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Laboratory of Game-Theoretical Analysis

Research Field

Game Theory; Optimization; Operational Research; Mathematical Economics

Education

Ph. D., Mathematics, National Dong Hwa University, Taiwan

Publications

1.1 Journal Papers

- 1.1.1 Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2023). Consistency and indexes of fuzzy games. *LAENG International Journal of Computer Science*, 50(4).
- 1.1.2 **Yu-Hsien Liao.** (2023). On the complement-reduction for fuzzy non-transferable-utility games. *Journal of Network and Computer Applications*. Volume 24, Number 11, 2439-2449.
- 1.1.3 **Liao, Y. H.** (2023) A weighted power distribution mechanism under transferable-utility systems: axiomatic results and dynamic processes. *Italian Journal of Pure and Applied Mathematics*, 440-454.
- 1.1.4 **Liao, Y. H.** (2023). Allocating Mechanism under Multicriteria Situations: Power Index and Relative Normalizations. *Engineering Letters*, 31(3).
- 1.1.5 Hwang, Y. A., & **Liao, Y. H.** (2023). Non-emptiness, relative coincidences and axiomatic results for the precore. *Mathematics*, 11(13), 2812.
- 1.1.6 **Liao, Y. H.** (2023). Power indices under specific multicriteria status. *Games*, 14(4), 51.
- 1.1.7 Chou, L. S., Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2023). Axiomatic processes for asymmetric allocation rules under fuzzy multicriteria situations. *Axioms*, 12(3), 284.
- 1.1.8 Hwang, Y. A., **Liao, Y. H.**, Wang, B. Y., & Chou, L. S. (2023). Outcomes and relative axiomatic results under multicriteria management models. *LAENG International Journal of Computer Science*, 50(1).
- 1.1.9 **Liao, Y. H.** (2023). A weighted solution concept under replicated behavior. *Mathematics*, 11(1), 150.
- 1.1.10 Hwang, Y. A., **Liao, Y. H.**, & Wang, B. Y. (2022). On balanced host games: a sufficient condition for non-emptiness of the core. *Mathematics*, 10(20), 3897.
- 1.1.11 **Liao, Y. H.** (2022). Solutions and characterizations under multicriteria management systems. *Journal of Industrial & Management Optimization*, 18(3).
- 1.1.12 Huang, R. R., Wei, H. C., Huang, C. Y., & **Liao, Y. H.** (2022). Axiomatic analysis for scaled allocating rule. *LAENG International Journal of Applied Mathematics*, 52(1).

