

## Research-led institutes are not cheap

**If we want to encourage research-led institutes to develop in India, which should be a goal as progress depends on the R&D capabilities of a nation, there has to be some subsidy for higher education, says Pankaj Jalote**

THERE are two main goals of an academic enterprise — knowledge creation and knowledge dissemination. However, both these are not necessarily the goals of all academic institutes — for example, a typical college has only information dissemination as its goal. Academic institutes which support both the goals can be divided into two broad groups — those which are research-led but also have teaching, and those which are teaching-led but also engage in some research. Institutes like IITs, IISc and IIITs aim to be in the first category, while many of our universities are in the latter category. This separation is there in the US also: the top universities are all research-led places with great emphasis on research, while other universities are typically teaching-led, with only peripheral focus on research.

It can easily be argued that for science and technology, the best places for even undergraduate (UG) education are the research-led places. The reasons are easy to see: knowledge in these areas is created at such a rapid pace that institutes that are not actively engaged in research find it hard to keep pace in their knowledge dissemination (teaching) part. Furthermore, the best faculty generally prefers research-led institutes. Empirically also it can be easily established that the best places for UG education in science and engineering are the top research universities — MIT, CalTech, Berkely, Illinois, Princeton, etc, in the US, and IITs, IISc, etc, in India.

As there has been an ongoing debate on the role of private capital in higher education, it is useful to understand the costs involved in a research-led Institute. In such an institute, UG students are the primary consumers of education and the primary source of fee revenue. The PG students generally provide some services to the institute (in terms of teaching assistance and help in R&D), and are therefore paid. This pattern holds globally as well as in India for sciences and engineering — PG students are paid some stipend and add to the cost.

The manpower or running cost for an institute can be approximated through the faculty strength. For each faculty member, in a research-led institute, we should have at least two masters students and at least one PhD student, and approximately one staff (AICTE suggests more than one, and in IITs it is probably closer to two or three). With this, the overall manpower cost to an institute for each faculty member, in terms of CTC, will be (after Sixth Pay Commission): Rs 10 lakh (faculty) + 6 lakh (staff) + 4 lakh (PhD) + 4 lakh (two masters) = Rs 24 lakh. If each faculty member gets Rs 10 lakh as research grant per year, the faculty cost will reduce by about Rs 2 lakh (the overhead the institute will get).

Such an institute can have 15:1 UG student to faculty ratio (which will translate to over 20:1 overall, which is really the limit for such places — IITs have about 12:1). For each 15 UG students the total manpower cost to the institute will be about Rs 22 lakh. If funds for doing research and establishing labs are obtained through funding agencies (the best case scenario), unless there are other sources of revenue, this will have to be recovered through fees, that is, the fee needs to be Rs 1.5 lakh per year per student just for the manpower. Add to this the maintenance and other consumable expenses (water, electricity, etc.), and the cost per student will be over Rs 2 lakh.

The capital cost of building a decent campus is at least Rs 10 lakh per UG student — this will include hostels, class rooms, labs, recreation facilities, etc., as well as R&D spaces, faculty offices, cubicles for PG students, and accommodation. If this capital is treated as an interest-free loan (as, for example, is the case for IIT-Delhi) which has to be paid over 10 years, then each student will have to pay about Rs 1 lakh per year for the loan, making the total fees to about Rs 3 lakh per year. (After 10 years this component can be used to support further expansion.) If this was not an interest-free loan, but a loan by an investor then there will be an additional cost of about Rs 1 lakh. (And if the investor wants “returns” then the fee will, of course, rise even further.)

IN SUMMARY, if a research-led institute/ university which has vibrant PG and UG programmes has to become self-sustaining, then even with free land and interest-free loan for building the infrastructure, the fees per student will have to be around Rs 3 lakh per year, which can be reduced to around Rs 2 lakh per year only if the entire capital cost is borne through some grant. If PhD and masters students are paid through national grants, then the fee will reduce to less than Rs 1.5 lakh. Even with this, the institute is not fully self-supporting — it assumes research funding is available through agencies (generally government sponsored).

It should be clear that a private university, unless it charges a very heavy fee, can never really be research-led, unless the group setting the university is truly a philanthropic organisation that is willing to put in a large amount of capital, and not recover it. No wonder, despite thousands of new colleges having come up, and despite hundreds of universities and deemed universities coming up, the only places which are research-led continue to be the well funded government institutes. There are a few exceptions (like IIT Hyderabad, Dhirubhai Ambani Institute), but these are Institutes where the capital cost was borne earlier by the state or the donor, and they still face difficulty in being fully self-supporting.

In a study conducted in the US of private and public universities, it was found that for undergraduate education both have subsidies, in that both are providing education at a price lower than the cost. In fact, subsidies in private universities, which subsidise using endowments, government grants and other resources, are about the same as in public universities, where the subsidies are primarily through government grants.

If we want to encourage research-led institutes to develop in India, which should clearly be a goal in the modern world where progress depends on the R&D capabilities of a nation, there has to be some subsidy for education. This provides a possible policy approach for research-led private universities — if a private body is willing to provide large capital grants for the infrastructure, then the government can further subsidise education by providing land at low cost, funding research in them (on merit) and providing PG scholarships in them. For such sponsors who are willing to write off Rs 100+ crore, the government should be ready to roll out the red carpet, and roll away the entire red tape — in the interests of the nation and

the students crying for high quality education opportunities.

**(The author is director, IIT Delhi and professor, IIT Delhi. Views are personal.)**

