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**TRADE LIBERALIZATION AND  
DIGITAL DIVIDE  
An Analysis of the  
Information Technology  
Agreement of WTO**

**K. J. Joseph  
Govindan Parayil**

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## ABSTRACT

This article reflects on the effectiveness of trade liberalization, as envisaged in the Information Technology Agreement (ITA) of the WTO, for promoting ICT use and production in developing countries. Based on empirical evidence on global exports of ITA goods, and the performance of different groups of ITA member countries and non-member countries a case has been made for complementing trade liberalization with capacity building so that ITA becomes more attractive to developing countries as an additional strategy to bridge the digital divide. It has also been argued that substantial capabilities in ICT production and use have been developed over the years by select developing countries, which provide fresh opportunities for new ICT policy for social and economic development. Against this background the article makes the case for an e-South Framework Agreement that facilitates the harnessing of southern capabilities through building new system of ICT innovation, as a complement to ongoing North-South initiatives, *inter alia* involving trade liberalization along with capacity building to promote ICT use and production in developing countries.

**Key Words:** Trade liberalisation, Digital Divide, Information Technology Agreement, WTO

**JEL Classification:** F 13, L 86, F 53

## Introduction

Recent studies have provided ample empirical evidence at the firm, industry, and economy wide levels, especially in the developed countries, indicating the significant contribution of ICT towards productivity growth. (Pohjola, 2001; Link and Siegel, 2003; UNCTAD, 2003); Indjikian and Siegel, 2005). Also, there are several cases across the developing world<sup>1</sup> demonstrating the benefits from increased access to ICT in enhancing competitiveness, empowering people, and improving social and government services. These evidences seem to have added new optimism to developing countries to harness ICT as a short cut to prosperity. Hence an increasing number of developing countries are undertaking various policy initiatives and institutional interventions towards promoting ICT use. Thanks to these initiatives, growth in the number of telephones (both fixed and mobile) and Internet in developing countries during the recent past has been impressive (UNCTAD 2004a). Nonetheless, the digital world is still characterized by sharp divides-both at international and intra-national levels.

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1 In Gambia, for example, ICT is being used to achieve better health outcomes. In Chile significant results are shown in primary school education with the use of ICT. In Bangladesh mobile phone rental scheme known as “Grameen Phones” has created direct employment for thousands of women. In Indonesia the Internet is enabling the local citizens’ groups to monitor complaints with environmental standards (DOI 2001). A study on the use of ICT in four villages in northern Thailand (as quoted in World Bank, 2002) also has similar conclusion to offer. In the Indian context the experience of *Gyan Doot* programme in Madhya Pradesh, Internet Kiosks set up by MSS Foundation in Tamil Nadu and *Bhoomi* Project implemented in Karnataka and various other rural ICT projects are notable examples of ICT benefiting the poor in several rural locations (Singh 2002, Government of India 2001).

Indeed the issue has received attention from not only policy makers at international, national and sub-national levels but also from an array of civil society organizations (CSOs) and multilateral organizations giving rise to a plethora of initiatives to harness ICT for development (Sreekumar, 2006). Yet, most of the ICT based development projects undertaken by different stakeholders seemed to have stuck at the pilot stage (UNCTAD, 2004a). Also, the initiatives, in general, lay emphasis on trade and investment liberalization as pre-condition for technology catch up, and consequently forcing developing countries on a constant waiting game for the transfer of technology from the North, focusing their energy on an uphill race to attract transnational corporations to their shores (Mytelka and Ohiorhenuan,2000). While the role of ICT has been widely recognized in achieving the Millennium Development Goals, the discussions through out the World Summit on Information Society (WSIS) process made it clear that the status quo in this matter does not serve the interests of developing countries and needs to be changed (UNCTAD, 2004a).

Against this background this article examines the effectiveness of trade liberalization as a means to bridging the digital divide and explores new avenues for promoting the use and production of ICT in developing countries. To accomplish these objectives, we analyze the effectiveness of the Information Technology Agreement (ITA) initiated by the WTO in order to promote ICT use through trade liberalization. The search for unexplored avenues reveals that, unlike earlier general-purpose technologies, substantial ICT capabilities have been developed in select developing countries over the years. The full extent of these capabilities in developing countries is not fully appreciated, and there is a great need to institutionalize arrangements to harness these capabilities. Finally, we make the case for an e-South Framework Agreement, as a complement to ongoing North-South initiatives, involving trade liberalization along with capacity building for the promotion of ICT use and its production to harness developing country capabilities.

