

**University of Toronto**  
Department of Economics  
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Toronto, Ontario,  
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**Curriculum Vita**  
**Fall 2011**

## **CARLOS J. SERRANO**

### **Personal Data**

#### *Address*

150 St. George Street  
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Canada

#### *Telephone Numbers*

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*Citizenship:* Spanish. Canada Permanent Resident.

### **Major Fields of Concentration**

Empirical Industrial Organization, Economics of Innovation and Technological Change, Entrepreneurship, Entrepreneurial Finance

### **Education**

<i>Degree</i>	<i>Field</i>	<i>Institution</i>	<i>Year</i>
Ph.D.	Economics	University of Minnesota	2006
M.A.	Economics	University of Minnesota	2002
M.Sc.	Economics	University College London	2000
B.S. (Licenciatura)	Economics	Universitat Autònoma de Barcelona	1999

### **Dissertation**

Title: "The Market for Intellectual Property: Evidence from the Transfer of Patents"

Dissertation Advisors: Professors Thomas Holmes and Samuel Kortum

### **Employment and Affiliations**

2005-Present Assistant Professor, Department of Economics, University of Toronto.

2006-Present Faculty Research Fellow, NBER

### **Honors and Awards**

2010-2011 Ranked Top 1 Teacher of the year, Courses of less than 35 students, Department of Economics, University of Toronto

2011-2013 SSHRC Standard Grant, Principal Investigator, Government of Canada

2010 SSHRC Conference Travel Grant, University of Toronto

2006-2007 SSHRC Conference Travel Grant, University of Toronto

2006 Faculty Research Fellow, NBER

2006 Connaught Matching Grant, University of Toronto

2005 Connaught Start-Up Award, University of Toronto

1999-2003 Graduate Fellowship, Bank of Spain

1998-1999 Erasmus-ENTER, Visiting University College, London

## **Publications**

“The Dynamics of the Transfer and Renewal of Patents”, *RAND Journal of Economics*, Vol. 41, November 2010, pp. 686-708.

## **Working Papers**

(Papers can be downloaded from <http://www.economics.utoronto.ca/serrano>)

“Business Partners, Financing, and the Commercialization of Inventions,” (with Thomas Astebro), June 2011, NBER Working Paper 17181, submitted

“Estimating the Gains from Trade in the Market for Innovation: Evidence from the Transfer of Patents,” July 2011, NBER Working Paper 17304, submitted.

“Trading and Enforcing Patent Rights,” (with Alberto Galasso and Mark Schankerman), August 2011, NBER Working Paper 17367, submitted.

“Patent Trading Flows of Small and Large Firms: Idea Complementarity and Economies of Scale in the Reallocation of Innovations,” (with Nicolas Figueroa), November 2011, NBER Working Paper TBA, submitted

“Transfer of Technology and the Business Cycle: Evidence from Patent Reassignments,” June 2010, Working Paper University of Toronto.

## **Work in Progress**

“Patent Property Rights as Collateralized Assets in the Financing of Start-up Firms,” (with Rosemarie Ziedonis)

“Estimating the Effect of Intellectual Property Protection on Cumulative Innovation: Evidence from a Pseudo-Random Allocation of Patent Property Rights,” (with Alberto Galasso and Mark Schankerman)

“What is the Impact of Capital Gains Taxation on Entrepreneurship, Cumulative Innovation, and the Lock-in Effect,” (with Alberto Galasso and Mark Schankerman)

## **Teaching Experience**

Department of Economics, University of Toronto

2005-present Managerial Economics: Competitive Strategy I (Undergraduate), (Industrial Organization)

2005-2010 Intermediate Microeconomics (Undergraduate)

2007-present Empirical Applications of Economic Theory (Graduate), (Empirical Industrial Organization I)

2010-present Empirical Applications of Economic Theory (Undergraduate)

## **Presentations to seminars and conferences**

### **2011 (includes scheduled)**

Fourth Annual Conference on Entrepreneurship and Innovation, Chicago (June 2011), Entrepreneurship, Finance, and Innovation Conference, Boston, (June 2011), European Association for Research in Industrial Economics, Stockholm (Sept. 2011), Roundtable for Engineering Entrepreneurship Research, Georgia Tech, (Nov. 2011), Ryerson University, Toronto (Nov. 2011), OECD-KNOWINNO Workshop on “Knowledge Networks and Markets: Measuring the use and impact of Knowledge Exchange Mechanisms.” USPTO Headquarters, (Nov. 2011), SUNY - Stony Brook (Nov. 2011), University of Minnesota (Nov. 2011), Spanish Economics Association Meetings, Malaga (December 2011)

