

Introduction

Much of this book is concerned with the influence of information technology on patterns of globalization and with the question of how such patterns can be altered so as to reduce the growing digital divide between rich and poor countries.¹ More specifically, Part I below is concerned with exploring conceptually the nature of the mechanisms through which this new technology actually influences globalization and with examining the disparate outcomes of these processes in various parts of the world economy. Part II, on the other hand, addresses itself to the policy issue of how the mechanisms thus described can be made more responsive to the needs of the developing countries and especially the poorer groups living in those countries.

CONCEPTUALIZING THE INFLUENCE OF INFORMATION TECHNOLOGY ON GLOBALIZATION

Any attempt to analyse the influence of information technology on globalization needs to take into account not only that there are numerous forms of this technology (such as telecommunications, computers and industrial machinery), but also that the notion of globalization itself embodies several dimensions, among the most important of which concern the volume of international trade as a percentage of world output and the extent to which the latter is made up of foreign direct investment.

Such complexity notwithstanding, we argue in Chapter 1 that many, if not most, of the impulses propagated by the various forms of information technology on international trade and foreign investment can be understood with reference to the concept of transactions costs (which, broadly, refers to all the costs incurred by the transacting parties in reaching an agreement to trade with one another). In particular, it is argued that by reducing these types of costs, electronic communication technologies generate an increase in the volume of international transactions, not only between independent buyers and sellers but also within large multinational corporations. (Calculations performed recently by the World Bank, for example, show that the yearly savings to a firm in Sub-Saharan Africa from substituting the Internet for fax communications with other countries would amount to more than

6,000 US dollars.²) In this respect, the current wave of globalization and its implications for developing countries needs to be distinguished from the similar degree of global economic integration that occurred in the 19th century, which was driven not, as now, by a drastic fall in transactions costs but rather by a fall in the cost of transporting goods from one country to another.³

Chapter 2, by contrast, is concerned not so much with information technology as it benefits buyers and sellers in the form of reduced transaction costs, but more with the comparative advantage that such technology may bestow on those who adopt it *vis-à-vis* those who do not. The particular question that we seek to answer there is whether and to what extent the emergence of (a new form of) competition, based on the rapid introduction of new products and the use of information technology in the developed countries, will undermine in some way the comparative advantage that developing countries have increasingly come to enjoy in sectors such as textiles and clothing.⁴ From among the many existing theories of international trade, the model of the product cycle, with its emphasis on product innovations and the role of foreign investment, might seem to be an especially useful framework for addressing this issue (bearing in mind, as one must, the growing importance of foreign investment as a determinant of international competitiveness). Yet, although the theory of the product cycle retains a certain degree of contemporary validity, we argue that it concerns itself almost entirely with the different phases of development in the life cycle of a *given* product, rather than the effect of a *new* product on the comparative advantage currently enjoyed by developing countries in *old* (or mature) product varieties. Based on the type of highly disaggregated data that we think are required to answer this question, what seems crucial is the changing nature of global competition as manifest in rapid product turnover, flexibility in production and proximity to final markets. As a result of such competition in at least one important industry, clothing, it appears that while some developing countries will indeed suffer from the introduction of new technology in the developed countries, others, however, will gain. And in yet another category, there are developing countries that will remain largely unaffected by these changes in the nature of global competition.

Chapter 3 combines the issues raised in the two previous chapters into a more complete taxonomy of the various impulses propagated by information technology on the global economy by means of international trade and foreign investment. For each such impulse we seek to describe how different types of developing countries are likely to be influenced by the relationships thus identified. What we find is that some countries, especially the East Asian NICs (newly industrializing countries), have explicitly sought to exploit the full range of possibilities for global integration afforded by information technology and these countries have also benefited from a number of powerful

cumulative processes that have further enhanced the extent of their integration into global economy. Many other countries, on the other hand, have made little progress in the exploitation of the new technology and they may even have suffered in an absolute sense from the so-called ‘backwash effects’ of the expansion of trade and foreign investment in the former group of countries. Indeed, a central theme of this chapter is that these differential effects of information technology on patterns of globalization need to be viewed from the perspective of Myrdal’s notion of cumulative causation, rather than a framework which envisages the technological (or some other form of) convergence of developing countries with one another.⁵

