

## Innovation Indexes

### Overview

The Institute for Triple Helix Innovation is a Congressionally mandated nonprofit corporation with a mission to *enable the nation to realize its collaborative potential for economic growth, efficiency, and innovation*. In this context, “triple helix” refers to three economic sectors: Academia; industry; and government. In both research and development, the Institute seeks to achieve the following objectives: Development of organic collaboration processes and tools; applied empiricism for commercialization; networked access to cross-cutting expertise; faster and more transparent technology transfer; collaborations for economic and social benefit; evidence-based project development; new regional networks with cultural alliances; exportable methodologies for innovation; and the translation of empirical knowledge into marketable products.

Measurement is an important aspect of the Institute’s research; hence the creation of the Innovation Indexes. This overview provides salient background information; a description of the indexes; a discussion of their purpose and use; a statement on the indexes’ estimation and revision cycle; a note about future developments for the innovation indexes; and a notice concerning innovation index consulting services that are available from the Institute.

### *Background*

In 2006, the U.S. Congress appropriated funds for developing the Institute for Triple Helix Innovation. Under this mandate, the Institute embarked upon a rich and enduring research program and operations that include Research, Collaboration, and Innovation products and services (<http://www.triplehelixinstitute.org/projectInfo/index.html> ).

A key component of the Institute’s research knowledge management service is the performance of “Megatrend Analyses.”<sup>1</sup> In the winter of 2006, the Institute undertook the collection of an initial Megatrend sample consisting of 10-year retrospective data for six locales in an Institute designated Pacific Region that includes the states of California, Hawaii, and Washington, and the nations of China, Japan, and Singapore. The purpose of this Megatrend project is to collect technological, economic, demographic, and ecological (sustainability) data that

---

<sup>1</sup> For details on the Megatrend Analysis, please see the following Web page:  
<http://www.triplehelixinstitute.org/projectInfo/dataAnalysis.html>.

provide information on innovation “inputs” and “outputs.” The Institute will further analyze the “impacts” of innovation through a related research effort of data collection utilizing the “Innovative Research Model Questionnaires” (IRMQs). The list of Megatrend project variables was derived primarily from research by the European Commission to prepare annual measures of innovation for members of the European Community.<sup>2</sup>

In addition to exploring time series models and trends that fit the Megatrend data, the Institute prepares “Innovation Indexes.” Separate indexes are prepared for each of the six locales.

### *Purpose and Use*

The purpose of Innovation Indexes is to provide analytical measures that reflect changing magnitudes and mixes of technological, economic, demographic, and ecological factors that are related to innovation in the six locales. The indexes may be used to perform comparative analyses of these innovation factors across the six locales. In addition, the indexes may be incorporated into broader analyses as indicators of innovation potential for the six locales.

After innovation indexes of sufficient length have been prepared, the indexes will be used to develop models aimed at forecasting innovation potential. Similarly, the Institute plans to extend its research in this area in an effort to develop leading, coincident, and lagging indicators of innovation. Specifically, the Institute plans to update MegaTrend time series through 2007 during the Spring of 2008. During 2009, the Institute will research developing forecasts of its Innovation Indexes. For 2010, the Institute will explore prospects for developing leading, coincident, and lagging indicators of innovation.

### *Description*

The Innovation Indexes are composite indexes that reflect the standardized weighted sums/averages of four categories of innovation-related series:

1. **Technology** series constituting direct inputs and outputs of innovation
2. **Economic** series reflecting the contributions of innovation to economic production and growth
3. **Demographic** series accounting for direct and indirect factors that facilitate innovation
4. **Ecological** series that help sustain innovation processes

---

<sup>2</sup> See Sajeve et al. (2005).

There are “A” and “B” versions of the Innovation Indexes: The former reflect full contributions (sums) by the four aforementioned categories; the latter reflect the mean contributions of the categories.

