



# SEMINAIRE SMART-LERECO

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## ***“Convex and Nonconvex Cost Estimates Differ: A Non-Parametric Approach With an Illustration on Scale Economies and Returns to Scale”***

### **Abstract:**

This contribution focuses on testing the empirical impact of the convexity assumption in estimating costs using non-parametric specifications of technology and cost functions. Empirical results based on two publicly available data sets reveal the effect of the convexity axiom on cost function estimates: cost estimates based on convex technologies turn out to be on average between 20.76% and 38.08% lower than those computed on nonconvex technologies. These differences are statistically significant when comparing kernel densities and can be illustrated using sections of the cost function estimates along some output dimension. Finally, also the characterization of returns to scale and economies of scale using production and cost functions for individual units yields conflicting results for between 18.52% and 30.73% of individual observations. These results should make us reconsider convexity in empirical production analysis.