Described thus, our conclusions are consistent with and in fact help to explain the highly uneven patterns of globalization that have been emphasized by many international institutions in recent years (according to the 1999 edition of the Human Development Report, for example, whereas some ‘have predicted convergence ... the past decade has shown increasing concentration of income, resources and wealth, among people, corporations and countries’ (UNDP (1999), p. 2).⁶

PRO-POOR MODES OF TECHNICAL INTEGRATION INTO THE GLOBAL ECONOMY

In as much as globalization based on technical advances in information technology (as opposed to other factors) is creating the tendency just noted towards growing dualism in the world economy, the question arises as to whether and under what circumstances it is possible to promote an alternative, pro-poor form of technical integration into the global economy (that is to say, a form of globalization that benefits the poor as well as the rich). From the two chapters in Part II of the book that address themselves specifically to this question (Chapters 4 and 5), a number of important policy conclusions may be said to emerge.

The first of these is that particular attention needs to be paid to improvements in basic telephony in rural areas of developing countries, partly because it is in such areas that most of the poor tend to be concentrated and also because it is in those same areas that the telecommunications infrastructure is usually most acutely lacking. One recent study of Bangladesh, cited in Chapter 4, for example, suggests that even the poorest groups in society tend to benefit economically from the availability of (cell) phones in their villages (among other ways, via improved access to information about the prices of inputs and outputs). Basic telephony is also important, however, because of the limits it sets on the attainable growth of the new communications technologies such as the Internet. For example,

further growth of the Internet in Africa is closely tied to the quality and availability of telecommunications infrastructure in this vast continent. A major component in this process is the liberalization of the sector and private sector investment. In Sub-Saharan Africa, change is already underway; 25 countries have begun reform programs in telecommunications. However, how much these reforms will immediately impact the growth of the Internet is yet to be gauged.

The Internet places large demands on infrastructure with its requirements of high quality and high speed connections. Service providers need cheap and reliable access to international communications lines to link with the web, as well as equally reliable local access for their customers. (World Bank (2000) p. 2)

A second main conclusion that emerges from our discussion of pro-poor modes of technical integration into the global economy, is that while the goal of providing each and every household with its own telephone, computer or e-mail facility may be feasible in the context of developed countries, in the poorer regions of the world reality demands a much more modest target, namely, to provide members of the community with reasonable *access* to (as opposed to individual ownership of) these technologies. In fact, there are already a variety of institutional models of how this goal can actually be promoted in the Third World. Some of them are confined mainly to the use of telephones (as is currently the case for example with the Grameen Telecom project in rural Bangladesh or 'phoneshops' in India), while others (usually referred to as telecentres) also include access to e-mail and Internet facilities. Some models have been initiated by governments or international organizations, while others owe their origin to private entrepreneurs⁷ or NGOs (still others, meanwhile, involve some combination of these various institutions). As yet, however, there is little evidence of the differential degree of success with which these numerous endeavours are actually reaching the poor in developing countries (for at least one case, however, that of the Grameen Telecom, the available data on this issue are summarized in Chapter 4).⁸

Whereas the issues described in the previous paragraph mainly involve institutional innovations that are needed if the poor are to gain increased access to various forms of information technology, the final policy implication one can draw from the second part of the book is concerned with the nature of the technology itself. In particular, we suggest in Chapter 5 that in areas such as telecommunications, computer hardware and software and electronic communication technologies there are already far more low-cost alternatives (and hence potentially more scope for adoption by those with low incomes) than most people realize. The problem is that information about most such alternatives – ranging as they do from software that avoids the premature obsolescence of useable hardware to network computers that cost less than 200 US dollars – is highly fragmented and hence difficult to acquire. What we suggest therefore is the establishment of an institution whose ongoing function would be precisely to collect and disseminate all the fragmentary information

about low-cost information technology that is available at any one point in time.