## **ITA: Bridging the Digital Divide through Trade Liberalization**

Developing countries face numerous constraints to providing ICT access to their population for taking advantage of the benefits of this general purpose technology. The most serious constraint is the limited affordability of ICT goods and services due to the low income levels of the people in developing countries.<sup>2</sup> To the extent that a non-competitive business environment and limited ICT infrastructure add to the problem, there is the need for creating a more competitive environment and attracting substantial foreign and domestic investments for ICT infrastructure provision. But in most developing countries, government budgets are meager and private investment is limited and is often deterred by outdated legislation and policies that block investment in new and converging technologies like ICT. The ITA aims at addressing some of these issues through liberalizing the trade in ICT goods and services.

The ITA came into force in 1997 and required the elimination of tariffs and other duties and charges on goods covered by the ITA in maximal four stages until 2000. However, developing countries could opt for extending their staging until 2005.<sup>3</sup> Participants are required to abide by the Most Favored Nations (MFN) principle. Hence, the benefits of zero tariffs are extended to those WTO members who did not sign the ITA. While ITA is open to non-WTO members, it is not mandatory on the part of WTO members to sign it. The ITA today is solely a tariff cutting mechanism, as the review of non-tariff barriers has not yet come to any conclusion. Also, while mass communication tools like radio and television could play important roles in addressing the information needs

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2 Studies have shown that the inter- country differences in rate of ICT diffusion is significantly related to general levels of socio economic development represented by per capita GDP, R&D expenditure and the levels of human development (Hargittai 1999, Rodriguez and Wilson 2000, Norris 2001).

3 The exact text of the ITA, including the product coverage, can be found at [http://www.wto.org/english/docs\\_e/legal\\_e/itadec\\_e.htm](http://www.wto.org/english/docs_e/legal_e/itadec_e.htm)

of the poor, such products are not covered by the ITA and the negotiations on expanding the product coverage of the ITA have not been concluded.

### **Trade Liberalization, ICT and Development**

The virtues of trade liberalization that involves removal of tariff and non-tariff barriers have been well articulated in the literature. According to Dornbusch (1992: 74), trade liberalization brings benefits through “improved resource allocation in line with social marginal cost and benefits”; it allows the country access to better technologies, inputs and intermediate goods; it moulds the economy to take advantage of economies of scale and scope; it facilitates greater domestic competition. It creates favourable conditions for growth through externalities by transferring know-how, and ultimately, international trade shakes up of industry through competition and creates a “Schumpeterian environment especially conducive to growth.” Increased competition induced by trade liberalization affects the efficiency in the following ways: it induces the firms to cut cost of production, allows exit of inefficient firms and the absorption of their market share by more efficient ones enabling them to reap economies of scale, and, finally, it leads to increase in the X-efficiency (Corden 1975).<sup>4</sup> The link between international trade, economic growth and total factor productivity was well articulated by Krueger (1997) and Srinivasan and Bhagwati (1999), among others.

In the case of ICT, trade liberalization as envisaged under the ITA could be instrumental in promoting both the use and production of ICT goods and services through its influence on both demand and supply side factors. From the demand side, as Kraemer and Dedrik (2001) argued, one of the best ways to promote ICT use is not to create barriers to users. Tariff reduction and increased competition associated with trade liberalization could bring down the prices of ICT goods and services, leading to increased demand that could be a catalyst for the diffusion

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4 For a detailed survey of studies on this issue please see Tybout (1992)



and use of ICT in other sectors of the economy. This impact is likely to be strong in the case of less developed countries wherein the affordability, on account of low per capita income, is a major constraint in promoting ICT use. As available empirical evidence indicates, the increased use/diffusion of ICT could help increasing the efficiency, productivity and competitiveness of ICT using sectors. The resultant higher output growth in the using sectors could lead to higher income and employment generation in the domestic economy as a whole. Viewed in another way as argued by Pohjola (2001), in an era of globalization, the diffusion of ICT and consequent enhancement in competitiveness could be instrumental in arresting the plausible decline in output and employment growth caused by globalization-induced structural disruptions and external competition in the domestic economy.

