

# INDIA'S R&D ESTIMATES ARE AN INCOMPLETE PICTURE

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'India's GERD data could be an underestimate' | Photo Credit: Getty Images

India's research and development (R&D) expenditure-GDP ratio of 0.7% is very low when compared to major economies and is much below the world average of 1.8%. The main reason is the low investment in R&D by the corporate sector. While the corporate sector accounts for about two-thirds of gross domestic expenditure on R&D (GERD) in leading economies, its share in India is just 37%. There is evidence, however, suggesting that India's GERD data are an underestimate.

A 2022 infobrief of the National Science Foundation (NSF) of the United States on Foreign R&D by U.S.-based multinational corporations (MNCs) shows a spend of \$9.5 billion (649.7 billion) on R&D in India in 2018, which increased to \$9.8 billion (690.2 billion) in the following year. There are MNCs from other leading countries also spending on R&D in India. But the latest Research and Development Statistics, published by the Department of Science and Technology (DST) in 2020, has provided an estimate of 60.9 billion R&D spending in 2017-18 by foreign MNCs, which is only about 10% of what U.S. firms have reported to have spent in India on R&D.

The National Science and Technology Management Information System (NSTMIS) of the DST is the agency that compiles GERD statistics in India. It is easier to gather the information on R&D by the government sector, the higher education sector and public sector enterprises. The challenge lies in collecting data from the private corporate sector. There are two key factors that make the official R&D estimates grossly inadequate.

The method used for identification of R&D performing firms does not capture all the R&D performing firms. The NSTMIS relies on the Department of Scientific and Industrial Research (DSIR) list of recognised R&D units and the Prowess database of the Centre For Monitoring Indian Economy Pvt. Ltd. for this purpose. The DSIR list may not have many of the actual R&D performers for two reasons: firms which consider government incentives as not attractive enough or that are sensitive about sharing critical information with the DSIR may not be inclined to register themselves with the DSIR. Second, it may be difficult for R&D firms in services such as software and R&D services to meet the requirement of having separate infrastructure for R&D to distinguish it from their usual business. In fact, many of the R&D performing enterprises in new technology areas may come under the services category.

A study at the Institute for Studies in Industrial Development, that looked at 298 firms receiving foreign investment (2004-16) for R&D purposes, found that only 11% had been registered with DSIR. The Prowess database, on the other hand, covers only 3.5% of the currently active registered enterprises in India. A quick search in both the DSIR directory of recognised R&D units (2021) and Prowess shows that some of the leading Indian enterprises in new technology areas and foreign R&D centres are not covered. For example, SigTuple Technologies, which is a leading start-up in India focusing on artificial intelligence-based HealthTech and has filed 19 patents as in 2021, is unlisted in both databases.

Two, the survey conducted by the NSTMIS is the key source of R&D statistics of India. For those firms which do not respond to the survey, the data is collected from secondary sources such as annual reports and Prowess. This method will work only if firms disclose their R&D spending. A review of the documents submitted to the Ministry of Corporate Affairs (MCA) by some R&D-oriented firms shows that there are firms which do not report any spending on R&D in spite of their declarations that suggest that they are engaged in activities of technology development, adoption and adaptation. Interestingly, some of the firms which do not report spending on R&D do have patents granted in India, or their personnel are mentioned as innovators in patents granted by the U.S. Patent and Trademark Office. They may not feel the compulsion of disclosing accurate data to the Indian regulatory authorities.

Transforming India's R&D statistics to truly reflect the R&D ecosystem calls for short-term and medium-term measures. In the short term, the NSTMIS should use the patents granted data, both in India and the U.S., in addition to its current method to identify R&D performing enterprises.

While surveys can collect much more information related to innovation activities, R&D statistics should not be confined to the responses to the surveys. Instead, annual R&D estimates can be prepared from mandatory disclosures that the enterprises are required to make to the MCA. In order to ensure compliance and proper reporting, technologies can be used like in the case of revamped income-tax return forms where various sections are interlinked. Additionally, proper disclosure of information to regulatory agencies, including R&D spending data, should be made an essential component of the environmental, social and governance (ESG) ranking of enterprises.

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