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EDITORIAL ANALYSIS

Quantum Shift, or Better Arithmetic? Private Industry Crosses Half of India's R&D

THE HINDU

6 August 2026 · SCIENCE & TECH · ECONOMY · GS3

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INTERVIEW ANGLE

"If a statistical revision moves the private share of R&D from a minority to a majority without a single new laboratory being built, has anything changed? What evidence would you look for to distinguish a real shift in research funding from a change in how it is counted?"

Every fact web-verified against primary sources

THE LIFT LINE

A private majority in a research system that spends 0.84 per cent of GDP tells you who is paying. It does not yet tell you that enough is being paid.

WHY THIS EDITORIAL MATTERS FOR YOUR EXAM

Research and development spending appears in GS3 answers as a single number, usually "India spends about 0.7 per cent of GDP on R&D, against 2 per cent in China". Both halves of that sentence are now out of date, and the second is the kind of stale figure that costs marks. This editorial supplies the current figures and, more usefully, a way of interrogating them: the distinction between a share and a level, and between a change in behaviour and a change in measurement.

It also pairs directly with the Gaganyaan qualification milestones in today's news, which are publicly funded, long-horizon capability of exactly the kind the private majority does **not** finance.

GS Paper 3: Science and technology, developments and their applications and effects in everyday life; indigenisation of technology and developing new technology; Indian economy and mobilisation of resources.

CONCEPT	MEANING	WHY IT IS TESTABLE
GERD	Gross Expenditure on Research and Development, the total spent on research in a country in a year, from all sources	The headline metric of national research effort; usually expressed as a percentage of GDP
Funding share versus performance share	Who *pays* for research versus who *does* it; a firm may fund research performed in a university	Students conflate the two; the 51.8 per cent figure is a **funding** share
Basic versus applied research	Research undertaken to extend knowledge without a specific application, versus research directed at a defined objective	Explains why private capital cannot substitute for public funding at the basic end
Reclassification effect	A rise in a measured category caused by a change in survey coverage or definition rather than in underlying activity	The editorial's central caution, and a transferable statistical concept
Global Capability Centre (GCC)	An offshore unit of a multinational performing research, engineering or analytics for its parent	A large part of the recent growth in India's measured private research

BACKGROUND AND CONTEXT

The trigger is the **R&D Statistics** tabled in the **Rajya Sabha on 31 July 2026**, which record private industry at **51.8 per cent** of gross expenditure on research and development in **2023-24**, and gross expenditure at about **0.84 per cent of GDP** in FY24.

India's research system was constructed in the decades after independence around public institutions with distinct mandates.

INSTITUTION	DOMAIN
CSIR (1942)	Industrial and applied research, a network of national laboratories
DRDO (1958)	Defence research and development
DAE (1954)	Atomic energy, from research reactors to power
ICAR (1929)	Agricultural research and the state agricultural university system
ISRO (1969)	Space research and applications

This architecture delivered genuine achievements, the Green Revolution research base, an indigenous nuclear and space capability, and a defence research establishment. What it did not do was pull private industry into research, because the state was simultaneously the funder, the performer and often the customer.

THE ANALYSIS

1. Crossing 50 per cent changes the character of the system, not just its size. The share matters because of what the private sector funds. Firms fund research nearest to commercialisation, because they capture the returns. That is simultaneously the strength and the limit of private funding: it converts knowledge into products efficiently, and it systematically underfunds research whose returns are distant, uncertain or non-appropriable.

2. The denominator is the binding constraint. At **0.84 per cent of GDP**, India's total research effort remains well below the long-stated national goal of **2 per cent** and far below the comparator economies. A share can rise for two very different reasons: the numerator grows, or the denominator of the other component shrinks. If the private share rose partly because public research funding stagnated in real terms, the composition improved for a reason that should worry rather than reassure.

3. Measurement is doing some of the work, and nobody knows how much. As the statistical system widens its survey coverage of private firms, and as expenditure previously classified as design, testing, engineering or production is reclassified as research, the measured private share rises with no change in behaviour whatsoever. This is not a hypothetical concern for a series that has recently expanded its coverage of the corporate sector.

4. But the reclassification argument has a limit. Measurement error correcting in one direction across several successive years is better evidence that the **earlier** series understated private research than that the present one overstates it. The expansion of global capability centres, pharmaceutical and vaccine development, and semiconductor design in India is visible independently of the statistics.

5. What the private majority cannot do. Gaganyaan's human-rating programme, in today's news, is the illustration. Certifying a launch vehicle to carry humans has no commercial return for a decade or more and no appropriable intellectual property at the end of it. No private funder finances that. Neither does basic research in mathematics, nor long-horizon agricultural breeding, nor most of what a country needs in a pandemic. A private majority is a good outcome only if public funding holds its position in absolute terms.

