



Industry Data and Terminology

The data and indicators reported here permit the tracing and analysis of broad patterns and trends that shed light on the spread and shifting distribution of global knowledge- and technology-intensive (KTI) capabilities. The industry data used in this chapter are derived from a proprietary IHS Global Insight database that assembles data from the United Nations (UN) and the Organisation for Economic Co-operation and Development to cover 70 countries consistently. IHS estimates some industry data for developing countries, including China, that are missing or not available on a timely basis.

Firms are classified by their primary activity in the UN's International Standard Industrial Classification of All Economic Activities. Thus, a company that primarily manufactures pharmaceuticals, for example, but also operates a retail business would have all its economic activity counted under pharmaceuticals. Table 6-A describes these classification systems and aims to clarify the differences among them.

Production is measured as value added. Value added is the amount contributed by an economic entity—country, industry, or firm—to the value of a good or service. It excludes purchases of domestic and imported supplies as well as inputs from other countries, industries, or firms.

Value added is measured in current dollars. For countries outside the United States, value added is recorded in the local currency and converted at the prevailing nominal exchange rate. Industry data are reported in current dollar terms because most KTI industries are globally traded and because most international trade and foreign direct investment is dollar denominated. However, current dollars have shortcomings as a measure of economic performance, which the reader should bear in mind. Economic research has found a weak link between nominal exchange rates of countries' currencies that are globally traded and differences in their economic performance (Balke, Ma, and Wohar 2013). In addition, the exchange rates of some countries' currencies are not market determined.

Using value added as a measure of output has disadvantages. It is credited to countries or regions based on the reported location of the activity, which is often uncertain because of companies' use of different reporting and accounting conventions. In addition, the value added of companies that have diversified businesses is assigned to the single industry that accounts for the largest share of the company's business. Moreover, a company classified as manufacturing may include services, and vice versa. For China and other developing countries, industry data may be estimated by IHS Global Insight or may be revised frequently because of rapid economic change or improvements in data collection by national statistical offices.

For all these reasons, the reader should view the value-added trends analyzed here as relatively internally consistent but broad indicators of the changing geographical distribution where economic value is generated. Small differences and fluctuations in the data should be treated with caution.

TABLE 6-A

Data Sources

(Topics and selected data source information)

Topic	Data provider	Variables	Basis of classification	Coverage	Methodology
Knowledge-intensive (KI) services and high-technology (HT) manufacturing industries	IHS Global Insight, World Industry Service database (proprietary)	Production, value added	Industry basis using International Standard Industrial Classification of All Economic Activities	KI services — business, financial, information, health, and education	Uses data from national statistical offices in developed countries and some developing countries and estimates by IHS Global Insight for some developing countries
Information and communications technologies (ICT) spending	IHS Global Insight, Global ICT Navigator (proprietary database)	ICT expenditures, by businesses and consumers	ICT consumer spending of population, by country	Not applicable	Uses data from national statistical offices and other sources and estimates by IHS Global Insight for some developing countries
Trade in commercial KI services	World Trade Organization	Exports and imports	Product basis using Extended Balance of Payments Services classification	KI services — business, financial, information, and royalties and fees	Uses data from national statistical offices, the International Monetary Fund, and other sources
Trade in HT goods	IHS Global Insight, World Trade Service database (proprietary)	Exports and imports	Product basis using Standard International Trade Classification	Aerospace, pharmaceuticals, office and computing equipment, communications equipment, and scientific and measuring instruments	Uses data from national statistical offices and estimates by IHS Global Insight
Globalization of U.S. multinationals	U.S. Bureau of Economic Analysis (BEA)	Value added, employment, and inward and outward direct investment	Industry basis using North American Industrial Classification System (NAICS)	Commercial KI services — business, financial, and information	BEA annual surveys of U.S. multinationals and U.S. subsidiaries of non-U.S. multinationals

Topic	Data provider	Variables	Basis of classification	Coverage	Methodology
U.S. industry innovation activities	National Science Foundation, Business R&D and Innovation Survey	Innovation activities	U.S. businesses with more than five employees	Industries classified on an industry basis using NAICS	Survey of U.S.-based businesses with more than five employees using a nationally representative sample
U.S. Patent and Trademark Office (USPTO) patents	Science-Metrix, SRI International, Scopus, LexisNexis	Patent grants	Inventor country of origin, technology area as classified by the Patent Board	More than 400 U.S. patent classes, inventors classified according to country of origin and technology codes assigned to the grant	Source of data is USPTO
Triadic patent families	Organisation for Economic Co-operation and Development (OECD)	Patent applications	Inventor country of origin and selected technology area as classified by the OECD	Broad technology areas as defined by the OECD, inventors classified according to country of origin	Sources of data are USPTO, European Patent Office, and Japan Patent Office
Venture capital	Dow Jones VentureSource	Investment, technology area, country of investor origin	Technology areas as classified by the Dow Jones classification system	Twenty-seven technology areas, investment classified by venture firms' country location	Data collected by analysts from public and private sources, such as public announcements of venture capital investment deals
Sustainable energy investment	Bloomberg New Energy Finance (BNEF)	Investment, technology area, country	Technology area classified by BNEF	Ten technology areas, investment classified by country receiving investment	Data collected by analysts from public and private sources, such as public announcements of venture capital investment deals
Public research, development, and demonstration (RD&D) in sustainable energy and related technologies	International Energy Agency (IEA)	Type of RD&D, technology area, country	Technology area classified by IEA	Six broad technology areas and numerous subtechnology areas	Data collected by IEA survey of its member countries
Public and private investment in energy infrastructure	IEA	Investment, type of energy source	Energy source classified by IEA	Six broad and numerous fine technology areas	Data collected by IEA survey of its member countries



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