- 1.1.13 **Liao, Y. H.** (2022). Axiomatic results and dynamic processes for two weighted indexes under fuzzy transferable-utility behavior. *Numerical Algebra, Control & Optimization*, 12(1).
- 1.1.14 **Liao, Y. H.** (2022). Balanced effectiveness of toxic mitigation measures under aquatic environments: game-theoretical analysis for combinatorial mechanism among antidotes and catalysts. *Engineering Letters*, 30(1).
- 1.1.15 **Liao, Y. H.**, & Chung, L. Y. (2022). Extended results of `Cores of fuzzy games and their convexity. *Iranian Journal of Fuzzy Systems*, 19(2), 99-103.
- 1.1.16 Hwang, Y. A., & **Liao, Y. H.** (2022). The replicated core under multi-choice non-transferable-utility situations: converse reduction axiomatic enlargements. *Mathematics*, 10(5), 806.
- 1.1.17 **Liao, Y. H.** (2022). Relative symmetric reductions under multi-choice non-transferable-utility situations. *Mathematics*, 10(5), 682.
- 1.1.18 Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2022). Axiomatisations, alternative formulation and dynamic processes for the maximal self-consistent value under multicriteria decision situations. *Journal of Control and Decision*, 9(1), 13-22.
- 1.1.19 **Liao, Y. H.**, & Chung, L. Y. (2022). Characterizations and dynamic results for consistent indexes under weighted consideration. *Journal of Control and Decision*, 9(1), 1-12.
- 1.1.20 **Liao, Y. H.**, Li, C. H., Chen, Y. C., Tsai, L. Y., Hsu, Y. C., & Chen, C. K. (2021). Agents, activity levels and utility distributing mechanism: game-theoretical viewpoint. *IAENG International Journal of Applied Mathematics*, 51(4), 1-7.
- 1.1.21 Huang, R. R., & **Liao, Y. H.** (2021). Axiomatic and dynamic results for power indexes under symmetry. *Axioms*, 10(4), 345.
- 1.1.22 **Liao, Y. H.** (2021). A normalized distribution mechanism under multi-criteria situations and fuzzy behavior. *Iranian Journal of Fuzzy Systems*, 18(6), 119-131.
- 1.1.23 Huang, J. C., Chen, K. H. C., & **Liao, Y. H.** (2021). Game-theoretic dynamic procedure for a power index under relative symmetry. *Symmetry*, 13(10), 1921.
- 1.1.24 Chi, E. C., **Liao, Y. H.**, & Li, C. H. (2021). Sustainable allocation mechanism for children's sports resource: game-theoretical analysis. *Journal of Cheng Kung University Physical Education Research*, 53(2), 62-82.
- 1.1.25 Cheng, C. Y., Zhang, G. J., **Liao, Y. H.**, & Chi, E. C. A note on alternative axiomatic results and sports applications of the precore. *Italian Journal of Pure and Applied Mathematics*, 480.
- 1.1.26 Li, C. H., Chiang, J. W., Chi, E. C., & **Liao, Y. H.** (2021). Axiomatic and dynamic processes for a symmetric allocation rule. *Symmetry*, 13(8), 1474.
- 1.1.27 Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2021). Sustainability for utility allocation: a game-theoretical mechanism. *Journal of Intelligent & Fuzzy Systems*, 41(1), 2485-2493.

- 1.1.28 Chang S. L., Lee K. C., Huang R. R., **Liao, Y. H.** (2021). Resource-allocation mechanism: game-theory analysis. *Symmetry*, 13(5), 799.
- 1.1.29 **Liao, Y. H.** (2021). A weighted power distribution mechanism under fuzzy behavior systems. *Journal of Intelligent & Fuzzy Systems*, 40(3), 3945-3956.
- 1.1.30 **Liao, Y. H.** (2021). Axiomatic results for weighted allocation rules under multiattribute situations. *Mathematics*, 9(6), 617.
- 1.1.31 Chi, E. C., Liou, J. N., Chen, K., Lin, H. L., & **Liao, Y. H.** (2021). Optimal utility allocations under multicriteria situation. *Journal of Control and Decision*, 8(1), 14-26.
- 1.1.32 Chen, K. H. C., Huang, J. C., & **Liao, Y. H.** (2021). Sustainable combination mechanism for catalysts: A game-theoretical approach. *Catalysts*, 11(3), 345.
- 1.1.33 Chi, E. C., & **Liao, Y. H.** (2021). Sustainable usability distribution mechanisms under multi-attribute sports management schemes. *Sustainability*, 13(3), 1528.
- 1.1.34 Hwang, Y. A., & **Liao, Y. H.** (2021). The similarity among two extended shapley values. *IAENG International Journal of Applied Mathematics*, 51(1), 1-7.
- 1.1.35 **Liao, Y. H.** (2021). Consonance, symmetry and extended outputs. *Symmetry*, 13(1), 72.
- 1.1.36 **Liao, Y. H.**, Huang, H. C., Wu, C.P., & Wu, Y. J. (2021). The replicated core: different reduction and related axiomatic results. *Far East Journal of Mathematical Sciences (FJMS)*.
- 1.1.37 Hwang, Y. A., & **Liao, Y. H.** (2020). Note: Natural extensions of the equal allocation of non-separable costs. *Engineering Letters*, 28(4).
- 1.1.38 **Liao, Y. H.**, Liu, P. T., Huang, R. R., Lee, K. C., & Chi, E. C. (2020). Resource allocation under sports management systems: game-theoretical methods. *Engineering Letters*, 28(4).
- 1.1.39 Du, W. S., Liu, P. T., & **Liao, Y. H.** (2020). On the mixed reduction: an alternative axiomatization of the fuzzy NTU core. *Results in Nonlinear Analysis*, 3(4), 179-184.
- 1.1.40 Hwang, Y. A., & **Liao, Y. H.** (2020). A solution concept and its axiomatic results under non-transferable-utility and multi-choice situations. *Mathematics*, 8(9), 1559.
- 1.1.41 Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2020). Different characterizations of a game-theoretical solution and its application on sports management. *Italian Journal of Pure and Applied Mathematics*, 658.
- 1.1.42 Cheng, C. Y., Chi, E. C., Chen, K., & **Liao, Y. H.** (2020). A power mensuration and its normalization under multicriteria situations. *IAENG International Journal of Applied Mathematics*, 50(2), 1-6.
- 1.1.43 **Liao, Y. H.**, & Chung, L. Y. (2020). Power allocation rules under fuzzy behavior and multicriteria situations. *Iranian Journal of Fuzzy Systems*, 17(3), 187-198.
- 1.1.44 Chen, K. H. C., Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2020). The supreme-core on multicriteria fuzzy games. *Journal of Intelligent & Fuzzy Systems*, 38(2), 1753-1760.