DATA AND INSTITUTIONS VAULT

PRELIMS-GRADE FACTS:

Private industry share of GERD: 51.8 per cent in 2023-24, the first year above half

GERD as a share of GDP: about 0.84 per cent in FY24

Source: R&D Statistics tabled in the Rajya Sabha on 31 July 2026

India's long-stated national goal: 2 per cent of GDP

Industry-funded share in innovation-led economies: roughly 60 to 70 per cent

Public research institutions: CSIR (1942), DRDO (1958), DAE (1954), ICAR (1929), ISRO (1969)

Anusandhan National Research Foundation (ANRF) was established by the ANRF Act, 2023, replacing the Science and Engineering Research Board (SERB), with a mandate to seed and fund research including in state universities, and an intent to draw a substantial share of its corpus from non-government sources

Department of Science and Technology (DST) compiles the R&D Statistics series

India's rank in the Global Innovation Index has risen substantially over the last decade, driven more by market sophistication and knowledge outputs than by research expenditure

WATCH THE TRAP: THE WIDELY QUOTED FIGURE "INDIA SPENDS 0.7 PER CENT OF GDP ON R&D" IS NOW OUT OF DATE, AND SO IS ANY CLAIM THAT THE GOVERNMENT FUNDS THE MAJORITY. BOTH WERE TRUE AND ARE NO LONGER. EQUALLY, DO NOT WRITE THAT INDIA HAS REACHED THE 2 PER CENT GOAL; 0.84 PER CENT IS NOT 2 PER CENT.

THE DEBATE

Argument FOR reading this as a genuine turning point. The structure of research funding has inverted after seven decades, in the direction every innovation-led economy has taken. The change is visible in the real economy through global capability centres, pharmaceutical development and chip design, not only in a statistical table. Demand-pulled research converts into products in a way that state-pushed research historically has not in India, and the shift should be welcomed rather than qualified into insignificance.

Argument AGAINST. The milestone is a ratio, and a ratio can improve without anything improving. At 0.84 per cent of GDP the absolute effort is modest, and if the private share rose partly because public spending stagnated, the composition improved for the wrong reason. A material and unquantified part of the movement is reclassification. Announcing a "quantum shift" on these numbers risks the conclusion that the state's job is now done.

Balanced verdict. The shift is real and its direction is right, but it is a diagnostic and not an achievement. Composition matters only at an adequate level of total spending. The correct policy response to a private majority is therefore **more** public research funding rather than less, redirected towards the basic and long-horizon end

where the private majority will never go, together with methodological transparency so that the reclassification component can be separately estimated.

HOW TO THINK ABOUT THIS

The transferable pattern here is: **separate the ratio from the level, and the measurement from the behaviour.**

Whenever a statistic is presented as a breakthrough, ask two questions before accepting it.

Is this a share or a quantity? A share can rise because the numerator grew or because the other component fell. The two have opposite policy implications, and the headline never distinguishes them.

Did the world change, or did the counting change? Expanded survey coverage, redefined categories and reclassified expenditure all move measured quantities without moving real ones.

This pattern applies far beyond research spending. It is the same question to ask of a fall in the poverty headcount after a change in the consumption survey design, of a rise in forest cover after a change in the definition of forest, and of an improvement in a learning outcome after a change in the sampling frame.

DIAGRAM-IN-WORDS

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STATE-DOMINATED SYSTEM (historic)
Public funding  →  Public institutions perform  →  Capability built
                                                        ↓
                                              Weak commercialisation
                                              (no private demand pull)

TRANSITION (2023-24: private share crosses 51.8%)
Private funding ─┐
                 ├→ Research performed →  Products, near-term returns
Public funding  ─┘

                 BUT: GERD still only 0.84% of GDP
                 AND: part of the private rise = reclassification

THE GAP THAT REMAINS
Basic research ─── no appropriable return ──→ private capital will not fund
Long-horizon capability (e.g. human-rating a launch vehicle)
                 ↓
        LEVER: public funding must RISE, not fall, and
               concentrate where private funding cannot go (ANRF)
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TAKEAWAY BOX

India's research problem was never only who pays. It was how little was paid in total, and that has not yet changed.

private share **51.8 per cent** *(2023-24);* **GERD 0.84 per cent of GDP** *(FY24); R&D Statistics tabled* **31 July 2026***;* **ANRF Act, 2023** *replaced* **SERB***; CSIR 1942, DAE 1954, DRDO 1958, ISRO 1969, ICAR 1929.*

a government that publishes a statistic showing improvement has an interest in not publishing the methodology change that produced part of it. What obligation does a statistical system owe to the public beyond accuracy in the number itself?

UPSC has repeatedly examined the gap between India's scientific output and its innovation performance, including questions on why publicly funded research does not translate into commercial technology, and on the role of the private sector in research. This editorial supplies current figures for exactly that answer.

"A rising private share in research funding is a diagnostic, not an achievement." Critically examine with reference to India's gross expenditure on research and development.

