

PRESS RELEASE

Foundation for Advancing Science and Technology (FAST India) launches report on the State of Industry R&D in India in collaboration with IIFL Securities

- Between FY2016 – FY 2023, Indian firms performed slightly better than Global firms in R&D growth documenting **1.2x** growth compared to Global firms.
- Global firms led input parameters, with **2.9x** R&D intensity and **3.7x** proportion of PhD employees compared to Indian firms.
- Global firms also led output parameters and had **13.1x** patents and **1.3x** publications per billion USD revenue for the study period.
- Indian firms performed exceedingly well in disclosing R&D-related information in their annual reports. Out of 10, the average Indian R&D disclosure score was **6.2**, while Global firms' average score was **3.7**.
- Pharmaceutical firms performed best within the Indian cohort, ranking first in R&D intensity and proportion of PhD employees. Energy firms ranked last within the Indian cohort.

28 May 2024, New Delhi: The Foundation for Advancing Science & Technology (FAST India), a nonprofit initiative, is dedicated to enhancing the Science and Technology ecosystem in India. The organisation observes that in the study period of FY16 to FY23, Indian firms performed slightly better than the Global firms in R&D growth across four sectors—Aerospace and Defence, Automobile and Components, Chemical, and Energy—and have maintained their growth between FY16 to FY23 despite COVID-19 pandemic and changes in the R&D tax regime. However, Global firms led Indian firms in other parameters. For instance, Global firms recorded **2.9x** R&D intensity, **3.7x** proportion of PhD employees, **13.1x** patents and **1.3x** publications per billion USD revenue than Indian firms. In terms of R&D disclosures, Indian companies fare better than their global peers, disclosing 2x information regarding R&D as compared to global firms. These findings along with comparisons on key R&D parameters like publications and patents by revenue have been reported in the **State of Industry R&D in India** report released by FAST India.

The State of Industry R&D in India presents the state of Indian R&D across six important sectors – Pharmaceuticals and Biotechnology, Automobile and Parts, Software and Technology, Energy, Aerospace and Defence, and Chemical Sectors. With an analysis of four key parameters across 119 companies, FAST India's holistic approach presents publicly available information in a new light. It is an attempt to understand the R&D activities of Indian firms and compare them with Global counterparts from both input and output perspectives to highlight their performance.

"This is a first-of-its-kind report which objectively maps and compares R&D inputs, outputs, and disclosures for top Indian firms with global ones. It will go a long way to help the industry benchmark their R&D activities and be instructive for course correction. While the Indian

industry has made great strides, it needs to invest more in R&D to go up the global value chain. At FAST India, we are committed to catalyse this transition and provide all support possible."

- **Varun Aggarwal, Co-Founder FAST India**

"FAST India's latest report on the State of Industry R&D in India marks a significant milestone in understanding the comparative performance of Indian and Global firms with respect to R&D. This report, a pioneering effort, provides a comprehensive analysis of R&D inputs, outputs, and disclosures, shedding light on the areas where Indian industry excels and where there is room for improvement.

Despite facing challenges such as the COVID-19 pandemic and changes in the R&D tax regime, Indian firms have shown slightly higher R&D growth, albeit from a much lower baseline, compared with global firms and scored well in R&D disclosures to the public. However, the findings also underscore the need for Indian firms to increase their performance in both R&D inputs and outputs to perform competitively in the global market."

- **Prof K VijayRaghavan, Former Principal Scientific Advisor to GoI**

Global v. India Comparison

Table 1: Global vs India comparison: Medians

Sectors	R&D Intensity*	PhD by total Employees*	R&D by Profit*	R&D Growth	Patents by revenue	Publications by revenue
Automobiles	3.1x	3.4x	5.9x	0.7x	29.8x	1.6x
Chemicals	1.7x	1.0x	2.0x	0.8x	14.1x	3.4x
Defence	2.8x	2.5x	3.0x	0.8x	33.0x	0.4x
Energy	2.5x	4.0x	2.8x	0.6x	9.9x	0.9x
Pharmaceuticals	3.0x	7.1x	2.0x	1.2x	5.6x	8.4x
Software	32.0x	6.1x	46.3x	1.1x	12.1x	0.4x
Overall	2.9x	3.7x	2.9x	0.8x	13.1x	1.3x

Note: Information for parameters with * is shown for the latest year, while for other parameters information is shown for the study period.

Table 1 above provides sectoral and overall comparisons between Global and Indian firms for the parameters studied. Indian firms lagged the most in patents by revenue parameter, for which Global firms produced **13.1x** patents by revenue. When looking at the absolute number of patents, Global firms had **355x** the number of patents as Indian firms for the study period.

It is also notable that Global firms invested **2.9x** their profits in R&D as compared to Indian firms. In the Software sector, the difference between Global and Indian firms was very stark,

with Global firms investing **30.9x** their profits in R&D. This shows that Global firms prioritise investing a large percentage of their profits into R&D.