## **2010**

University of Alberta (November 2010), Washington University in St. Louis - School of Business (December 2010), International Industrial Organization Conference, Vancouver (May 2010), Canadian Economics Association Meetings, Quebec City (May 2010), European Association for Research in Industrial Economics, Istanbul (September 2010), Spanish Economics Association Meetings, Madrid (December 2010)

## **2009**

Queens Entrepreneurship and Innovation Meetings, Queens University School of Business (June 2009) (Discussant), Econometric Society Meetings, Barcelona (August, 2009), European Association for Research in Industrial Economics (September 2009), HEC Paris Entrepreneurship Meetings, HEC School of Business, (Sept. 2009) (Discussant), Markets for Patents: Emerging Practices and Directions for Research, Ross School of Business and Law School, University of Michigan (Dec, 2009)

## **2008**

York University, Toronto, (April 2008), IESE – Barcelona (June 2008), Canadian Economics Association Meetings, Vancouver (June 2008), Canadian Economic Association Meetings, Vancouver (May 2008) (Discussant), Society of Economic Dynamics, Boston (July 2008), Roundtable for Engineering Entrepreneurship Research 2008, Georgia Tech (November 2008), Duke University (Dec, 2008), Universidad de Chile (Dec, 2008)

## **2007**

Models of Industry Dynamics in Empirical IO, University of Toronto (May, 2007) (Discussant), NBER Summer Institute (July, 2007), Wilfrid-Laurie University (October 2007), Spanish Economic Association Meetings, Granada (Dec 2007)

## **2006**

UCLA (March 2006), International Conference in Industrial Organization, Boston (April 2006), International Conference in Industrial Organization, Boston (April 2006) (Discussant), Harvard (September 2006), Numerically Intensive Economic Policy Analysis V, Kingston, (May 2006), North American Meetings of the Econometric Society, Minneapolis (June 2006), Society of Economic Dynamics Meetings, Vancouver (July 2006), UBC Summer Conference on Industrial Organization, Kelowna (July 2006), Spanish Economic Association Meetings, Oviedo (Dec. 2006),

## **2005**

Concordia University (January. 2005), University of Toronto (January 2005), Universite de Montreal (January 2005), University of Iowa (February 2005), Federal Reserve Bank of Minneapolis (February 2005), University of British Columbia – Sauder Business School (February 2005), University of Texas, Dallas – Management School (February 2005), Federal Reserve Board (February 2005), London School of Economics (February 2005), Universitat Autònoma de Barcelona (February 2005), Midwest Macroeconomics Meeting Iowa (May 2005), University of Toronto (Sept. 2005)

## **Professional Activities**

Referee for *Applied Economics*, *B.E. Journals in Economic Analysis & Policy*, *Canadian Journal of Economics*, *Economic Journal*, *Economic Inquiry*, *International Economic Review*, *International Journal of Industrial Organization*, *Journal of Economics & Management Strategy*, *Journal of Economic Behavior and Organization*, *Journal of Economics and Management Strategy*, *Journal of Industrial Economics*, *Journal of Political Economy*, *Management Science*, *Rand Journal of Economics*, *Research Policy*, *Review of Economics and Statistics*, *Review of Economic Dynamics*, *Review of Economic Studies* and *Research Policy*.

## University Service

Coordinator, Conference on “*Empirical Models of Industry Dynamics in Empirical IO*”, Toronto, Joint with Victor Aguirregabiria and Ken Corts.

Member, Recruitment Committee (2007-2008)

Member, Graduate Program Ad-hoc Committee (2007-2010)

Member, Graduate curriculum Committee (2008-2010)

## Graduate Supervision

Hugh Macartney, “*Teacher Effort: The Effects of Monitoring, Pressure and Other Incentives*,” Member of Thesis Committee, PhD in Economics, September 2011. First placement: Duke University

Arvind Magesan, “*Estimation of Dynamic Games*,” Member of Thesis Committee, PhD in Economics, September 2010. First placement: University of Calgary.

