Eduardo Augusto de Souza Rodrigues

Home Address:
517, Prospect Street, Apt 3
New Haven, CT 06511

Office Address:
Department of Economics
Yale University
PO Box 208268
New Haven, CT 06520-8268
Fax: (203) 436-2630

Telephone: (203) 768-1375

E-mail: eduardo.souzarodrigues@yale.edu

Web page: https://sites.google.com/site/eduardorodriguesyale2012/

Citizenship: Brazilian (J1 Visa - No two years exclusion)

Gender: Male

Fields of Concentration:
Industrial Organization
Environmental Economics
Econometrics

Desired Teaching:
Industrial Organization
Environmental Economics
Econometrics

Comprehensive Examinations Completed:
May 2008 (Oral) Econometrics and Industrial Organization (both with *distinction*)
May 2007 (Written) Microeconomics and Macroeconomics (with *distinction*)

Dissertation Title:
Understanding the Deforestation in the Amazon Using Semiparametric Methods with Group Effects

Committee:
Professor Philip A. Haile (chair)
Professor Steven T. Berry
Professor Donald A. K. Andrews
Professor Xiaohong Chen

Expected Completion Date: May 2012

Degrees:

Ph.D., Economics, Yale University, Expected May 2012
M. Phil., Economics, Yale University, May 2010
M.A., Economics, Yale University, May 2008
M.Sc., Economics, University of São Paulo, Oct 2003
B.A., Economics, University of São Paulo, Dec 2000

Fellowships, Honors and Awards:

Charles V. Hickox Fellowship, Yale University, 2007-2010
Carlos Diaz Alejandro Fellowship, Yale University, 2006-2007
Yale University Dissertation Fellowship, Fall 2011
Yale University Summer Fellowship, 2007-2009
Yale University Fellowship, 2006-2010
CAPES Fellowship for Doctoral Programs, 2006-2010 (*declined*)
National Council of Research Fellowship (CNPq Brazil) 2001-2003
Ranked in the top one percent in the National Graduate Admission Exam (ANPEC), 2000
FAPESP Undergraduate Fellowship, 1999-2000

Teaching Experience:

Ph.D., Econometrics I, Yale University, Fall 2009
Ph.D., Microeconomics II, Yale University, Spring 2009
Undergraduate, Econometrics & Data Analysis I, Yale University, Spring 2011
Undergraduate, Microeconomic Theory, Yale University, Fall 2010
Undergraduate, Introductory Microeconomics, Yale University, Summer 2009 and 2010
Undergraduate, Introductory Microeconomics, Yale University, Fall 2008
Undergraduate, Microeconomic Theory I, University of São Paulo, Spring 2003
Undergraduate, Monetary Economics, University of São Paulo, Fall 2002
Assistant Professor, Price Theory, Insper - Institute of Education and Research, 2004-2005
Teaching Assistant, Price Theory, Insper - Institute of Education and Research, 2002-2003

Professional Experience:

Research Economist at the Brazilian Central Bank, Oct 2003-2006

Publications:

"Minimum Wage and Wage Inequality in Brazil, 1981-1999: A Semiparametric Approach," with Naércio A. Menezes-Filho, *Revista Brasileira de Economia*, vol. 63, pp. 277-298, Sep 2009 (in Portuguese)

Working Papers:

"Demand for Deforestation in the Amazon," **Job Market Paper**

"Nonparametric Estimation of a Generalized Regression Model with Group Effects," 2011

"Nonparametric Regression with Common Shocks," 2011

"What is the Impact of Transportation Costs on Deforestation in the Amazon?" (*in progress*)

Working Papers in Portuguese:

"Fatores de Risco e o Spread Bancário no Brasil," with Fernando G. Bignotto, *Brazilian Central Bank Working Paper Series*, 110, Jul 2006

"O Efeito da Consignação em Folha nas Taxas de Juros dos Empréstimos Pessoais," with Victorio Chu, Leonardo S. Alencar and Tony Takeda, *Brazilian Central Bank Working Paper Series*, 108, Jun 2006

"Efeitos dos Recolhimentos Compulsórios sobre a Distribuição das Taxas de Juros Bancárias no Brasil," with Tony Takeda, *Brazilian Central Bank Report: Relatório de Economia Bancária e Crédito*, Dec 2004

Refereeing:

Journal of Applied Econometrics, Brazilian Review of Econometrics, Estudos Econômicos, Brazilian Central Bank Working Paper Series

Language Skills: English (fluent), Portuguese (native)

References:

Professor Philip A. Haile
Department of Economics
Yale University
P.O. Box 208264
New Haven, CT 06520-8264
Phone: (203) 432-3568
Fax: (203) 432-6323
philip.haile@yale.edu

Professor Steven T. Berry
Department of Economics
Yale University
P.O. Box 208264
New Haven, CT 06520-8264
Phone: (203) 432-3556
Fax: (203) 432-6323
steven.berry@yale.edu

Professor Donald W. K. Andrews
Department of Economics
Yale University
P.O. Box 208281
New Haven, CT 06520-8281
Phone: (203) 432-3698
Fax: (203) 432-6167
donald.andrews@yale.edu