From the supply side, ITA could be instrumental in attracting investment into the ICT sector because of the direct link between trade and investment. Obviously, the link between trade and investment is conditioned by the product characteristics and the organization of production. The link is likely to be stronger in product industries geared towards an assembly-line structure of production compared to process industries. In an assembly-line oriented industry like ICT goods such as computers, TVs, mobile phones, video game consoles, compact disks and so on, production essentially involves assembling a number of individual components based on a design. The production of needed components, accessories and materials may be highly skill-, capital- and scale-intensive that not many countries could afford to have the capacity to produce all by themselves. Hence there lies the need for rationalizing their production across different locations. This is what led to the evolution of global production networks (Ernst and Kim 2001) and the new international division of labour in ICT production. In the global production networks of ICT goods, each of the component or sub-assembly is produced and transported across different countries according to their comparative advantage such that the over all cost of production

is minimized. This essentially means that the production in any one country will call for substantial imports and the bulk of the output will have to be exported to other countries rather than sold in the domestic market. Hence if the production and, therefore, investment in ICT is to take place in any country, the trade regime needs to be transparent such that the free flow of inputs into and outputs out of the economy is ensured – a situation that the ITA envisages to bring about.

While the theoretical case for trade and investment liberalization is elegant, when it comes to empirical evidence we have a mixed picture. As noted by Stiglitz (2002: 20), “Globalization itself is neither good nor bad. It has the *power* to do enormous good, and for the countries of East Asia, who have embraced globalization....it has been an enormous benefit.... But in much of the world it has not brought comparable benefits. For many, it seems closer to an unmitigated disaster.” After a critical analysis of the literature on South Korea and Taiwan, Rodrik (1995: 57) states that “a much plausible explanation for the[ir] economic take off is the sharp increase in investment demand that took place in the early 1960s. In the early 1960s and thereafter the Korean and Taiwanese governments managed to engineer a significant increase in private return to capital. They did so not only by removing a number of impediments to investment and establishing a sound investment climate, but more importantly by alleviating a coordination failure which had blocked economic take off.”

In the case of ICT production, the link between trade and investment notwithstanding, it has been shown that local capabilities are critical for attracting investment and promoting production. In a context wherein low labour cost is taken for granted, the ability of developing countries to participate in global production network is governed by their capacity to provide certain specialized capabilities that the TNCs need in order to complement their own core competence. Countries that cannot provide such capabilities are kept out of the circuit of international production networks despite their liberal trade regime (Ernast and

Lundvall, 2000). Also, to avoid the risk of getting locked in at the low end of the value chain, and to facilitate movement along the value chain from OEM to ODM and, and finally, to OBM (Hobday, 1994), it is essential to build up an innovation system that is focused on opening the doors of invention and enterprise in the country. In a similar vein, a survey by Saggi (2002) concludes that the absorptive capacity of the host country is crucial for obtaining significant benefits from FDI. Without adequate human capital, investment in R&D, capital markets, and so on, spillovers from FDI are infeasible.

When it comes to ICT use, lower prices resulting from trade liberalization need not necessarily promote ICT demand and its diffusion unless the developing countries have the capability to use it effectively. Also, at an individual level, the capabilities to use the information provided by ICT, particularly to convert the information into useful knowledge, depends on the cognitive capabilities and social context of the users (Thomas, 2006). Hence trade liberalization has to be accompanied by capacity building such that needed local content is developed and capabilities are created to make its effective use. This calls for complementing liberalized trade and FDI regimes with appropriate policy measures with respect to education, R&D and human capital such that learning capabilities are enhanced in all parts of the economy. On the whole, the present international trade regime is asymmetric, and not fully favourable to least developed countries. Following Rodrik's (1995) valid comment on trade and development, it must be emphasized that a bad trade regime can perhaps make the digital divide more acute, but a good trade policy alone may not address the digital threat to development unless capacity building measures suggested earlier are set in place.

### **Preliminary Empirical Evidence**

The above discussion leads us to examine the evidence on the impact of the ITA. Various indicators could be used to assess its

effectiveness such as the number of countries that signed the ITA and the extent to which it has promoted the demand for ICT goods at the global level and across different countries. Given that demand could be met either through trade or through local production, the issue at hand could be analyzed by examining the growth in ICT use, especially, in developing countries. As the ITA has been fully implemented in a phased manner and full tariff reduction by developing countries has been effective only by 2005, the empirical evidence is only indicative.

