen, France.
- Sep. 2019 **Laboratory of applied mathematics to social science**, « Naive individualism and decomposer function », University of Yaoundé 1, Cameroon.
- June 2020 **Centre de Recherche en Economie et Management (CREM)**, « Decomposition of interaction indices : alternative interpretations of cardinal-probabilistic interaction indices», Unicaen, France
- June 2021 **Centre de Recherche en Economie et Management (CREM)**, « Uncertain production environment and communication structure: the Bayesian Myerson value », Unicaen, France.
- March 2022 **Centre d'Economie et de Management de l'Océan Indien (CEMOI)**, « Decompositions of inequality measures from the perspective of the Shapley-Owen value», La Reunion, France
- April 2022 **Laboratoire d'économie mathématique et de microéconomie appliquée (LEMMA)**, « Uncertain production environment and communication structure: the Bayesian Myerson value », Paris, France

RESPONSABILITIES AND ADMINISTRATIONS

- Avril 2019 **Participant for CNRS at Festival de l'Excellence Normande, FENO 2019**. Activity carried out: Voting experience with the general public on the various classical voting rules.
- 2019-2021 **-Member of the council at Ecole doctorale Economie Gestion Normandie.**
-Delegate of PhD students in Economics (for Caen) at Collèges des Ecoles Doctorales de Normandie Université.

COMPUTER, LANGUAGES AND OTHER INTERESTS

Computer skills	Languages	Interests
-Microsoft Office -SQL, C++, C, Java -Matlap, Latex	French: native English : Advanced	-Tourism -Trips -Football

REFERENCES

Vincent MERLIN

Director of Research of CNRS
University of Caen Normandie
France
vincent.merlin@unicaen.fr

Full professor
University of Franche Comté
France
sylvain.beal@univ-fcomte.fr

Isabelle LEBON

Professor
University of Caen Normandie
France
Isabelle.lebon@unicaen.fr

Research Professor
HHL Leipzig Graduate School of Management
Deutschland GERMANY
sujasac@googlemail.com

Sébastien COURTIN

Assistant professor (HDR)
University of Caen Normandie
France
sebastien.courtin@unicaen.fr