The indexes reflect comparable categories and series across all six locales. The indexes, therefore, permit comparisons across the locales. Comparisons must be interpreted with regard to the inherent differences existing in the underlying series due to differences in definitions and measurement across locales.

The base year for the indexes is 1995; the initial year of the Megatrend dataset. With the 2007 release of the indexes, the Institute presents indexes for the period 1995 through 2004. The reference year for the indexes is 2000.

Please visit the following Web page for a complete “Methodology Statement” that describes how the indexes are prepared:

<http://www.triplehelixinstitute.org/projectInfo/megatrend.html>

### *Estimation and Revision Cycle*

In the spring of 2008, the Institute will expand the current sample by collecting Megatrend data through year  $t-1$ . Innovation Indexes through year  $t-1$  will be made available in July, 2008. These indexes will reflect the Institutes’ estimates for certain series for which data are not yet available for the most recent year(s). Generally, when new indexes are released in July, revisions to underlying source data series will be incorporated for years back to year  $t-4$ .

The Institute plans to continuously review its data collection and estimation methods, and may incorporate revisions to the indexes as they are released. Sufficient notice and explanation of these statistical and methodological revisions will be provided as they occur.

### *Future developments*

Planning is underway for the Institute to expand this research in the areas of: The temporal scope of the Innovation Indexes; the dimensionality of the data series that are reflected in the index; modeling and development of index forecasts; and/or the preparation of leading, coincident, and lagging indicators of innovation potential.

In addition, as the Institute grows, plans are underway to expand the geographic scope of coverage of Pacific Rim nations. Consequently, Innovation Indexes will

be prepared for Pacific Rim nations that are not now included in the current research.

Finally, after sufficient research has been performed on the interaction of Pacific Rim nations and U.S. states, the Institute is planning the development of a “Pacific Rim Innovation Index,” which could serve as a broad indicator of Pacific Rim innovation potential.

### *Innovation Index consulting services*

The Institute extends its services to prepare Innovation Indexes for municipalities, regional areas, and states for interested parties. The Institute is willing to enter into agreements to prepare such indexes that are as consistent as possible with the Institute’s featured Innovation Indexes; however, the Institute is willing to consider preparing Innovation Indexes that reflect special features.

### Contact Information

For answers to questions or comments about Innovation Indexes, please contact:

Brooks B. Robinson, Ph.D.  
Senior Economist for Research  
Institute for Triple Helix Innovation  
John A. Burns School of Medicine  
651 Ilalo Street  
Honolulu, HI 96813  
[brooks.robinson@pacifichui.org](mailto:brooks.robinson@pacifichui.org)  
(T) 808.433.1085; (F) 808.433.1920

### *References*

Conference Board (2000). *Business Cycle Indicators Handbook*. The Conference Board. New York, NY. Obtained from the Internet on June 26, 2007; [http://www.conference-board.org/pdf\\_free/economics/bci/BCI-Handbook.pdf](http://www.conference-board.org/pdf_free/economics/bci/BCI-Handbook.pdf).

Organisation for Economic Co-Operation and Development. *Oslo Manual*. The Measurement of Scientific and Technological Activities: Proposed Guidelines for Collecting and Interpreting Technological Innovation Data. European Commission. Obtained from the Internet on June 26, 2007; <http://www.oecd.org/dataoecd/35/61/2367580.pdf>.

Copyright 2007 - The Institute for Triple Helix Innovation

The Institute allows the use and reproduction of this document for noncommercial purposes but require that the author, the title, the Institute, and the document URL be cited clearly. Contact The Institute for Triple Helix Innovation to request permission to reproduce for commercial purposes.

Sajeva, M. Gatelli, D., Tarantola, S., and Hollanders, H. (2005). *Methodology Report on European Innovation Scoreboard 2005*. European Commission. Obtained from the Internet on June 26, 2007;  
<http://www.trendchart.org/scoreboards/scoreboard2005/pdf/EIS%202005%20Methodology%20Report.pdf>.