TECHNOLOGY POLICY IN SUB-SAHARAN AFRICA

Part III focuses specifically on Sub-Saharan Africa, the region which, as noted at various points in the first five chapters, has benefited least from the various types of information technology. To some extent, of course, the comparatively limited degree of diffusion of this technology in the region can be explained in terms of the constraints imposed by the low average incomes in most Sub-Saharan countries. As noted by a number of authors, however,⁹ the African experience with information technology also has partly to do with the lack of any coherent government policy towards this technology and the related fact that there are more than a few countries in the region that impose tariffs and sales taxes on telephone equipment and computers. Mozambique, for example, imposes an import duty of 35 per cent on telephone equipment and 45 per cent on computers. In Senegal the corresponding magnitudes are 61 and 26 per cent, while Kenya imposes a sales tax of 18 per cent on telephone equipment and 15 per cent on computers (World Bank (2000)). Such inattentiveness to information technology, we should note, is far from being an exception to an otherwise active state technology policy in the region. On the contrary, as argued in Chapter 6, state passivity with regard to the choice of technique and the acquisition of local technological capabilities in general is a recurring historical theme in the literature on industrialization in Africa,¹⁰ a tendency which we believe helps to explain the poor performance of this sector in most of the region during the post-independence period (in contrast, most strikingly, to the East Asian NICs which made technology into a central component of state industrial policy).¹¹

Not least among the things that African governments seem to lack is reliable and convincing information about the potential gains afforded by information technologies and the policies that are needed in order for those gains to be realized (as evidenced, where relevant, by the successful experience of one or another country in the region). From this point of view it is fortunate that the World Bank has recently prepared an 'Internet Economic Toolkit for African Policy Makers' which contains detailed information on these and other issues (World Bank (2000)). Africa, according to this report,

has an unprecedented opportunity to vastly improve its information technology and communication infrastructure. African nations, however, must act quickly to gain access and contribute to the world's knowledge base, communicate with global neighbors and fully participate in the development of a global information society. The Internet represents a technology that encapsulates much of the promise of this

information revolution. This toolkit aims to assist African policy and decision makers to better understand how the Internet is different, its costs and benefits, and policy issues that surround this technology. (World Bank (2000) p. 1)

Even if this and other donor initiatives (alluded to in Chapter 4) are reasonably successful in inducing the required policy changes, however, one cannot, given the enormity of the existing constraints, realistically expect more than a relatively small proportion of the population in Sub-Saharan Africa to gain access to the Internet and other forms of information technology in the short to medium term. It is crucial therefore that attention continues to be paid to policies directed towards *conventional* technologies and in particular to the promotion of technologies that benefit those described as living in poverty, rather than, or in addition to, the groups with relatively high average incomes. Chapter 7, accordingly (as well as parts of Chapter 6), describes some of the main elements involved in such a pro-poor technology policy and illustrates the argument with a number of African cases that were particularly successful from this point of view.

NOTES

1. Information technology is defined here in a broad sense that includes not just electronic communications technologies such as the Internet, but also industrial computer technology such as computer-aided design, and telecommunications technology such as digital switching equipment. The term 'globalization' is used primarily to connote a rise in the ratio of foreign trade and investment to GDP.
2. These estimates are based on companies that do a lot of international business. In the particular example cited in the text it is assumed that

Talking to the United Kingdom for about an hour each business day over the period of a year would cost a Mozambican businessman approximately US \$38 250. Faxing that same information would cost US \$7650. All of the yearly costs of a regional Internet connection - a computer, a modem, and Internet access - used for international e-mail alone as a substitute for fax traffic, would together amount to US \$1328. The yearly savings over fax use would thus be US \$6322 (World Bank (2000) p. 5).

3. 'Thinking About Globalisation: Popular Myths and Economic Facts', *The Economist* (1997).
4. In the early literature on information technology and development, this issue was referred to as 'comparative advantage reversal'.
5. For a critique of the convergence literature, see, for example, Felipe (2000) and Rowthorn and Kozul-Wright (1998). Rodriguez and Wilson (2000) show that 'the gap between the ICT haves and have-nots appears to be growing substantially'.
6. The same point was emphasized earlier by the World Bank (1996).
7. To the examples of entrepreneurial initiative cited in Chapter 4 one can add the case of Somalia, where 'The state telephone system was destroyed in the civil war and has now been replaced, at least in the main towns by enterprising Somalis. They simply buy a satellite dish and telephones, build a shed of phone booths and charge \$1 a minute for anywhere in the world' (*The Economist*, November 25 (2000)).
8. See especially the appendix to that chapter.
9. See, for example, Wangwe and Musonda (1998).

10. For a detailed argument on this point see James (1995).
11. See, for example, Bell and Pavitt (1997).

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