

E-Commerce, WTO and Developing Countries

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1. Introduction

Even though phone, fax and television remain the most widely used electronic mediums to promote or conduct commerce, much of the current excitement, confusion and debate on e-commerce are the result of the rapid ascendancy of Internet. This medium of transmission has made possible international transmission of services on a scale that was not possible via fax, phone and television. Internet is being used today to buy abroad many back-office services such as electronic publishing, website design and management, customer call centers, medical records management, hotel reservations, credit card authorizations, remote secretarial services, mailing list management, technical on-line support, indexing and abstracting services, research and technical writing, and technical transcription. It has also become a medium for electronic transmission of many products, traditionally traded in the form of goods. Thus, books, CDs, movies and computer programs can now be transmitted internationally in digital form.

The increasing use of Internet gives rise to important policy issues relating to both multilateral rules of international trade and national economic policy. At the multilateral level, the members of the World Trade Organization (WTO) must decide whether the General Agreement on Tariffs and Trade (GATT) or General Agreement on Trade in Services (GATS) should be applied to international trade on Internet. Or, will the member countries' interests be best served by an entirely separate discipline in this area? If Internet commerce is treated as a service, should it be considered cross-border trade or consumption abroad? And how can market access for the member countries be improved in this important area?

At the national level, countries must decide which policies will best improve the provision of Internet services and facilitate trade through this medium. The developing countries interested in promoting this medium may have to speed up their efforts to build the

telecommunications industry and to create financial infrastructure necessary for electronic transactions (for example, credit cards). They may also find it necessary to relax the rules governing direct foreign investment. Countries such as India, that have a large potential to export services electronically, may find it beneficial to actively negotiate trade liberalization in services with developed countries.

In the present paper, I discuss these multilateral and national aspects of e-commerce. A key distinguishing feature of the paper is its focus on developing countries.¹ In Sections 2-4, I offer an analytic discussion of the issues relating to multilateral rules applicable to Internet commerce. In Section 5, I focus on the implications of e-commerce for developing countries and discuss possible policy measures the countries may wish to take to maximize the benefits from it. I conclude the paper in section 6.

2. Which Multilateral Discipline: GATT, GATS or Both?²

The degree to which WTO members can regulate and tax international Internet trade will depend on the WTO discipline they decide to apply to it. The WTO report mentioned in footnote 1, Bacchetta et al. (1998), raises the possibility that, in principle, the “digits” traded

¹ The literature on e-commerce is small but rapidly growing. Among the key contributions are Barfield (1999), Bhatnagar (1999), Choi et al. (1997), Vulken (1999) and Ypsilanti (1999). Most relevant to the present paper is the comprehensive study by the World Trade Organization, Bacchetta et al. (1998). For a general discussion of the developments, the reader may also find the surveys in the May 19, 1997 and June 26, 1999 issues of the *Economist* useful.

² In writing this section, I have benefited greatly from advance access to the ongoing joint research of Aaditya Mattoo and Ludger Schuknecht.

on Internet could be viewed as goods, services or even something else. Which of these characterizations is chosen determines whether this trade is subject to the rules laid down in GATT, GATS, a combination of these two, or an entirely new agreement.

It may be noted at the outset that there is no ambiguity at present regarding the status of the goods ordered and paid for on Internet but delivered physically in the conventional manner. Except for the order and payment themselves, these transactions are treated as goods trade and the GATT discipline applies to them. The ambiguity arises only when the goods are delivered on Internet.

On the face of it, any deliveries made by Internet would seem to resemble services. Nevertheless, there are products delivered by Internet that have counterparts in merchandise trade. The obvious examples are books, videos, music CDs and computer software. When imported in physical form, these products are treated as goods with the GATT discipline applied to them. But can they be treated as services when delivered by Internet? Or, in conformity with their physical counterparts, should they be treated as goods?

One extreme possibility is to characterize all transmissions on Internet as goods with GATT discipline applied to them. Such a characterization accompanied by a ban on custom duties on the transmissions, currently in place, would amount to the WTO members committing themselves to complete free trade in transactions routed by Internet. This is because national treatment and MFN status are general obligations under GATT. Under national treatment, the member countries would give up their right to discriminate against Internet imports as far as domestic taxes are concerned. And the ban on custom duty would bind their tariffs on Internet imports at zero. In view of the fact that the member countries made their commitments in the UR and post-UR negotiations in services under the implicit assumption that most of the Internet transactions were services, they are unlikely to consider this option seriously.

At the opposite extreme, we could abandon both GATT and GATS and develop an entirely new discipline for Internet trade. While some have argued in favour of this approach, its benefits are less than clear. Internet services, which include Internet service providers and phone lines on which transmissions flow, are already subject to GATS and the Agreement on Basic Telecommunications. All electronic transmissions that flow on Internet, on the other hand, have counterparts in either goods trade or services trade. As such, the rules necessary to regulate that trade can be found in GATT or GATS.