Professor Xiaohong Chen
Department of Economics
Yale University
P.O. Box 208281
New Haven, CT 06520-8281
Phone: (203) 432-5852
Fax: (203) 432-6167
xiaohong.chen@yale.edu

Dissertation Abstract

I. Demand for Deforestation in the Amazon (*Job Market Paper*)

In this paper, I estimate the demand for deforestation on private properties in the Brazilian Amazon. This demand is defined as the amount of cleared area as a function of the difference between the private value of the agricultural and forested land. The estimated demand function can be used to study multiple policy interventions with the ultimate goal of preventing deforestation. Here I consider three possible policies: (a) quantitative limits on deforestation allowed on private properties, (b) Pigouvian taxes on agricultural land, and (c) payments for ecological services (PES). Neither Pigouvian taxes nor PES programs have been implemented in the Brazilian Amazon yet. Evaluating PES programs is of particular interest because they have been seriously considered as a viable option to preserve the environment, especially under the reduced emissions from deforestation and degradation (REDD+) agreements. The Brazilian government, on the other hand, has adopted quantitative limits for land-use; however, these quantitative limits have not been fully enforced. To the best of my knowledge, no empirical study addressing these policies for the Brazilian Amazon in a unified and coherent framework currently exists.

To recover the demand curve, I use a revealed preference approach and exploit the fact that regional variation in transportation costs can be used to infer variation in the value of forested land relative to agricultural land. By rescaling these costs using yields, I am able to value the difference between forested versus agricultural land in dollars per hectare. The strategy I propose, therefore, is divided in two steps: first, I estimate the effects of transportation costs on deforestation (using both parametric and semi-parametric quantile IV estimators), and second, I rescale these costs to recover the demand function.

I combined data from the Brazilian Agricultural Census of 2006 with data on the network of modes of transportation in Brazil, freight values, and covariates, such as soil quality and agro climatic conditions. To allow for diminishing (or increasing) returns to agricultural land that may affect farmer's private valuations, I split the sample into different farm sizes and run the analysis separately for each sub-group.

The results suggest that the share of 80% of forest cover on private land specified in the Brazilian law would be so expensive for farmers if it were fully enforced that farmers would be willing to pay at least US$ 5.38 billion per year to avoid the enforcement of this rule. A perfectly enforced Pigouvian tax of US$ 100/ha/year on agricultural land would have maintained 70% coverage of the forested areas on private properties as opposed to 40% coverage observed in the data. In addition, it would have resulted in US$ 2.1 billion in revenues. Similarly, a PES program paying private landholders at the same rate to prevent deforestation would have achieved the same levels of protection, but would roughly cost US$ 5.33 billion per year. If the program were able to perfectly target the payments only to farmers who were going to deforest, the cost would be reduced to approximately US$ 2.1 billion per year. The results also indicate that large landholders are the most responsive to PES programs, which, together with the unequal

distribution of land in the Amazon, suggests that these programs are unlikely to reduce local poverty and deforestation simultaneously. Finally, a "back-of-the-envelope" calculation of the supply of carbon stock in the Amazon based on the estimated demand function indicates that a REDD+ program fixing the price of carbon at US$ 1/tC/year would have increased the carbon stock from 4 billion tons of carbon in the privately owned forests to approximately 7 billion tons.

II. Nonparametric Estimation of a Generalized Regression Model with Group Effects

This paper develops a nonparametric estimator for the generalized regression model proposed by Berry and Haile (2009) in which each individual is associated with a group and each group is subject to observable and unobservable shocks. In the previous section, the farmers are the individuals and the municipalities are the groups. The motivation for this model is to estimate the effects of group-level observables, such as transportation costs, on individual outcomes, such as farmers' land use decisions, when group-level observables correlate with group-level unobservables. Furthermore, the latter can be indexed by individual characteristics, such as farm size, which allows for more general group shocks than existing approaches. I propose a two-step estimator in which the first step runs a nonparametric regression of individual outcomes (landowners' decision) on individual characteristics (farm size) within each group. It is a nonparametric regression in the presence of common shocks. The second step fixes the individual characteristics (farm size) and runs a nonparametric quantile instrumental variable regression across groups of the predicted outcome obtained in the first step (i.e., the predicted share of deforestation) on group-level variables (transportation costs). It separates the effects of group-level observables from unobservables. I establish consistency and convergence rate of the estimator as well as the rates at which both the number of groups and the number of observations within each group have to increase to guarantee consistency.

III. Nonparametric Regression with Common Shocks

This paper considers a nonparametric regression model for cross-sectional data in the presence of common shocks. It investigates the properties of the Nadaraya-Watson kernel estimator in this context. It also determines how general the common shocks can be while still obtaining meaningful kernel estimators. Restrictions on the common shocks are necessary because kernel estimators typically manipulate conditional densities, but conditional densities do not necessarily exist in the present case. By an appeal to disintegration theory for conditional distributions, I provide sufficient conditions for the existence of conditional densities given common shocks that are very general in nature. The estimator converges in probability to the Kolmogorov conditional expectation given the sigma-field generated by the common shocks. I also establish the rate of convergence and the asymptotic distribution of the kernel estimator.