# Innovation surveys in Latin America: a primer

Castellacci, Fulvio and Natera, Jose Miguel

2012

# Innovation Surveys in Latin America: A Primer

**Fulvio Castellacci*** **and Jose Miguel Natera†**

* Norwegian Institute of International Affairs (NUPI), Oslo, Norway. E-mail: fc@nupi.no

† GRINEI – ICEI, University Complutense, Madrid, Spain. E-mail: jm.natera@pdi.ucm.es

This version: January 14th, 2012

Innovation Surveys in Latin American started more than ten years ago. Initially based on the Oslo Manual, adapted to better suit the characteristics of innovation and technology diffusion in Latin American countries, the Bogota Manual (RICyT, 2001) did later formulate a set of methodological guidelines that were followed by many of the countries in the region (Sutz, 2000). As of today, 15 Latin American countries have carried out a total of 46 innovation surveys, and Latin America does now stand out as the region with the most active innovation survey data production within the developing world (Marins, 2011). This short article provides a primer to innovation surveys in Latin America, listing the available data, some key institutional and scholarly references available on the web, and briefly pointing to some methodological issues and challenges for future improvements.

Table 1 presents a summary of the innovation surveys carried out in ten Latin American countries for which data and/or key institutional references are available on the Internet.[1] Innovation survey data is mostly produced and provided by the national institutes that deal with statistics information management in each respective country. However, the information is not in all cases easily available and ready to use, and it is presented in a high range of different formats and, in most cases, in Spanish or Portuguese language only. In order to ensure a wider dissemination and use of this type

[1] Cuba, Dominican Republic, Ecuador, Paraguay and Trinidad & Tobago have also carried out innovation surveys, but we were not able to find any publicly available information on the Internet.

of data by the international research and policy community in the future, it would be of great benefit to achieve a higher coordination among the various national institutes and a better harmonization of the presentation format of the various survey data and results. The *Network on Science and Technology Indicators – Ibero-American and Inter-American (RICyT)* is a key institutional reference in the field.[2] During the last sixteen years, it has made a great contribution to overcome this issue by gathering most of the available data and increasing the methodological standardization across countries in the region.

**< Insert Table 1 here >**

A higher degree of harmonization would in particular be beneficial to the Latin American and international research community, since it would make it possible to carry out cross-country and cross-industry empirical analyses on a much more systematic basis than it has been the case so far. Raffo et al. (2008) present one of the few comparative exercises that have been produced using Latin American innovation survey data. Anlló, Suárez and De Angelis (2009), Crespi and Peirano (2007) and Sutz (2000) carry out a thorough comparison and methodological discussion of Latin American innovation surveys, pointing out the data and results that can be safely used for international comparison and those that are less reliable and should be threatened with care. Table 2 presents a summary of the key issues highlighted in these papers. A look at the various survey questionnaires shows that some degree of comparability across countries is indeed present. In order to further increase this, the European experience with the Community Innovation Surveys (CIS) is relevant, particularly with reference to the standardization and micro-data data collection efforts made by Eurostat, OECD and some EU-funded projects in the last few years.

A second issue that hampers a wider use, dissemination and impact of Latin American innovation survey data across the international research community is its still limited application to economic and econometric analyses of micro-level innovation patterns and impacts within each national economy. The challenge is twofold. On the one hand, it is important to ensure that researchers in the various countries in the region can more easily get access to firm-level innovation data and link them to other micro-level

[2] Visit the webpage: www.ricyt.org and www.innovacion.ricyt.org for further details.

sources of information on, e.g., firms' productivity, profitability, employment and export activities. On the other hand, it is crucial that this type of linked innovation-economic data will increasingly be available not only for one specific point in time, but rather for different years (Chudnovsky et al., 2006; De Negri et al., 2007).

These two aspects – matching innovation and economic indicators, and working with panel data rather than cross-sections – represent important challenges for ensuring a greater reliability and diffusion of Latin American empirical studies of innovation across the international research community (Anlló, Suárez and De Angelis, 2009; Crespi and Peirano, 2007; Sutz, 2000). The European experience with CIS-based econometric analyses indicates that only a thorough dealing with these two issues gives firm-level empirical analyses the necessary credibility and thoroughness to get accepted and have wide impact on the global community of innovation scholars (Mairesse and Mohnen, 2010).

**< Insert Table 2 here >**

**Acknowledgments**

We are grateful for the useful suggestions received from Diana Suárez, Flavio Peixoto, Jocelyn Olivary, Judith Sutz and Mauricio Uriona. The usual disclaimers apply.

**References**

Anlló, G., Suárez, D. and De Angelis J., 2009. "Indicadores de Innovación en América Latina: diez años del Manual de Bogotá". *RICyT*: http://innovacion.ricyt.org/files/3_3Innovacion.pdf

Chudnovsky, D., López, A. and Pupato, G., 2006. Innovation and productivity in developing countries: A study of Argentine manufacturing firms' behavior (1992-2001). *Research Policy,* 35(2), pp. 266-288.

