HAL open science

Applying Interval Clustering to Quantile Estimates: Empirical Distributions of Fertilizer Cost Estimates for European Countries

Dominique Desbois

▶ **To cite this version:**

Dominique Desbois. Applying Interval Clustering to Quantile Estimates: Empirical Distributions of Fertilizer Cost Estimates for European Countries. SMTDA2020 & Demographics2020, ASMDA International, Jun 2020, Barcelona, Spain. pp.40. hal-02806732v1

HAL Id: hal-02806732

https://hal.inrae.fr/hal-02806732v1

Submitted on 6 Jun 2020 (v1), last revised 12 Oct 2020 (v2)

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Distributed under a Creative Commons Attribution - ShareAlike 4.0 International License

Applying Interval Clustering to Quantile Estimates: Empirical Distributions of Fertilizer Cost Estimates for European Countries

Dominique Desbois

UMR Economie publique, INRAE-AgroParisTech, Université Paris-Saclay

Abstract:

The decision to adopt one or another of the sustainable land management alternatives should not be based solely on their respective benefits in terms of climate change mitigation but also based on the performances of the productive systems used by farm holdings, assessing their environmental impacts through the cost of specific resources used. This communication uses the symbolic clustering tools in order to analyse the conditional quantile estimates of the fertilizer costs of specific productions in agriculture, as a replacement proxy for internal soil erosion costs. After recalling the conceptual framework of the estimation of agricultural production costs, we present the empirical data model, the quantile regression approach and the symbolic clustering tools used to obtain typologies of European countries on the basis of the conditional quantile distributions of fertilizer cost empirical estimates. The comparative analysis of econometric results for main products between European countries illustrates the relevance of the typologies obtained for international comparisons based on their input specific productivity.

References:

Afonso F., Diday E. and Toque C. (2018) *Data science par analyse des données symboliques*, Technip, Paris, 444 p.

Chavent M., Lechevalier Y. and Briant O. (2007) DIVCLUS-T: A monothetic divisive hierarchical clustering method. *Computational Statistics & Data Analysis*, 52 (2), pp. 687-701.

De Carvalho F.A.T., Lechevallier Y. and Verde R. (2008) Clustering methods, in *Symbolic Data Analysis and the SODAS Software*, Wiley, New-York, pp. 181-204.

Desbois D. (2015) *Estimation des coûts de production agricoles : approches économétriques*. PhD dissertation directed by J.C. Bureau and Y. Surry, ABIES-AgroParisTech, Paris, 2015.

Desbois D., Butault J.-P. and Surry Y. (2013) Estimation des coûts de production en phytosanitaires pour les grandes cultures. Une approche par la régression quantile, *Economie Rurale*, 333, pp. 27 49.

Desbois, D., Butault J.-P. and Surry Y. (2017). Distribution des coûts spécifiques de production dans l'agriculture de l'Union européenne : une approche reposant sur la méthode de régression quantile, *Économie rurale*, 361, pp. 3-22.

Koenker R. and Bassett G. (1978) Regression quantiles. *Econometrica*, 46, pp. 33-50.

Ichino M. and Yaguchi H. (1994) Generalized Minkowski Metrics for Mixed Feature-Type Symbolic Data. IEEE *Transactions on Systems, Man and Cybernetics*, 24 (4), pp. 698-708.

Irpino A., Verde R. and De Carvalho F.A.T (2014) Dynamic Clustering of histogram data based on adaptative squared Wasserstein distance. *Expert Systems with Applications*, 41 (7), pp. 3351-3366.