Sectoral Rankings across Key Parameters

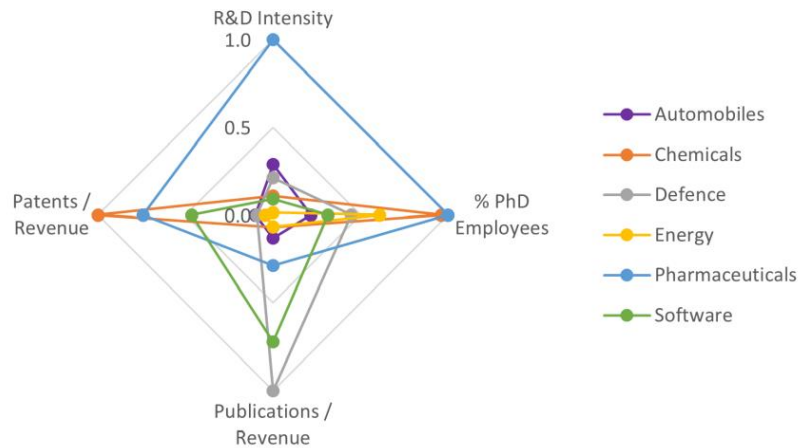


Fig 1: Sectoral performance of Indian firms

Figure 1 above compares the performance of **Indian firms** sectorally on the four chosen parameters. The Pharmaceutical firms perform best in both input parameters - ranking first in R&D intensity and % PhD Employees. It also has a high rank in the patents by revenue parameter. Defence firms, with one of the largest presence of Public Sector Enterprises (PSEs), score best in publications by revenue parameter. Chemical firms perform best in patents by revenue and proportion of PhD employees. The Software firms rank better in the output parameters (publications by revenue and patents by revenue) compared with the input parameters (R&D intensity and % PhD Employees).

R&D Intensity

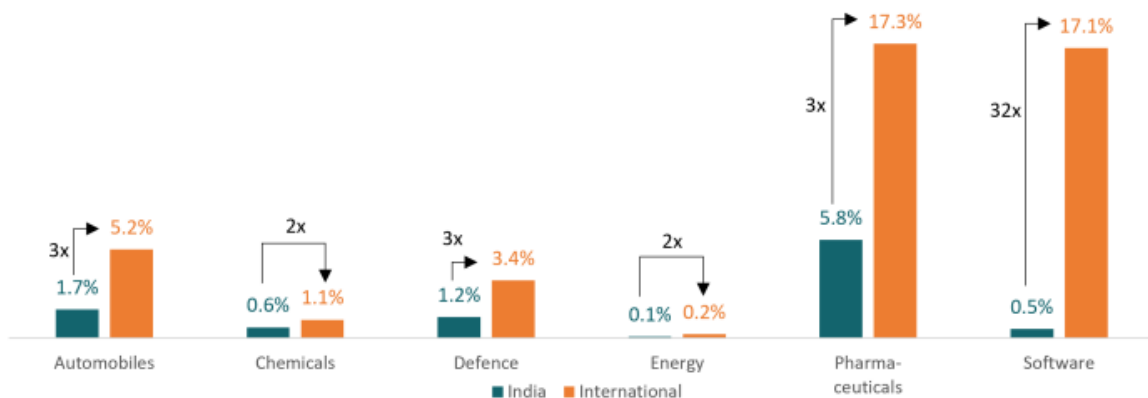


Fig 2: Sectoral performance for R&D Intensity

The figure above presents sectoral R&D intensity for FY2023. Global firms outperform Indian firms in all sectors. The largest difference between Global and Indian firms can be seen in the

Software sector, where Global firms had 32x the R&D intensity of Indian firms. The smallest difference in R&D intensities was seen in chemicals and energy sector firms.

Patents per billion USD revenue

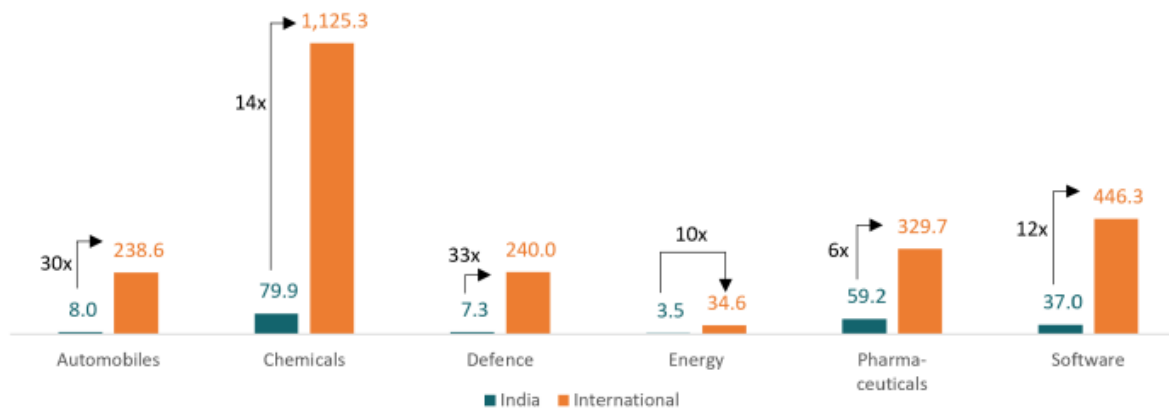


Fig 3: Sectoral performance for Patents per billion USD revenue

Figure 3 above shows the patents per billion USD revenue for Indian and Global firms.

Global firms published **355x** more patents than Indian firms during the study period as per absolute numbers. However, when normalised per billion USD revenue, the number reduced to **13x**.

The variation between Global and Indian firms was stark in the Automobile and Defence sector where Global firms had **30x** and **33x** patents by revenue compared to Indian firms.

About FAST India:

The Foundation for Advancing Science & Technology (FAST India), a nonprofit initiative co-founded by Ashish Dhawan (Founder, of Ashoka University and The Convergence Foundation) and Varun Aggarwal (Co-founder, of Aspiring Minds and The Change Engine), is dedicated to enhancing the Science and Technology ecosystem in India.

In the coming decade, FAST India aims to position India as one of the top three global giants in Science and Technology, harnessing India's immense potential to drive progress on the economic and societal fronts. In the short term, FAST India's objectives include propelling five Indian universities into the top 100 research ranks, tripling the R&D expenditure in the industry, and ensuring that five Indian firms feature in the world's 100 most innovative companies list.

To learn more about FAST India and its transformative initiatives, please visit <https://fast-india.org/>.

For press inquiries, please reach out to info@fast-india.org