- 1.1.45 **Liao, Y. H.**, Huang, K. W., & Hsiao, H.C. (2019). Different axiomatic results, formulation and weighted form for a resolution under uncertainty. *TARU Journal of Organizational Behavior & Analytics*.
- 1.1.46 Wei, H. C., Li, A. T., Wang, W. N., & **Liao, Y. H.** (2019). Solutions and its axiomatic results under fuzzy behavior and multicriteria situations. *IAENG International Journal of Applied Mathematics*, 49(4), 1-6.
- 1.1.47 Wei, H. C., Liu, P. T., & **Liao, Y. H.** (2019). Two optimal allocations under management systems: Game-theoretical approaches. *International Journal of Information and Management Sciences*, 30(2), 99-112.
- 1.1.48 **Liao, Y. H.** (2019). Power mensuration mechanism under fuzzy behavior and multicriteria situation. *Journal of Intelligent & Fuzzy Systems*, 36(6), 6631-6640.
- 1.1.49 **Liao, Y. H.**, & Chung, L. Y. (2019). Fuzzy transferable-utility games: a weighted allocation and related results. *Iranian Journal of Fuzzy Systems*, 16(3), 189-197.
- 1.1.50 **Liao, Y. H.**, Chen, T. Y., & Chung, L. Y. (2018). A power index and its normalization under fuzzy multicriteria situation. *Italian journal of pure and applied mathematics*, (40), 108-121.
- 1.1.51 **Liao, Y. H.** (2018). Power allocation rules under multicriteria situation. *Yugoslav Journal of Operations Research*, 28(2), 171-184.
- 1.1.52 **Liao, Y. H.** (2018). The excess formulation and related dynamic results for the consistent value. *American Journal of Mathematical and Management Sciences*, 37(3), 209-216.
- 1.1.53 **Liao, Y. H.**, Chen, K. N., Lin, H. L., & Chi, E. C. (2018). Utility allocation of sports management under uncertainty: dividend approach viewpoint. *Sports Research Review*, (145), 39-46
- 1.1.54 **Liao, Y. H.**, Chung, L. Y., Du, W. S., & Ho, S. C. (2018). Consistent solutions and related axiomatic results under multicriteria management systems. *American Journal of Mathematical and Management Sciences*, 37(2), 107-116.
- 1.1.55 **Liao, Y. H.** (2018). The precore: converse consistent enlargements and alternative axiomatic results. *Top*, 26(1), 146-163.
- 1.1.56 **Liao, Y. H.**, Liu, P. T., Tsai, M. H., Lin, Y. H. & Luo, Y. C. (2017). Allocation mechanisms under multicriteria situation: A power index and its normalization. *Journal of Interdisciplinary Mathematics*.
- 1.1.57 **Liao, Y. H.** (2017). Fuzzy games: a complement-consistent solution, axiomatizations and dynamic approaches. *Fuzzy Optimization and Decision Making*, 16, 257-268.
- 1.1.58 **Liao, Y. H.** (2017). The supreme-consistent value for fuzzy transferable-utility games: Alternative formulation, dynamic process and axiomatizations 1. *Journal of Intelligent & Fuzzy Systems*, 33(1), 137-143.
- 1.1.59 **Liao, Y. H.**, Liu, P. T., & Chung, L. Y. (2017). The normalizations and related dynamic processes for two power indexes. *Journal of Control and Decision*, 4(3), 179-193.

