
Technology Transfer for Sustainable Development

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The point of departure

In recent years, policy issues surrounding the international transfer of technology (ITT) to developing countries has taken on increasing importance on the global stage. One reason is the evident failure of TRIPS Article 66.2, which sets out an obligation for governments in developed countries to provide mechanisms supporting ITT to the least developed countries, to generate such flows. This failure can be attributed to many factors, most readily the simple fact that governments cannot mandate or effectively subsidise private investments in places where firms do not want to invest. Nevertheless, the weak response of private technology flows to poor countries in the wake of TRIPS, which implicitly should support them in ways far beyond Article 66.2, is a source of considerable disappointment in the agreement to authorities in the developing world.

A second reason is the widespread perception that access to technology, and its effective adaptation and implementation into local production, are critical processes supporting economic transformation and growth. This perception is growing in response to the emergence of global innovation and research networks, which are important channels of cross-border information. Governments in many countries wish to see their firms and research workers become more connected with these processes.

Finally, access to technology is among the best means available for poor countries to address key areas of public concern, such as agricultural security, energy conservation and mitigation of climate change. Such issues are so important on a global scale that the United Nations, along with other international organisations, is currently deliberating

whether to make improved access to science and technology, and the promotion of local innovation, a fully articulated Sustainable Development Goal for 2015.

As an institution, the WTO is properly focused on liberalising border measures and improving clearly trade-related regulations such as intellectual property rights in order to enhance the efficiency of trade and foreign direct investment (FDI). In this context, it is already deeply involved in policy issues that directly and indirectly affect ITT. Trade liberalisation importantly channels technology flows. A clear example is the International Technology Agreement (ITA), which has successfully cut import restraints on a range of products in the information and communication sector. Within the WTO agreements, elements of ITT clearly are envisioned and protected by TRIPS, TBT, SPS, TRIMS, and the GATS, along with the ITA. Also relevant are the subsidies agreement (SCM) and the plurilateral agreement on procurement, since both address policies that could affect investments in new or adapted technologies.

Thus, there is certainly scope for the WTO to revisit some of its rules and consider extending certain agreements in a way that can expand effective ITT to facilitate both economic benefits and solutions for public needs in developing economies. Doing so would permit the institution to engage collaboratively with other international organisations and elements of civil society that are increasingly focused on this area as a solution to public-goods problems. The balance of this chapter sets out some areas in which fruitful study and negotiations could take place within the WTO.

What could be accomplished within a two-year time horizon?

Between now and the 2015 ministerial there are at least two areas in which further WTO deliberations could deliver real benefits in ITT.

Complete the expanded International Technology Agreement

Negotiations to increase the scope of the ITA, in terms of both country membership and, crucially, product coverage, are tantalisingly close to completion. A unique agreement, the original ITA cut tariffs to zero on an important range of earlier-generation information technology products and attracted growing membership over time. Empirical analysis suggests it had a substantial trade-creating effect, with relatively more gains in developing countries because of the larger tariff cuts they implemented (Mann and Liu 2009).

Access to the newest ICT products on reasonable terms is one of the most effective means of linking individuals and enterprises to key global technologies. These products enable internet connections, cheaper communication and better educational opportunities. In this context, the original ITA should be counted a success for facilitating technology transfer.

It remains anomalous that the product list in the 1996 agreement has yet to be expanded to cover many of the wide range of digital consumer products, equipment and inputs that have evolved since that time. Cutting tariffs on these newer goods should generate similar gains, while helping to facilitate connections of enterprises and research organisations in developing countries to information sources elsewhere. Thus, a renewed push to move the new ITA past its finish line is both sensible and well within range of short-term possibility.

Trade in research services

One of the most important trends in ITT is the emergence of global innovation and research networks. These involve cross-border horizontal or vertical sharing of research tasks, whether within multinational firms or, increasingly, across multiple institutions including universities, foundations and private enterprises (Maskus and Saggi 2013).

These networks offer considerable promise for increasing the international circulation of technological information.

The GATS does not meaningfully address service and research regulations that could inefficiently restrict trade and international investments in research networks. Yet its approach could be applied to liberalise disparate R&D processes, subject to appropriate safety and security needs. For example, research grants often restrict associated management services or purchases of equipment to domestic suppliers. On the output side, governments may have requirements that universities or similar institutions license their inventions to domestic firms on a favourable or even exclusive basis (Barton and Maskus 2006). Similarly, rules regarding the location of clinical trials can diminish prospects for efficient investments in locations where such trials may be cheaper or better focused on local needs.

Thus, it could be beneficial to bring research services into GATS negotiations for those countries willing to liberalise the sector in particular ways. R&D services, ranging from equipment purchases and testing protocols to grant management and accounting and beyond, are often heavily regulated in favour of domestic providers. Similarly, grants may raise barriers to using research workers and students in other countries. Commitments to open such services to competition, whether through GATS or perhaps the emerging Trade in Services Agreement (TISA), could offer efficiency gains and improve global network linkages.

What could be accomplished within a four-year time horizon?

While the steps just mentioned would deliver real gains in ITT, ultimately the largest net gains could come from considerably expanding the scope of temporary migration of technically and entrepreneurially skilled workers through the GATS.

Expanding GATS to encourage temporary mobility of skilled workers

The essential idea is to increase ‘brain circulation’, in part to avoid perceived drawbacks of ‘brain drain’ in depriving developing countries of talent. Evidence shows that a significant channel of ITT is the temporary – though not brief – relocation of skilled personnel from countries where production technologies and R&D are lagging to where those skills can be fully utilised. The reverse flows contribute to technology transfer as well. The development of global research and innovation networks has been facilitated by the unimpeded flow of such personnel among R&D and production facilities for temporary stays. Similar comments would apply to research professionals, faculty, and graduate students moving between universities and public research labs and also migrating to spend time in private R&D facilities.

Compared to the current world of tightly limited visas and short stays, a more efficient system would link skilled workers together in an ‘innovation zone’ in which countries would agree to permit longer-term work visas, perhaps for ten years, that could be valid in all participant countries. The concept would be to facilitate free circulation of technical and entrepreneurial talent among the member nations, permitting them to be deployed freely within the associated innovation networks.

Thus, WTO Members could move towards (at least) a plurilateral agreement for significantly liberalised skilled-labour flows under the framework of an innovation zone work visa. The agreement would need to consider how the certification of skills acquired in different professions and in different countries would be recognised by the members, though a basic preference for mutual recognition would seem most efficient. Consistent with GATS principles, countries could reserve certain sensitive professions or perhaps enact safeguards, for example to ensure that security-sensitive positions in public agencies or research labs are ineligible.

References

Barton, J H and K E Maskus (2006), “Economic Perspectives on a Multilateral Agreement on Open Access to Basic Science and Technology”, in S J Evenett and B M Hoekman (eds), *Economic Development and Multilateral Trade Cooperation*, London: Palgrave MacMillan.

Mann, C L and X Liu (200), “The Information Technology Agreement: *Sui Generis* or Model Stepping Stone?”, in R Baldwin and B Low (eds), *Multilateralizing Regionalism*, Cambridge: Cambridge University Press.

Maskus, K E and K Saggi (2013), *Global Innovation Networks and Their Implications for the Multilateral Trading System*, Geneva: International Centre for Trade and Sustainable Development.

About the author

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Maskus received his Ph.D. in economics from the University of Michigan in 1981 and has written extensively about various aspects of international trade. His current research

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