Crespi, G. and Pirano,F., 2007. "Measuring Innovation in Latin America: what we did, where we are and what we want to do" *presentation at the Conference on Micro Evidence on Innovation in Developing Countries, UNU-MERIT*. Maastricht.

De Negri, J.A., Esteves, L. and Freitas, F., 2007. Knowledge production and firm growth in Brazil, *Micro Evidence on Innovation in Developing Economies Conference, Maastricht 2007*.

Mairesse, J. and Mohnen, P., 2010. "Using innovations surveys for econometric analysis". *UNU-MERIT Working Paper Series*. Available at: http://www.merit.unu.edu/publications/wppdf/2010/wp2010-023.pdf

Marins, L., 2011. "Innovation Surveys in developing countries: an overview" *presentation at the 9th Globelics Conference 2011*. Buenos Aires.

Raffo, J., L'huillery, S. and Miotti, L., 2008. "Northern and Southern Innovativity: a Comparison across European and Latin American Countries", *European Journal of Development Research*, 20(2), 219-239.

RICyT, 2001. "Manual de Bogotá: Normalización de Indicadores de Innovación Tecnológica en América Latina y el Caribe". Bogotá. http://www.ricyt.org/interior/difusion/pubs/bogota/bogota.pdf

Sutz, J. 2000. "Las encuestas de innovación latinoamericanas: un análisis comparativo de las formas de indagación". *Organización de Estados Americanos (OEA).* Montevideo.

*Table 1. Innovation Surveys in Latin America: Institutions and Data Sources*

| Country | Institution | Reference year | Data Sources |
|---|---|---|---|
| Argentina | INDEC (Instituto Nacional de Estadísticas y Censos) / National Institute of Statistics and Census) / http://www.indec.gov.ar/ | 2005 | http://www.indec.gov.ar/nuevaweb/cuadros/16/publicacion-enit-2005.pdf |
| | | 2002-2004 | http://www.indec.gov.ar/nuevaweb/cuadros/16/enit_02-04.pdf |
| | | 1998-2001 | http://www.indec.gov.ar/nuevaweb/cuadros/16/enit_98-01.pdf |
| Brazil | IBGE (Instituto Brasileiro de Geografia e Estatística / Brazilian Institute of Geography and Statistics) / http://www.ibge.gov.br/home/ | 2008 | http://www.ibge.gov.br/home/estatistica/economia/industria/pintec/2008/default.shtm |
| | | 2005 | http://www.ibge.gov.br/home/estatistica/economia/industria/pintec/2005/default.shtm |
| | | 2003 | http://www.ibge.gov.br/home/estatistica/economia/industria/pintec/2003/default.shtm |
| | | 2000 | http://www.ibge.gov.br/home/estatistica/economia/industria/pintec/default.shtm |
| Chile | INE (Instituto Nacional de Estadística / National Institute of Statistics) / http://www.ine.cl/ | 1995 | http://www.conicyt.cl/documentos/informacion/biblioteca/archivospdfsept2009/analisisencuesta1997.pdf |
| | | 2003 | http://www.conicyt.cl/documentos/informacion/biblioteca/archivospdfsept2009/3encuesta2003.pdf |
| | | 2005 | http://www.conicyt.cl/documentos/informacion/biblioteca/archivospdfsept2009/4encuesta1parte.pdf |
| | | | http://www.conicyt.cl/documentos/informacion/biblioteca/archivospdfsept2009/4encuesta2parte.pdf |
| | | 2007 | http://www.conicyt.cl/documentos/informacion/biblioteca/archivospdfsept2009/5encuesta2007.pdf |
| | | 6 waves, from 1993 to 2009 | http://www.ine.cl/canales/chile_estadistico/encuesta_innovacion/encuesta_innovacion.php |
| | | | http://www.ine.cl/canales/base_datos/otras_bases_datos.php |
| Colombia | DANE (Departamento Administrativo Nacional de Estadística / National Administrative Department of Statistics) | 1993-1996 | OCyT (2000). La innovación tecnológica en Colombia. Características por sector industrial y región geográfica . Autores: Durán , X .; Ibáñez, R . ; Salazar, M . ; Varg as, V; Observatorio Colombiano de Ciencia y Tecnología / Colciencias / Departamento Nacional de Planeación. ISBN: 958-33-169 9-7, Colombia, 2000. |
| | | 2003-2004 | http://www.dane.gov.co/files/investigaciones/industria/innovacion_tecnol_ind_manufacturera.pdf |