To begin with it may be noted that so far only 63 countries have signed the ITA, although it was only 29 in 1997. Thus with respect to the number of countries joining the ITA, the picture is not very encouraging. Now, we shall explore to what extent trade liberalization, as implemented under the ITA, has resulted in an increased demand for ICT goods by analyzing the growth in world trade in ITA goods. Further, we shall also explore the relative vibrancy of the ICT sector of developing countries that joined the ITA<sup>5</sup> vis-à-vis the ICT sector of those developing countries that did not sign the ITA. Since the latter group of countries is highly heterogeneous with wide variation in their levels of development, it may be instructive to compare the performance of developing ITA members with non-ITA developing countries with comparable levels of development.<sup>6</sup> Due to the difficulty in obtaining comparable production data across different countries, we shall approach this issue by analyzing the export and import of select ICT goods by these countries. Finally, we shall reflect on the available evidence of ICT use in developing countries.

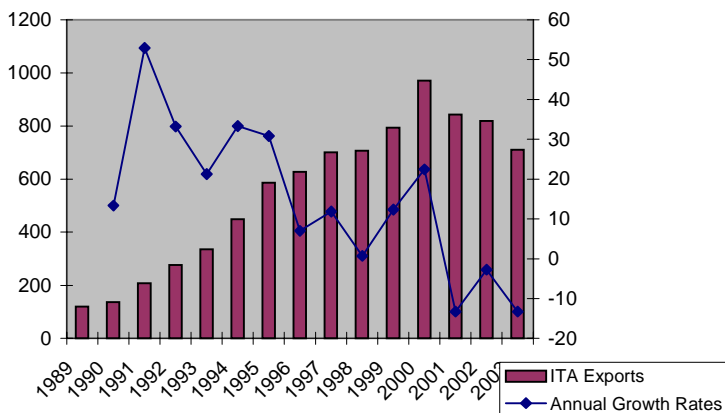
The trend in the world exports of ITA goods during 1989-2003 (Fig 1) shows that during the pre-ITA period (1989-97), the world exports

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5 This refers to the list of 16 developing countries that signed ITA by 1997.

6 We have selected the following 10 non-ITA developing countries: China, Chile, Mexico, Egypt, Brazil, Argentina, Hungary, Russia, South Africa, and Iran. China is been included in this group although it joined the ITA only 2002.

**Fig 1:Trend in World Export of ITA Goods (\$billion)**



Source: Based on Bora (2004)

of ITA goods recorded nearly six-fold increase (from \$120 billion to \$701 billion), an annual compound growth rate of 24.5 per cent. However, the overall performance has been less impressive during the post-ITA period (1997-2003). While the positive growth trends continued since the ITA till 2000 though with a lower growth rate (11.5%), the period thereafter showed steady decline in world exports. Not only that the rate of growth could not be sustained since the ITA, but also the observed growth rates since 2000 have been negative (-9.9% during 2000-03). As a result, the level of world exports of ITA goods in 2003 (\$710 billion) turned out to be almost at the level prevailed in 1997 (\$701 billion)<sup>7</sup>. Hence it may be inferred that, trade liberalization as envisaged under the ITA, had only negligible or negative impact in promoting world demand for ICT goods through increased competition and reduced prices.

7 The negative growth rate, however, should be viewed in the context of drastic decline in the price of most of IT goods considered here for analysis. The decline in prices, however, has not been a post WTO phenomenon.

Against this background let us examine how the different groups of countries identified above have performed in the export and import of ITA goods. ITA goods may be broadly divided into six categories: computers, telecom equipment, semiconductor manufacturing equipment, instruments, components, and software. In 2002, computers accounted for about 35 per cent of the trade in ICT goods followed by semiconductor manufacturing equipment (30%), telecom equipment (19%), components and parts (12%), and instruments (3%). Software accounted for only about one per cent (Bora, 2004).

For our analysis we have selected three products—computers, telecom equipment and components—that accounted for about 66 per cent of the total trade in ICT goods in 2002. The recorded rate of growth of exports and imports of these products by the three different groups of countries identified and for the world is presented in Table 1. It is evident that the developing ITA members as a group performed better compared to the developed ITA members in terms of exports and imports of all the three major product groups. The only exception is in the exports of components where the average growth rate recorded by the developed ITA members is higher than the developing ITA members. But when