Muji Rahaman, “*Acquisitions and failure of firms*,” Member of Thesis Committee, PhD in Finance and Economics, September 2009. First placement: Sobey School of Business at Saint Mary's University.

Mingxiao Ye, “*Overprotected to Grow?—pharmaceutical patents and the incentive to innovate*,” Member of Thesis Committee, PhD in Economics, September 2011. First placement: The Bermuda Health Council.

## References

Professor Ajay K. Agrawal	(416) 946-0203 ajay.agrawal@rotman.utoronto.ca	Dept. of Strategic Management Rotman School of Management University of Toronto 105 St. George St. Toronto, ON M5S 3E6, Canada
Professor Victor Aguirregabiria	(416) 978-4358 victor.aguirregabiria@utoronto.ca	Department of Economics University of Toronto 150 St. George Street Toronto, ON M5S 3G7, Canada
Professor Thomas Holmes	(612) 625-4512 holmes@umn.edu	Department of Economics University of Minnesota 4-101 Hanson Hall 1925 Fourth Street South Minneapolis, MN 55455, USA
Professor Matthew Mitchell	(416) 946-3149 matthew.mitchell@rotman.utoronto.ca	Dept. of Business Economics Rotman School of Management University of Toronto 105 St. George St. Toronto, ON M5S 3E6, Canada

## Recent Selected Working Papers

*“Trading and Enforcing Patent Rights”* (with Alberto Galasso and Mark Schankerman),

We study how the market for innovation affects enforcement of patent rights. Conventional wisdom associates the gains from trade with comparative advantage in manufacturing or marketing. We show that these gains imply that patent transactions should increase litigation risk. We identify a new source of gains from trade, comparative advantage in patent enforcement, and show that transactions driven by this motive should reduce litigation. Using data on trade and litigation of individually-owned patents in the U.S., we exploit variation in capital gains tax rates as an instrument to identify the causal effect of trade on litigation. We find that taxes strongly affect patent transactions, and that reallocation of patent rights reduces litigation risk, on average. The impact of trade on litigation is heterogeneous, however. Patents with larger potential gains from trade are more likely to change ownership, suggesting that the market for innovation is efficient. We also show that the impact of trade on litigation depends on characteristics of the transactions.

*“Business Partners, Financing, and the Commercialization of Inventions”* (with Thomas Astebro, HEC Paris),

This paper studies the effect of business partners on the commercialization of invention-based ventures, and it assesses the relative importance of partners' human and social capital on commercialization outcomes. Projects run by partnerships were five times more likely to reach commercialization, and they had mean revenues approximately ten times greater than projects run by solo-entrepreneurs. These gross differences may be due both to business partners' value added and to selection. After controlling for selection effects and observed/unobserved heterogeneity, our smallest estimate of partner value added approximately doubles the probability of commercialization and increases expected revenues by 29% at the sample mean.

*“Estimating the Gains from Trade in the Market for Innovation: Evidence from the Transfer of Patents”*

The "market for innovation" -- the sale and licensing of patents -- is an often discussed source of incentives to invest in R&D. This article presents and estimates a model of the transfer and renewal of patents that, under some assumptions, allows us to quantify the gains resulting from the transfer of patents in the market for innovation. The gains from trade measure the benefits of reallocating the ownership of a patent from the original inventor to a new owner for whom the patent has a higher value. In addition, we study the effect that lowering the costs of technology transfer has on the proportion of patents traded and the gains from trade.

*“Patent Trading Flows of Small and Large Firms: Idea Complementarity and Economies of Scale in the Reallocation of Innovations”* (with Nicolas Figueroa, Catholic University of Chile)

This paper studies the patent trading flows of small and large firms. We show that small firms disproportionately acquire more patents than the larger firms, especially patent initially issued to small firms. We also provide evidence on the role of "idea complementarity" in the market for innovation, and propose another determinant of patent transactions, economics of scale in the reallocation of innovations. Small firms can disproportionately sell and acquire more patents than the larger firms if bigger size provides superior ability to reallocate innovations within the firm to the best productive use. This ability is especially important for new innovations, being hard to control ex-ante their exact nature, quality, and scope of utilization.