ELIA LAPENTA

PERSONAL DATA

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Toulouse School of Economics
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EDUCATION

PhD in Economics, Toulouse School of Economics (TSE) *(expected) 2020*
Main advisor: Pascal Lavergne
Visiting student, University Carlos III Madrid *March-June 2019*

Master of Sc. Econometrics and Mathematical Economics (TSE), *with honors* *2014*

Master of A. Economics (University of Rome, La Sapienza), *with honors* *2012*

Bachelor of A. Economics (University of Rome, La Sapienza) *2010*

RESEARCH INTERESTS

Primary: Semiparametric and nonparametric estimation and testing; bootstrap methods; boosting methods for bias reduction;

Secondary: Empirical games with incomplete information; high-dimensional econometrics;

JOB MARKET PAPER

A Bootstrap Specification Test for Semiparametric Models with Generated Covariates

In this paper, I provide a specification test for semiparametric models with nonparametrically generated variables. These are variables which are not observed but are nonparametrically identified. Examples of these frameworks are common in empirical studies, and include models with endogenous regressors where the endogeneity is handled by control functions, sample-selection models where an outcome variable is observed only on the selected sample, or empirical games with incomplete information. The statistic I propose is a weighted sum of the estimated residuals, and has a simple closed form expression. By using tools from Empirical Process Theory, I show that its asymptotic null distribution is a transformation of a Gaussian process. To compute the critical values, I develop a two-step Wild Bootstrap. The test involves bias corrections for the nonparametric estimators, so it can be implemented without undersmoothing. A Monte-Carlo simulation study shows the good small-sample performance of the test.

WORKING PAPERS

Testing for Bayesian nash Behavior in Binary Games with Incomplete Information and Correlated Types of Agents *joint with Pascal Lavergne*

In this paper, we provide a test to check if the distribution of the observed data can be rationalized by a unique Bayesian-Nash equilibrium of a binary game with incomplete information, where agents' types are allowed to be mutually correlated. Testing such a kind of assumption is useful for two reasons. First, the uniqueness of the Bayesian-Nash equilibrium is key to identify the fundamentals of the game. Second, testing the Bayesian-Nash behavior is interesting *per se*, as it is an economic assumption often postulated in game theoretical models. The

test we propose relies on rationalization results in Liu et al. (2017). In order to construct our test statistic, we implement an L_2-boosting procedure from the Machine Learning literature. This is quite effective to control the bias arising in our context. We derive the asymptotic behavior of the test statistic, and propose two bootstrap procedures to obtain the critical value. A Monte Carlo experiment shows the good small-sample performance of the test.

A Nonparametric Encompassing Test Based on L_2 Boosting *joint with Pascal Lavergne*

According to the Encompassing principle, a model $\mathcal{M}_1$ encompasses a model $\mathcal{M}_2$ if the former is able to explain the results of the latter. The encompassing tests so far provided either rely on parametric functional forms or, when relying on nonparametric specifications, they condition the analysis on fixed values of the explanatory variables. Accordingly, the results obtained can be considered as conditional on these specific features. In this paper, we provide a nonparametric encompassing test. Our procedure does not rely on either functional forms nor on specific values of the explanatory variables. We propose a statistic that is computed according to an L_2 boosting algorithm. This procedure allows to obtain a good robustness with respect to the choice of the smoothing parameter. We propose to simulate the critical values by a Wild-Bootstrap procedure. In a Monte-Carlo simulation study, we show the attractive features of our test.

WORK IN PROGRESS

- Semiparametric Bootstrap for Binary-Choice Models with Endogeneity
- Testing Uniqueness of the Equilibrium in Discrete Games with Incomplete Information (*with Kevin Remmy*)
- Mixed Series-Kernel Estimation of Semiparametric Models with Endogeneity Exploiting Separability (*with Juan Carlos Escanciano*)

PRESENTATIONS

2019: IAAE Conference (June), Nicosia; ENTER Seminar (September), Mannheim; ESEM (August), Manchester; Bristol-TSE Econometrics Workshop (September), Toulouse; Econometrics Seminar (October), Nottingham; French Econometrics Conference (November), Marseille;

2018: International Society of Nonparametric Statistics (June), Salerno;

2017: TSE Econometric Workshop (March), Toulouse; ENTER Jamboree Conference (April), London;

2016: TSE Econometric Workshop (February), Toulouse; ENTER Jamboree Conference (April), Madrid; TSE PhD Students Workshop (June), Toulouse;

LANGUAGES & COMPUTER SKILLS

Languages: Italian (native), English (fluent), French (fluent), Spanish (fluent)

Computer: R and Matlab

REFEREEING ACTIVITY

Journal of Econometrics, Journal of Business and Economic Statistics, ISNPS 2018 Papers and Proceedings

TEACHING

TA for Econometrics, Master 1 (in English)	2018-2019
TA for International Economics, Master 1 (in French)	2017-2018
TA for Econometrics, Master 1 (in English)	2016-2017
TA for Econometrics, Master 1 (in English)	2015-2016

SCHOLARSHIPS

TSE Job Market Fellowship	2019-2020
ATER (Attaché Temporaire d'Enseignement et de Recherche)	2018-2019
Jean-Jacques Laffont Foundation Scholarship	2017-2018
PhD student Grant SAE	2014-2017

PLACEMENT INFORMATION

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REFERENCES

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