**Table 1: Annual average growth rate in exports and imports of select ITA products by different group of countries (1999-03)**

| Products   | Exports/<br>Imports | Developed<br>ITA<br>Members | Developing<br>ITA<br>Members | Developing<br>Non-ITA<br>countries | Total |
|------------|---------------------|-----------------------------|------------------------------|------------------------------------|-------|
| Computers  | Imports             | 1.80                        | 15.60                        | 24.99                              | 3.71  |
|            | Exports             | -3.85                       | 14.61                        | 35.13                              | 5.14  |
| Telecom    | Imports             | 6.25                        | 13.75                        | 13.04                              | 7.35  |
|            | Exports             | -0.31                       | 22.95                        | 28.99                              | 6.75  |
| Components | Imports             | 3.99                        | 9.20                         | 28.15                              | 8.78  |
|            | Exports             | 5.04                        | 4.00                         | 21.97                              | 4.69  |

Source: International Trade Centre, PC-TAS CD-ROM Database

we compare the performance of developing ITA members with the developing non-ITA countries there is not much room for cheer. In all, the exports and imports by developing non-ITA countries are found to be much higher than their counterparts who joined the ITA.

### **ICT Diffusion in Developing Countries**

International Telecommunication Union (ITU) estimates show that during 1992-2002 the share of developing countries in fixed telephones increased from 21 to 45 per cent, mobile phones from 12 to 46 per cent, PC users from 10 to 27 per cent and Internet users from 3 to 34 per cent (UN Millennium Project, 2005). Though these achievements are impressive, if we look at an indicator of ICT, number of telephone lines in developing countries, we find significant inter-regional variation. Telephone density in sub-Saharan Africa and South Asia is far less impressive. ICT growth has been concentrated in cities and few regional clusters. Studies have shown that in least developed countries like Laos and Cambodia their capital cities alone accounted for more than 80 per cent of all telephone lines and almost all Internet connections (Joseph, 2004).

Performance of developing ITA members has not been very remarkable in ICT use. In terms of Network Readiness Index<sup>8</sup> (Dutta et al., 2003), Brazil (a non-ITA country) with a rank of 29 was positioned above Malaysia, India, Thailand and others who are members of the ITA. Similarly, Chile and South Africa (again non-ITA countries) were ranked above India and Thailand. Similar observations could be made in terms of other indicators like household spending on IT, telephone intensity and other indicators of ICT use. Thus viewed, trade liberalization as undertaken under the ITA seems to have not enabled the developing ITA members to overcome the limits set by their per capita income to promote ICT use.

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8 For more details on the Network Readiness Index please see Dutta et al., (2003).

At the same time, it is instructive to note that Vietnam, a member of e-ASEAN Framework Agreement, has made significant progress compared to many other developing countries at similar levels of development not only with respect to developing an ICT production base but also in promoting ICT use across different sectors of the economy (Joseph, 2004). Here it is worth noting that e-ASEAN is not merely a tariff cutting mechanism like ITA, but it has built in provision for capacity building.<sup>9</sup> This tends to suggest that trade liberalization as envisaged under the ITA *per se* may not be adequate to enable developing countries to enjoy fruits of the ICT revolution. As already noted, until now, the number of signatories of the ITA remains at 63. Hence, while there is a great rush among developing countries to enter the WTO and also to harness the new technology for development, they are not generally inclined to sign the ITA. Hence much could be gained by developing ITA members if trade liberalization is complemented with targeted capacity building programmes, which is currently missing in the ITA.

### **Perils of Promoting ICT use by Neglecting its Production**

The studies on technology diffusion have shown that along with demand side factors, supply side factors are also important determinants of diffusion. Hence, greater domestic availability of technology acts as a catalyst for its diffusion (Stoneman, 1995). As Ernst (2001) rightly remarked, enhancing the diffusion of ICT, however, does not imply that developing countries should neglect ICT production. Both are complementary and need each other. But in the present approach to ICT and development, the focus is mainly on ICT use and only limited attempts have been made towards integrating ICT production and diffusion. Such neglect of ICT production is more evident, than elsewhere, in the important Kuala Lumpur Declaration on ICT policies and e-Strategies in Asia-Pacific that dealt with all aspects of ICT diffusion into

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9 See for details <http://www.aseansec.org/5308.htm>



different sectors of the economy, whereas the issue of ICT production was not given the attention that it duly deserves.<sup>10</sup>