- 1.1.60 Hwang, Y. A., & **Liao, Y. H.** (2017). Alternative formulation and dynamic process for the efficient Banzhaf–Owen index. *Operations Research Letters*, 45(1), 60-62.
- 1.1.61 Chung, L. Y., **Liao, Y. H.**, Hsieh, W. Y., Chen, T. Y., & Lin, C. K. (2016). Alternative reductions and axiomatizations of the unit-level-core. *Asia-Pacific Journal of Operational Research*, 33(06), 1650052.
- 1.1.62 **Liao, Y. H.** (2016). The consistent value: potentializability and equivalent relations on fuzzy games. *Appl. Math*, 10(5), 1871-1876.
- 1.1.63 **Liao, Y. H.** (2016). The D&P Shapley Value: a Weighted Extension. *Ukrainian Mathematical Journal*, 68(1).
- 1.1.64 **Liao, Y. H.** (2016). The consistent value for fuzzy games: alternative axiomatizations. *Fuzzy Optimization and Decision Making*, 15, 129-138.
- 1.1.65 **Liao, Y. H.**, Hsieh, W. Y., & Chung, L. Y. (2016). A consistent allocation and related results under fuzzy transferable-utility behavior 1. *Journal of Intelligent & Fuzzy Systems*, 30(6), 3167-3175.
- 1.1.66 Huang, C. H., Chi, E. C., Hsieh, Y. L., Xu, B. C., & **Liao, Y. H.** (2016). Alternative reduction and related axiomatic results for an extended Shapley value. *Far East Journal of Mathematical Sciences*, 99(7), 1109.
- 1.1.67 **Liao, Y. H.** (2016). The excess formulations and related results for the normalized Banzhaf index and the Shapley value. *Top*, 24(1), 233-241.
- 1.1.68 Hwang, Y. A., **Liao, Y. H.**, & Yeh, C. H. (2015). Consistent extensions and subsolutions of the core for the multichoice transferable-utility games. *Optimization*, 64(4), 913-928.
- 1.1.69 **Liao, Y. H.**, Chung, L. Y., & Wu, P. H. (2015). The EANSC: A weighted extension and axiomatization. *Economics Bulletin*, 35(1), 475-480.
- 1.1.70 Chung, L. Y., & **Liao, Y. H.** (2014). A consistent allocation rule: non-emptiness, reductions, domination and axiomatization. *Review of Economics & Finance*, 4, 61-74.
- 1.1.71 Hwang, Y. A., & **Liao, Y. H.** (2014). The core configuration for fuzzy games. *Journal of Intelligent & Fuzzy Systems*, 27(6), 3007-3014.
- 1.1.72 **Liao, Y. H.**, & Chung, L. Y. (2014). The minimal consistent core: a converse consistent enlargement and alternative axiomatizations. *Far East Journal of Mathematical Sciences*, 94(1), 113.
- 1.1.73 **Liao, Y. H.** (2014). Solutions, potentializability and axiomatizations under interval uncertainty. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, 22(04), 605-613.
- 1.1.74 **Liao, Y. H.** (2013). The equal allocation of nonseparable costs: An extension under fuzzy behavior. *Fuzzy Sets and Systems*, 231, 84-94.
- 1.1.75 Hwang, Y. A., & **Liao, Y. H.** (2013). Reduction and dynamic approach for the multi-choice shapley value. *Journal of Industrial & Management Optimization*, 9(4).

