

India – Economic liberalization and biomedical and health sciences research*

V. Ramalingaswami

A cliché 'Think Globally and Act Locally' is doing the rounds in the corridors of the World Health Organization in Geneva. It reflects the spirit of discussions at this symposium on 'Indian science after liberalization'.

The spirit of liberalization

The 'fact sheet' distributed at the meeting lists a series of measures that the Government of India took in 1991 to 'unshackle the Indian industrial economy from the cobwebs of unnecessary bureaucratic control'. It lists a number of measures such as abolition of industrial licensing, direct foreign investment up to 51% foreign equity, entry of private sector in areas hitherto reserved for public sector, etc., but as Mashelkar said earlier, the true spirit of liberalization is the important thing.

Performance indicators

An objective discussion of the issues under the rubric of Indian science after liberalization is possible only when there are objective indices of performance in various sectors. Such indices are not easy to come by as yet and so a discussion in depth on this topic is not yet entirely feasible. One has to indulge largely in a qualitative reflection.

Basic science indicators

As Herman Bondy said, basic science is the well-spring of modern technology. One yardstick of measuring the impact of liberalization on Indian science is to see to what extent creativity and advances in basic sciences had been stimu-

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lated as precursors of innovative technologies. The whole field of transforming findings in basic science to meaningful application in resolving health problems affecting vast numbers of people needs attention¹.

There is evidence that India's capabilities in basic biological science research in fields such as molecular biology, molecular genetics, immunology and cell biology are now pretty well developed. The scene is set for exploitation of this capability for economic growth through a biotechnological revolution subserving medical and health care².

The concept of partnership with industry is articulated beautifully in the Council of Scientific and Industrial Research document: *CSIR 2001 – Vision and Strategy*³. It is not enough to liberalize the economy through the series of measures promulgated by Government. The atmosphere must be conducive to the effective implementation of those measures and to bring about active collaboration between science and industry. This has been the Achille's heel of Indian science. However, there are signs that basic discovery and application are moving closer together in India. Even so, the sight of so many biotechnological diagnostic products developed in Indian laboratories lying unabsorbed into the health care system in a major way is all too common. This is an area, I would suggest, needs most urgent dialogue between science, industry, government, representatives of the health care system and the public.

Product indicators

Science has to be 'manipulated' into processes, products and devices and this can be quantitated to measure performance. The journey from a laboratory-based technology to the market place is the most crucial one for the Indian sci-

entific enterprise as alluded to already. It is an enigma to friends of India as to why India had been unable to jump on to the band-wagon of market economy despite the presence of a very significant science and technology infrastructure. The situation in this regard may be beginning to change.

Products and patents are the hallmarks of today's market economics. I would broadly endorse Mashelkar's comment: 'Patent before you publish'. It is like saying 'look before you leap'. It is time to de-emphasize the slogan 'publish or perish' but publication of one's work in peer-reviewed journals and its presentation in scientific fora must continue to be the general rule within these guidelines in today's world.

Social impact indicators

If science is to be the foundation of economic progress as well as social well-being, social impact indicators, although they may take time to reveal themselves, would be legitimate criteria to look for the impact of liberalization on Indian science. One obvious reflection would be to look at the poverty line, whether it is moving up or down as a function of time. The debates on how much poverty there is in India tend to become abstruse⁴. But, on the whole, whether it is government's or academicians', the data indicate a decline in the poverty figures, although understandably, in the case of government figures, the data are more impressive – a decline in poverty figure from 25.5% of the population in 1987–88 to 18.9% in 1993–94 (ref. 4).

There are other indicators such as infant mortality, life expectancy, employment, IQs and growth of children, environmental quality, and indicators pertaining to the well-being of women. Data on these are badly needed but instant changes should not be expected.

Joint ventures

There are apprehensions that opening up Indian S&T enterprise to foreign collaboration might erode into the dearly-held Indian policy of self-reliance. It must be remembered that in entering into joint ventures between Indian and foreign industry one has to negotiate from a position of strength. True partnership seeks to leverage complementary strengths and overcome weaknesses of individual partners⁵.

Privatization, disease palaces and the face of liberalization

To the ordinary citizen, the impact of liberalization on medical science in India is the overnight erection of large tertiary care institutions in urban areas. These may serve a useful purpose in making high quality care available largely to those who can afford the costs involved. As it is often claimed, they may also liberate the public hospitals from expropriation of their services by the privileged sections of society and enable more services from these hospitals to flow to the low-income groups. Large tertiary care institutions in the private sector are required by law by the state governments to make available a proportion of their caring services free of charge to those who cannot afford them. How this formula works in meeting the health care needs of the poor, even in a small and significant way, is a matter for further study. If it is largely serving as a conscience pacifier, how can this powerful force for health be modified and channelized to attain better equity in services? I know of several physicians working behind the high walls of these institutions who are looking for approaches by which these institutions could be linked to public sector health care institutions to provide back-up support, thus becoming integral parts of mainstream-caring services to the people. In countries like India which have a dual system, in reality a pluralistic patchwork of services, the subtle connections between public and private sectors in health care need careful analysis. The social and economic im-

pact of less restrained use of technology in treating individual patients needs to be evaluated⁶. The practice of medicine today is filled with an aura of high technology, expensive medical procedures, excessive laboratory investigations and the high drama of life-saving interventions. It creates stresses on resources, especially acute in low-income countries. How to cope with these stresses in such countries, particularly with the push of privatized health care and how to maintain a balance with considerations of equity in mind, constitutes one of the major challenges of economic liberalization in resource-poor countries.

From a population health standpoint, it is the effect of any reform on primary health care that is of utmost significance. Equally, how the reform addresses the issues of supportive referral services from primary to secondary and tertiary care level needs to be ascertained and mid-course corrections applied.

Plant-derived therapeutic substances

The directing of chemistry of natural products to the relief of human ailments and maintenance of human health is another aspect of the liberalization – health care equation. Intensive research for new therapeutic substances from natural sources is required – a process which has already begun. The discovery of bio-active natural products from Indian medicinal plants is an area of considerable significance for the health care of India's teeming millions. In line with the great legacy of India in this regard, much effort is being expended in Indian research laboratories in pursuit of this goal. Some progress has been made in this direction and several speakers have already alluded to this. This could be yet another indicator of liberalization and health sciences. There are immense opportunities for the discovery of new natural products against challenging diseases for which either the existing therapeutic substances are ineffective *ab initio* or the microbial pathogens transformed from sensitive to resistant strains. It is quite conceivable that plant

genes could be discovered that code for novel molecules of preventive or therapeutic or immunomodulatory value.

Conclusion

In a discussion on science and technology and the economy, there is a need for objective data on the trends in R&D expenditure, the areas of basic research that impact on the economy and in the case of biomedical and health sciences, advances in medical sciences and biotechnology and their impact on health care of people, not ignoring equity issues⁷.

It would be appropriate to conclude with the observations made by Douglas Black, past President of Royal College of Physicians, London, who said of market economies: 'There is an overconfidence in the beneficence of the market and an underawareness of the difference between a business and a service. Is managerial efficiency more important than the skills and dedications of doctors?'⁸.

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V. Ramalingaswami is at the Department of Pathology, All India Institute of Medical Sciences, New Delhi 110 029, India.