An implicit argument in such an approach is that the needed technology, both hardware and software, are available on the international technology market shelf at a falling price. Hence, as far as developing countries are concerned, there is no need to reinvent the wheel but choose appropriately from the international technology markets. With respect to technology and innovation, such thinking prevailed in the 1960s wherein there has been a proliferation of studies on the choice of technique implying that the core issue before the developing world is just one of choice and not development of technology (Fransman, 1986). The 1980s, however, has seen the emergence of a number of countries in the developing world building up substantial technological capability (Fransman and King, 1984). Various studies that analyzed the process of technological capability building in the developing world (Lall 1987 & 1992) revealed that this would not have been possible had these countries remained passive adopters of Western technology. Hence, if the available empirical evidence on technological capability in the developing world is any indication, the present lopsided approach being adopted by developing countries, in terms of promoting ICT use while neglecting ICT production capabilities, perpetuates technological dependence on the one hand and foregoes opportunities for income and employment generation on the other. Here it is worth remembering that the Green Revolution, which has been a success story so far as agricultural productivity in many developing countries in Asia and Latin America was concerned, would not have been possible had the technology transfer strategy been one of passive adoption of Western technologies without domestic capacity building in location specific agriculture science research and technology development (Parayil, 1992 & 2003). There is much that developing countries could learn (both the good and the bad)

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10 See <http://www.apdip.net/asian-forum/default.asp>

from the Green Revolution to institutionalize ICT innovation policies for development.

Thus viewed, there is no reason why developing countries should forego the opportunities for learning and innovation along with the income and employment generation offered by investing in ICT production, either through FDI or through internal investments. At the same time, ICT production policies need to be carefully integrated. Not all developing countries should, however, specialize in all segments of the global production networks. Without developing some capacity to participate in the technology spectrum, however rudimentary the level, countries will not learn and develop capacity for ICT infrastructure maintenance and system management so that they can wean themselves from external technical assistance.

The relevance of harnessing developing country capabilities needs to be seen against the background of different ways in which ICT could contribute to development. Kraemer and Dedrik (2001) articulated the contribution of ICT for development at two, different but interrelated, levels: (a) on account of the production of ICT goods and services (direct benefits) and, (b) on account of ICT diffusion/use (indirect benefits). The direct benefits refers to the contribution in output, employment, export earning and so on from the production of ICT related goods and services. The indirect benefits refer to ICT induced development through enhanced productivity, competitiveness, growth and human welfare in different sectors of the economy and society. It has also been argued that any effort to understand the new economy would show that the speed up of productivity growth that was at the core of this phenomenon had more to do with the extension of the division of labour than with the extended use of ICT (Lundvall, 2003). Therefore, a third way in which ICT contributes to development relates to its bearing on promoting international division of labour and facilitating the participation of developing countries in the global production networks. Since the indirect

contribution of ICT through its diffusion has attracted sufficient attention of researchers we shall focus on the other two aspects.

### **Returns to ICT Production: The Case of ICT Goods**

Studies have shown that in the USA, wherein the macroeconomic benefits of ICT revolution are already apparent, ICT industries accounted for about 8.3 percent of the GDP and nearly a third of GDP growth between 1995 and 1999 (US Department of Commerce, 2000). ICT production also contributed to lower inflation rates since a growing proportion of economic output has been in sectors marked by rapidly falling prices.<sup>11</sup> Economic growth from ICT production has not been confined to the US alone. ICT industry had shown to be a major source of economic output, exports and job creation in countries like Korea, Taiwan, Singapore, and Finland. Therefore, it appears that much could be gained by the developing world by focusing on both production and use of ICT; instead of the present approach emphasizing ICT access alone to bridging the digital divide.

It may be argued that given the present structure of ICT production at the international level and the higher entry barriers, ICT production need not necessarily be an easy proposition for developing countries. Industry segments such as microprocessors, operating systems, embedded systems and packaged business software applications are almost closed because standards are set by leading transnational ICT players, mainly US multinationals, such as Intel and Microsoft.<sup>12</sup> Other segments of the

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11 The report argues that actual inflation fell by 0.5 per cent points a year from 1994 to 1998 due the effect of declining prices of IT goods. Also ICT industry, including telecommunications, employed 7.4 million workers in 1998 and this accounted for 6.1 per cent of the total employment with an annual wage rate more than 1.5 times that for all private employees. A cynic may argue that to sustain such growth in employment, output and wages in developed countries, the diffusion of ICT in developing countries need to grow at higher rate and not production.

12 A classic example is the technology lock in model called “Wintelism” (Hart and Kim, 2002), whereby Microsoft’s Windows operating system and Intel’s micro-processors together account for almost all personal computer architecture standard in the world.