- 1.1.76 **Liao, Y. H.** (2013). The duplicate extension for the equal allocation of nonseparable costs. *Operational Research*, 13, 385-397.
- 1.1.77 Hwang, Y. A., & **Liao, Y. H.** (2013). A note on the core: Minimal conversely consistent enlargement. *Information Sciences*, 243, 100-105.
- 1.1.78 **Liao, Y. H.** (2013). The coincidences among the semicore and the dominance core. *Operations Research Letters*, 41(5), 503-505.
- 1.1.79 **Liao, Y. H.** (2013). Dividend approach for the P&Z Shapley value. *Far East Journal of Mathematical Sciences*, 73(2), 305.
- 1.1.80 **Liao, Y. H.** (2013). The Shapley value for fuzzy games: TU games approach. *Economics Bulletin*, 33(1), 192-197.
- 1.1.81 **Liao, Y. H.** (2012). Converse consistent enlargements of the unit-level-core of the multi-choice games. *Central European Journal of Operations Research*, 20, 743-753.
- 1.1.82 **Liao, Y. H.** (2012). Alternative axiomatizations of the shapley value under interval uncertainty. *International Journal of Uncertainty, Fuzziness & Knowledge-Based Systems*, 20(4).
- 1.1.83 Hwang, Y. A., & **Liao, Y. H.** (2011). The multi-core, balancedness and axiomatizations for multi-choice games. *International Journal of Game Theory*, 40, 677-689.
- 1.1.84 **Liao, Y. H.** (2011). Note: alternative axiomatizations of the multi-core. *Far East Journal of Applied Mathematics*. 59(1)
- 1.1.85 **Liao, Y. H.** (2011). Dynamic Approaches for Multichoice Solutions. *Advances in Operations Research*, 2011.
- 1.1.86 **Liao, Y. H.** (2011). Modified reduction and alternative axiomatizations of the core of fuzzy TU games. *Advances in Fuzzy Sets and Systems*.
- 1.1.87 **Liao, Y. H.** (2010). Alternative axiomatizations of the core under the mixed reduction. *Far East Journal of Mathematical Sciences* 47(1), 87-97.
- 1.1.88 **Liao, Y. H.** (2010). Value, complement reduction and interval TU games. *Economics Bulletin*, 30(4), 2671-2679.
- 1.1.89 Hwang, Y. A., & **Liao, Y. H.** (2010). The unit-level-core for multi-choice games: The replicated core for TU games. *Journal of Global Optimization*, 47, 161-171.
- 1.1.90 Hwang, Y. A., & **Liao, Y. H.** (2010). Consistency and dynamic approach of indexes. *Social Choice and Welfare*, 34, 679-694.
- 1.1.91 **Liao, Y. H.** (2010). Consistent extensions and subsolutions of the core of multi-choice NTU games. *4OR*, 8, 71-85.
- 1.1.92 **Liao, Y. H.** (2010). V-N Reduction and Axiomatization of the Core of Fuzzy Games. *Far East Journal of Mathematical Sciences* 38(1), 85-94.

