Productive Capacity Definitions

Productive capacities index (PCI): The overall PCI score is the geometric average of the values of the eight PCI categories, namely, natural capital, human capital, energy, transport, ICT, institutions, structural change and private sector.

Human capital: This category captures the education, skills and health conditions possessed by the population, and the overall research and development integration in the texture of society through the number of researchers and expenditure on research activities. The gender dimension is reflected by the fertility rate which at each increase reduces human capital score.

Natural capital: Natural capital estimates the availability of extractive and agricultural resources, including rents generated from the extraction of the given natural resource, minus the cost of extracting the resource. To capture commodity dependence, natural capital decreases as the material intensity increases.

Energy: This category measures the availability, sustainability, and efficiency of power sources. For this reason, it is composed of the use of and access to energy, losses in distribution and renewability of energy components and sources, and includes the GDP generated by each unit of oil to further highlight the importance of optimal energy systems.

Transport: Transport measures the capability of a system to take people or goods from one place to another. It is defined as the capillarity of roads and railways network, and air connectivity.

Information and Communication Technology (ICT): Information and Communication Technology estimates the accessibility and integration of communication systems within the population. It includes fixed line and mobile phones users, internet accessibility and server security.

Institutions: Institutions aim at measuring political stability and efficiency through regulatory quality, effectiveness, success in fighting criminality, corruption and terrorism, and safeguard of citizens' freedom of expression and association.

Private sector: Private sector is defined by the easiness of cross-border trade, which includes time and monetary costs to export and import, and the support to business in terms of domestic credit, velocity of contract enforcement and time required to start a business.

Structural Change: Structural change refers to the movement of labour and other productive resources from low-productivity to high-productivity economic activities. This shift is currently captured by the sophistication and variety of exports, the intensity of fixed capital and the share of industry and services in total GDP. Structural change can also happen within a given sector provided that binding constraints in the sector are identified and effectively addressed.

Technological Capacity Definitions

Frontier technology readiness index: Index to assess country's readiness for using, adopting, and adapting frontier technologies and is comprised of indices of ICT deployment, skills, R&D activity, Industry activity and access to finance. Principal component analysis (PCA) was conducted to generate the index.

ICT: Internet users (per cent of population) from ITU (accessed on 20 January 2020) and Fixed (wired)-broadband speed (in Mbit/s) from ITU. Indicators were normalized using Z-score standardization method, and the standardized values were normalized to fall between the range of 0 to 1. Principal component analysis (PCA) was conducted to generate the index.

Skills: Expected years of schooling from UNDP and High-skill employment (percentage of working population) from ILO. Indicators were normalized using Z-score standardization method, and the standardized values were normalized to fall between the range of 0 to 1. Principal component analysis (PCA) was conducted to generate the index.

Research and Development: Number of scientific publications on frontier technologies from SCOPUS and Number of patents filed on frontier technologies from PatSeer. Indicators were normalized using Z-score standardization method, and the standardized values were normalized to fall between the range of 0 to 1. Principal component analysis (PCA) was conducted to generate the index.

Industry Activity: High-technology manufactures export (percentage of total merchandise trade) and digitally deliverable services exports (percentage of total service trade) from UNCTADStat. Indicators were normalized using Z-score standardization method, and the standardized values were normalized to fall between the range of 0 to 1. Principal component analysis (PCA) was conducted to generate the index.

Access to finance: Domestic credit to private sector (percentage of GDP) from WB/IMF/OECD. Missing indicator data was imputed using the cold deck imputation method of latest available data. Indicators were normalized using Z-score standardization method, and the standardized values were normalized to fall between the range of 0 to 1.