ICT industry are highly capital intensive, scale intensive and require specialized skills that only a few countries have mastered (Kraemer and Dedrik, 2001). Moreover, early entrants such as Singapore, Korea, Taiwan, Ireland, Israel, China and India seemed to have pre-empted many others from new opportunities.

While there is some merit in the above argument, a closer look at the characteristics of ICT industry would reveal that the doors are not that firmly shut for new comers. The ICT industry is a multi product industry and its products may be broadly divided into two categories; ICT goods and ICT services. The ICT goods may be divided into a wide range of ICT equipment and components. Each of these broad categories comprise of a large number of sub-groups and products incorporating varying levels of technological sophistication, technological dynamism and investment requirements (Joseph, 1997). Also, at least in the near future, the demand for ICT goods is likely to go up as the rate of ICT diffusion increases both in the developed and developing world. Therefore, it is possible that the new comers could enter profitably into some of these product lines depending on their technological capability and their ability to learn, specialize and mobilize capital.<sup>13</sup>

### **Participating in Global Production Networks: The Case of ITES and BPO**

Recent developments suggest that primary commodity producing countries in the South have not benefited from globalization driven trade liberalization. As UNCTAD (2004b) rightly points out, the secular decline and instability in world commodity prices and resulting terms of trade losses have reduced the import capacity of many developing countries,

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13 The experience of “Asian Tigers,” especially, South Korea, Taiwan and Singapore, in breaking into the international ICT market dominated by US and European players, is instructive here. See Mathews and Cho (1999) for an inspiring account of this experience.

particularly sub-Saharan African countries that led to increased poverty and indebtedness. This situation is further complicated by the emergence of increasingly concentrated market structures at the international level and stringent standards and requirements in developed country markets. Various studies in the value chain framework have shown that the value retention by developing country producers of commodities is decreasing (Kaplinski 2000). Hence, while there is the need for giving a renewed impetus to the “commodity problematique,” there is also the need to search for new avenues of income and employment generation for developing countries.

Such an inquiry will naturally lead us to exploring ways and means of making effective use of their abundant labour. It has been long noted that services in general are cheaper in developing countries compared to developed countries. This was attributed mainly to the fact that labour is the major input in the production of services and the abundant supply of labour in less developed countries translates into low wages. Since the technology of producing services does not differ significantly across countries, lower wages results in low cost of production of services in less developed countries (Bhagwati 1984). Yet, developing countries in general were unable to take advantage of this cost benefit, mainly, because most of the services were embodied in its provider and that their export called for the movement of its provider, viz. labour. But the movement of labour, unlike capital, was subjected to a series of restrictions. Though the process of globalization, which *inter alia* implied the free movement of products and *all* factors, there have been hardly any relaxations in the restrictions on labour mobility. However, advances in ICT have made it possible to a great extent the “splintering off” of many of the services from its providers. Consequently, the labour component of service as a place and time bound entity became a spatially and temporally independent activity that could be place- and time-shifted through the intermediation of ICT. This is the critical factor behind the outsourcing of services and knowledge work (Parayil, 2006).

India, with its large pool of skilled manpower, has emerged as an attractive location in the international division of labour in knowledge intensive industries as well as in Business Process Outsourcing (BPO). In 2004-05, it was estimated that the IT-enabled services (ITES) sector recorded a growth rate of over 51 per cent during the previous three years and generated total employment of about 0.35 million and export earning of about \$ 5 billion. The current export from India, however, accounts for only about 0.6 per cent of the global market of about \$773.6 billion and the world market is expected to grow at an annual growth rate of 8.6 per cent to reach \$1079 billion by 2006 (Nasscom 2004).<sup>14</sup> If low-income countries could manage to have at least 50 per cent of this growing market in the near future, it could contribute significantly to their growth.

India is not the only country benefiting from the opportunities offered by BPOs and ITES. China, the Philippines and Costa Rica among others are also emerging as providers of BPO services to the developed countries (UNCTAD 2002). Given that BPO services are not very skill intensive and most of the required skill could be acquired in a relatively short span of time, developing countries need to adopt appropriate policies to exploit this growing opportunity. In order to achieve this, developing countries need to work together and much could be learned from India and other countries to exploit this service industry. If such services are perceived as an opportunity for less developed countries in the near future, it is also important that the countries in the South join together to address the restrictive practices currently being adopted by the developed world such that outsourcing does not end up with the same fate that labour faces today with respect to cross boarder mobility.

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14 To put it in perspective, the total primary commodity export from low-income countries in 2001 was of the order of \$ 882 billion.