- 1.1.93 Huang, Y. H., Huang, R. R., & **Liao, Y. H.** (2009). Dynamic approach and sport application for the P&Z Shapley value. *Journal of Chung Jen Junior College of Nursing, Health Science and Management*, (3), 13-20.
- 1.1.94 Hwang, Y. A., & **Liao, Y. H.** (2009). Equivalence theorem, consistency and axiomatizations of a multi-choice value. *Journal of Global Optimization*, 45, 597-613.
- 1.1.95 **Liao, Y. H.** (2009). Moulin reduction, V-N reduction and axiomatizations of the duplicate core. *Asia-Pacific Journal of Operational Research*, 26(05), 623-636.
- 1.1.96 **Liao, Y. H.** (2009). Dividend approach and level consistency for the Derks and Peters value. *Economics Bulletin*, 29(2), 1054-1062.
- 1.1.97 Hwang, Y. A., & **Liao, Y. H.** (2009). The consistent value of fuzzy games. *Fuzzy Sets and Systems*, 160(5), 644-656.
- 1.1.98 **Liao, Y. H.** (2008). The maximal equal allocation of nonseparable costs on multi-choice games. *Economics Bulletin*, 3(70), 1-8
- 1.1.99 Hwang, Y. A., & **Liao, Y. H.** (2008). Potentializability and consistency for multi-choice solutions. *Spanish economic review*, 10, 289-301.
- 1.1.100 Hwang, Y. A., & **Liao, Y. H.** (2008). Potential approach and characterizations of a Shapley value in multi-choice games. *Mathematical Social Sciences*, 56(3), 321-335.
- 1.1.101 **Liao, Y. H.** (2008). The maximal equal allocation of nonseparable costs on multi-choice games. *Economics Bulletin*, 3(70), 1-8.
- 1.1.102 Hwang, Y. A., & **Liao, Y. H.** (2008). Potential in multi-choice cooperative TU games. *Asia-Pacific Journal of Operational Research*, 25(05), 591-611.
- 1.1.103 **Liao, Y. H.** (2008). Consistency and the core for fuzzy non-transferable-utility games. *Economics Bulletin*, 3(45), 1-6.
- 1.1.104 **Liao, Y. H.** (2008). The solutions for multi-choice games: TU games approach. *Economics Bulletin*, 3.43,1-7.
- 1.1.105 Hsiao, C. R., & **Liao, Y. H.** (2008). The potential and consistency property for multi-choice Shapley value. *Taiwanese Journal of Mathematics*, 12(2), 545-559.
- 1.1.106 Hwang, Y. A., & **Liao, Y. H.** (2008). Max-consistency, complement-consistency and the core of fuzzy games. *Fuzzy Sets and Systems*, 159(2), 152-163.
- 1.1.107 **Liao, Y. H.** (2007). A dynamic approach to a consistent value under Plurality-efficiency. *Economics Bulletin*, 3(40), 1-8.
- 1.1.108 **Liao, Y. H.** (2007). A new axiomatization of the core on fuzzy NTU games. *Economics Bulletin*, 3. 37, 1-6.

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Academic Projects

2.1 專題研究計畫

- 2.1.1 112 年度：基於運動性能評估不同止痛藥對斷鰭斑馬魚的療效及機制探討-共同主持人
- 2.1.2 111 年度：邊際貢獻：模糊行為與多目標情境下不一樣的延伸形式及相關的解-計畫主持人
- 2.1.3 111 年度：以碎形維度和熵來解析斑馬魚處於單重及雙重逆境之行為模式-共同主持人
- 2.1.4 110 年度：在不確定性下的權力指標及其公設化結果-計畫主持人
- 2.1.5 109 年度：外部加權和內部修正之下的解-計畫主持人
- 2.1.6 108 年度：利益可交換賽局上紅利函數、公設化與動態過程之間關係-計畫主持人
- 2.1.7 107 年度：模糊賽局上的權力指標-計畫主持人
- 2.1.8 106 年度：區間利益不可交換賽局上解的公設化與動態過程-計畫主持人
- 2.1.9 105 年度：利益可交換賽局上的加權解及其相關結果-計畫主持人
- 2.1.10 104 年度：賽局理論上解的另類觀點表示式以及相關的公設化與動態過程-計畫主持人
- 2.1.11 103 年度：利益不可轉換賽局上的解及相關的公設化-計畫主持人
- 2.1.12 101 年度：合作賽局中退化局、超量函數與解的動態過程之間的關係-計畫主持人
- 2.1.13 100 年度：利益可交換區間賽局上的解及公設化-計畫主持人
- 2.1.14 99 年度：合作對局上解的一致性及其一致性的拓展-計畫主持人
- 2.1.15 98 年度：多重選擇對局上的解、退化局及公設化-計畫主持人

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Relevant Experience

2023 — Present : Distinguished Professor, Department of Applied Mathematics, National Pingtung University.

2015—Present : Professor, Department of Applied Mathematics, National Pingtung University.

2012—2015: Associate Professor, Department of Applied Mathematics, National Pingtung University.

2009—2012: Assistant Professor, Department of Applied Mathematics, National Pingtung University.