| | | | |
|---|---|---|---|
| | / http://www.dane.gov.co | 3 waves, from 2004 to 2008 | http://www.dane.gov.co/index.php?option=com_content&view=article&id=104&Itemid=61 |
| Costa Rica | MICIT (Ministerio de Ciencia y Tecnología / Ministry of Science and Technology) / http://www.micit.go.cr/ | 3 waves, from 2006 to 2009 | http://www.micit.go.cr/index.php/docman/cat_view/28-indicadores/29-indicadores-nacionales.html |
| Mexico | INEGI (Instituto Nacional de Estadística y Geografía / National Institute of Statistics and Geography) / http://www.inegi.org.mx | 1994-1996 | CINCyT(1998).Informe de la Encuesta Nacional sobre Innovación en el Sector Manufacturero1997. Consejo Nacional de Ciencia y Tecnología, Dirección Adjunta de Política Científica y Tecnológica. México 1998. |
| | | 1999-2000 | http://www.siicyt.gob.mx/siicyt/docs/Estadisticas3/ENCUESTAS/ENCUESTA%20INNOVACION/parte1.Pdf |
| | | | http://www.siicyt.gob.mx/siicyt/docs/Estadisticas3/ENCUESTAS/ENCUESTA%20INNOVACION/parte2.Pdf |
| | | 2004 | http://www.inegi.org.mx/Sistemas/temasV2/Default.aspx?s=est&c=19007 |
| | | 2006 | http://www.siicyt.gob.mx/siicyt/docs/Estadisticas3/Informe2007/Innovacion.pdf |
| | | 2008 | http://innovacion.ricyt.org/files/indicadores_cti_2008.rar |
| Panama | SENACYT (Secretaría Nacional de Ciencia y Tecnología / National Secretary of Science and Technology) / http://www.senacyt.gob.pa | 2009 | http://www.senacyt.gob.pa/transparencia/descargas/103/2009_eidi.pdf |
| Peru | CONCYTEC (Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica / National Council of Science, Technology and Technological Innovation) / | 1999 | http://innovacion.ricyt.org/files/indica_99_10.pdf |
| | | 2004 | http://portal.concytec.gob.pe/images/upload2010/indicadores_encyt2004/2_informe_1_empresas_encyt2004.pdf |
| | | | http://portal.concytec.gob.pe/images/upload2010/indicadores_encyt2004/4_anexo_cuadros_estadisticos_empresas.pdf |

| | | | |
|---|---|---|---|
| | http://portal.concytec.gob.pe | | |
| Uruguay | ANII (Agencia Nacional de Investigación e Innovación / National Agency of Research and Innovation) / http://www.anii.org.uy | 1998-2000 | http://www.anii.org.uy/imagenes/el_proceso_innovacion_industria_uruguaya3.pdf |
| | | 2001-2003 | http://www.anii.org.uy/imagenes/innovacion_industria_uruguaya_2001-2003_version_completa.pdf |
| | | 2004 | http://www.anii.org.uy/web/static/pdf/Encuesta_Innov_Indust.pdf |
| | | | http://www.anii.org.uy/web/static/pdf/Encuesta_Innov_Indust.pdf |
| Venezuela | ONCTI (Observatorio Nacional de Ciencia, Tecnología e Innovación / National Observatory of Science, Technology and Innovation) / http://oncti.gob.ve | 1996 | Testa, Pablo "Una aproximación estadística a las capacidades tecnológicas e innovadoras en la industria manufacturera Venezolana". En Pirela, Arnoldo (editor) Venezuela: el desafío de innovar. Caracas: Fundación Polar CENDES, 2003. |
| | | 2004 | Testa, Pablo, "Encuesta de capacidades tecnológicas e innovadoras en la industria venezolana: construcción de una taxonomía estadística", ponencia presentada en el XII seminario latinoamericano de gestión tecnológica – ALTEC 2007, Buenos Aires, 26, 27 y 28 de septiembre de 2007. |

*Table 2. Characteristics and Cross-country Comparability of Some of the Main Latin American Innovation Surveys*

| | Innovation Surveys' Characteristics | | | | Main Groups of Indicators and their Cross-Country Comparability | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Country** | **Period** | **Reference Manual** | **Firms size Cut-Off (Empl)** | **Sectors** | **Innovation Activities** | **Human Resources in R&D** | **Innovation Outputs** | **Innovation Cooperation** | **Obstacles** | **Information Sources** | **Funding Sources** |
| Argentina | 1998-2005 | Bogota | +10 | Manufacturing | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Brazil | 2000-2008 | Oslo | +10 | Manufacturing | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Chile | 1993 - 2009 | Oslo | +10 | Manufacturing | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Colombia | 1993 - 2008 | Bogota | +20 | Manufacturing & Services | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Mexico | 1994 - 2008 | Oslo | +50 | Manufacturing | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Uruguay | 1998 - 2004 | Bogota | +5 | Manufacturing & Services | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Venezuela | 1996 - 2004 | Oslo / Bogota | +5 | Manufacturing | Yes | Yes | Yes | Yes | No | Yes | Yes |

Source: Marins (2011); Anlló, Suárez and De Angelis (2009); Crespi and Peirano (2007); Sutz (1999).