## **Concluding Observations**

Present unequal access to ICT notwithstanding, there is a general consensus, based on empirical evidence across the world, among academics, policy makers, NGOs and multilateral organizations that developing countries could benefit from the new technology as much as the developed countries. Hence the series of policy initiatives and institutional interventions undertaken in the recent past by developing countries and other stakeholders to harness ICT for development are steps in the right direction.

The many e-strategies developed so far, in general, underscore the need to promote the use (diffusion) of ICT across different sectors of the economy. Towards this end the establishment of a liberalized trade regime has been given importance as is manifested in the Information Technology Agreement under the WTO. While the diffusion of ICT is crucial to the socio-economic transformation and building up of competitiveness in the developing world, the present approach appears to consider developing countries as passive adopters. The present approach towards ICT use without due attention to ICT production perpetuates the technological dependence of LDCs on developed countries. Such an approach negates the income, employment and export earning opportunities offered by this new general purpose technology.

The theoretical case for trade and investment liberalization as envisaged under the ITA is elegant. However, preliminary empirical evidence suggests that the returns to trade liberalization have, at best, been modest. Trade liberalization as implemented under the ITA has so far neither promoted the world demand for ITA goods nor has it arrested the decline in world trade in ITA goods. Surprisingly, a select set of developing countries who are not members of ITA are found performing better than their counterparts in the ITA, both in terms of exports and imports of ITA goods. No wonder, while developing countries are eager to join the WTO and harness the new technology for development, they

are not equally keen on signing the ITA. Hence, if the available evidence is any indication, trade liberalization as envisaged under the ITA, *per se*, may not enable developing countries to enjoy the fruits of ICT revolution. Developing ITA members could gain much from the ITA and it could become attractive to others if trade liberalization is complemented with built in provision for capacity building, which is currently missing in the ITA.

Unlike the earlier general-purpose technologies wherein Western countries held monopoly, several countries in the developing world have gained substantial capabilities in ICT. Yet it is vital to scale up these innovative capabilities and institutionalize a strategic southern system of innovation for reaping economies of scale and scope as well as mutual learning and risk sharing. It is well known that primary commodity producing countries have not benefited from globalization and free trade. Hence, there is a great need for giving impetus to the problem of “commodity problematique” by developing new avenues of income and employment such as IT enabled services (ITES) and Business Process Outsourcing (BPO) and other “New Economy” business opportunities related to ICT. Some countries like India and China have made significant progress in reaping this new opportunity. Hence what is called for is cooperation among Southern countries to avoid wasteful competition and to address the restrictive practices currently being adopted by the developed world such that outsourcing does not end up with the fate that labour faces today with respect to cross boarder movement.

The need for the proposed southern system of innovation is too obvious because of the existence of ICT capabilities in the developing world and marked divergence in the ICT interests of developing and developed countries. But, what is at present missing is an institutional arrangement for promoting such a system and research backed by theory and empirical evidence to sustain it. In this context new initiatives must be undertaken by bringing together developing countries under the



umbrella of an e-South Framework Agreement aimed at bridging the digital divide through an integrated ICT-based development programme. Towards achieving this objective, the proposed Agreement, in tune with the Information Technology Agreement of the WTO, should facilitate free and fair trade in ICT goods and services. At the same time, the proposed e-South Framework Agreement should be instrumental in building capacity for the production and use of ICT. Given the paramount importance of human capital in developing ICT production and promoting ICT use, special focus must be given to developing ICT manpower base and relaxing the restrictions on the mobility of skilled manpower across the developing world. In general, the Agreement should facilitate integrated development of the ICT sector wherein both production and use are promoted instead of the present approach that forces many developing countries to be passive adopters of technology. The architecture of such e-South innovation system is yet to be worked out and we leave that task to developing countries and multilateral agencies. In conclusion, it must be born in mind that reiterating South-South cooperation should not be construed as a substitute for the ongoing initiatives at promoting North-South, bilateral, and regional cooperation or country-specific policies.

***K. J. Joseph** is Professor/Fellow at the Centre for Development Studies, Trivandrum.*

*E-mail contact: [kjoseph@cds.ac.in](mailto:kjoseph@cds.ac.in)*

***Govindan Parayil** is Professor and Research Director at the Centre for Technology, Innovation and Culture, University of Oslo.*

*E-mail contact: [govindan.parayil@tik.uio.no](mailto:govindan.parayil@tik.uio.no)*

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