Sources: The Hindu, Department of Science and Technology, PIB

KEY ARGUMENTS AT A GLANCE

The crossing of the halfway mark by private industry in India's gross expenditure on research and development, to 51.8 per cent in 2023-24, is a genuine structural milestone that ends decades of state-dominated research funding, but a material part of the movement reflects wider survey coverage and statistical reclassification rather than new money, and India still trails innovation-led economies where industry funds 60 to 70 per cent of a far larger research base.

✓ SUPPORTING

- The composition of Indian research funding has historically been the inverse of the innovation-led economies: the state funded the majority through DRDO, CSIR, the Department of Atomic Energy, ICAR and ISRO, while in the United States, Japan, South Korea and China industry has long funded the larger share. Crossing 50 per cent is therefore a change in the structure of the system, not merely in its size.
- The denominator remains the problem. India's gross expenditure on research and development stood at about 0.84 per cent of GDP in FY24 on the R&D Statistics tabled in the Rajya Sabha on 31 July 2026.
  A rising private share of a small base can coexist with continued underinvestment in absolute terms, and a share that rises because public funding stagnates is not a success.
- Improved measurement is a real and under-acknowledged driver. As survey coverage of private firms widens and expenditure previously classified as production or design is reclassified as research, the measured private share rises without any change in underlying behaviour.
  The editorial's caution on this point is the analytically serious part of its argument.

⚠ COUNTER

The reclassification caveat can be pushed too far. Measurement error that has been correcting in one direction for several successive years is more plausibly evidence that the earlier series understated private research than that the present one overstates it.
India's corporate research base has visibly expanded through global capability centres, pharmaceutical and vaccine development and semiconductor design, and requiring that every rupee be shown to be new before the shift is acknowledged sets an evidentiary bar that no national statistic could meet. The risk of dismissing the milestone is complacency about public funding: if the private sector is now the majority funder, the case for raising public research spending can be quietly abandoned.

→ WAY FORWARD

Treat the private share as a diagnostic rather than a target. Raise gross expenditure on research and development towards the long-stated 2 per cent of GDP goal, since the composition question only matters at an adequate level of total spending; publish the methodology and coverage changes underlying the R&D Statistics series so the reclassification component can be separately estimated; direct public funding towards basic research and long-horizon capability where private capital will not go, using the Anusandhan National Research Foundation as the instrument; and measure outcomes, patents granted to residents, doctoral output and translation of publicly funded research into licensed technology, rather than input share alone.

✍ MAINS ANSWER FRAMEWORK

QUESTION

India's private sector has for the first time funded a majority of national research and development expenditure. Examine the significance of this shift, and assess whether it represents genuine private investment in research or improved measurement of existing activity. (250 words)

INTRODUCTION

The composition of a country's research funding is as diagnostic as its level. India's gross expenditure on research and development has long been characterised by two features: a low ratio to GDP, and a state-dominated funding structure that is the inverse of the pattern in innovation-led economies.

The R&D Statistics tabled in Parliament on 31 July 2026 record that private industry funded 51.8 per cent of gross expenditure in 2023-24, crossing the halfway mark for the first time.

BODY

The significance of the milestone lies in what it reverses. India's research system was built around public institutions, the Defence Research and Development Organisation, the Council of Scientific and Industrial Research, the Department of Atomic Energy, the Indian Council of Agricultural Research and the Indian Space Research Organisation, which conducted and funded the bulk of national research.

In the United States, Japan, South Korea and China, industry has long funded the majority, and the correlation between a high industry-funded share and sustained innovation output is among the more robust regularities in the economics of technology, because firms fund research closest to commercialisation and therefore convert it into products. A private majority therefore signals a research system that is beginning to be pulled by demand rather than pushed by the state.

Two qualifications matter. The first is the denominator: gross expenditure stood at about 0.84 per cent of GDP in FY24, against a long-stated national goal of 2 per cent and against roughly 3 to 5 per cent in the comparator economies.

A rising share of a small base leaves India's absolute research effort modest, and if the share rose partly because public funding stagnated, the composition improved for the wrong reason. The second is measurement.

Widening survey coverage of private firms, and the reclassification of expenditure previously recorded as design, testing or production into research, raise the measured private share without any change in behaviour. Distinguishing the two requires methodological transparency that the published series does not currently provide.

Against this, several successive years of movement in the same direction, alongside the visible expansion of global capability centres, pharmaceutical development and semiconductor design in India, suggest the underlying shift is real even if its magnitude is overstated.

CONCLUSION

The private share is best read as a diagnostic rather than a target. The composition question becomes decisive only once total research expenditure is adequate, and at 0.84 per cent of GDP it is not.

The policy implication is therefore the opposite of complacency: public funding should rise, concentrated on basic research and long-horizon capability that private capital will not finance, with the Anusandhan National Research Foundation as the vehicle, while the statistical series is made transparent enough for the reclassification component to be separately estimated.

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