Thus, the real contest is between the application of GATS to all Internet trade or GATT to that trade for which physical counterparts also exist and GATS to all other e-trade. In my judgement, on balance, it makes more sense to define all electronic transmissions as services. At one level, it may be argued that at the time Internet transmissions cross the border between two countries, they do not have a physically traded counterpart. The eventual transformation of the transmission into a good such as a book or CD does not negate the fact that at the border the transmission did not have a physically traded counterpart. Indeed, in many cases, the transmission may not be turned into the physically traded counterpart at all. For example, the recipient may continue to store it in the digital form with books read on the screen and music played directly on the computer.

But this is not the principal reason why I lean in favor of treating all Internet trade as service trade. The key advantage of adopting the across-the-board definition is that it is clean and minimizes possible disputes that may arise from countries wishing to have certain transmissions classified as intangible goods and others as services. Under a mixed definition, in any trade dispute involving Internet trade, panels will have to first decide whether the object of dispute is a good or a service to determine whether the rules of GATT or GATS are to be applied. The adoption of the across-the-board definition automatically resolves this issue.

The across-the-board definition, nevertheless, raises some efficiency issues that must be addressed. Thus, consider first the issue of tariffs, which are applicable to products imported in physical form but not when transmitted electronically. As long as the cost of electronic transmission is lower than that of physical delivery, the presence of tariffs on the latter poses no problem. Effectively, the electronic transmission offers the product to the country at a price lower than that available through physical delivery. This change is equivalent to an improvement in the country's terms of trade and, leaving aside some general-equilibrium considerations, improves welfare unambiguously.

But for many countries, especially developing ones, this is an unlikely scenario. In these countries, most consumers do not have computers or Internet access. A likely scenario, therefore, is one in which a handful of independent entrepreneurs will receive the product by Internet, convert it into physical form such as CDs and sell the latter to consumers. But this activity may itself be costly, using up real resources.

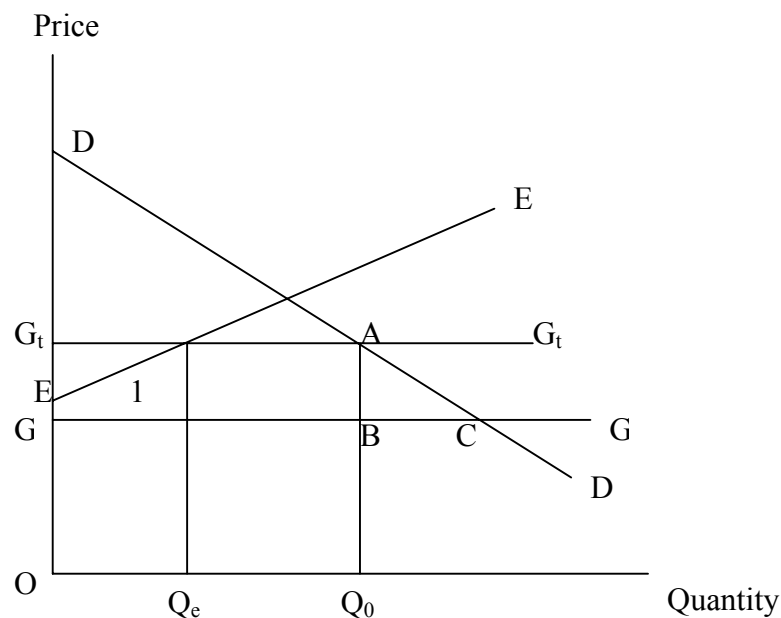


Figure 1

A possible outcome of the proposed regime in many developing countries can be represented stylistically, therefore, with the help of Figure 1. In the figure, DD gives the

demand for a specific compact disc (CD) and GG its supply when imported in physical form, as a good. It is assumed that the country is small so that the supply is perfectly elastic. In the absence of Internet transmission, the quantity purchased is given by Q_0 and tariff revenue by $ABGG_t$.

Suppose we next introduce Internet transmission. Assume, as is true currently, that if music is transmitted electronically, no tariff is paid. Competitive entrepreneurs import music electronically, convert it from digitized form into CDs and sell them to consumers. The marginal cost of conversion and distribution is positive and rising, leading to the supply curve EE. It is then immediate that quantity OQ_e is now be imported by the electronic medium while Q_eQ_0 continues to come in physical form. The tariff revenue collected previously on OQ_e disappears. Of the lost revenue, area marked 1 goes to cover the higher costs of supply by Internet and is a deadweight loss. The remainder of the lost revenue becomes a transfer to exporters.³

This analysis shows that subjecting like products, delivered by different means, to different disciplines can potentially result in harmful efficiency effects. There are at least two solutions to this problem, however. First, the country could choose to eliminate the tariff on physical deliveries, thus, eliminating the efficiency loss represented by area 1 in Figure 1.

³ This is the standard story from the smuggling literature that arises when there are two sources of supply and the more expensive source is not subject to a tariff but the less expensive source is. It should, of course, be clear that if the cost of Internet transmission were low such that the Internet supply curve crossed the demand curve below GG, this problem would not arise. Internet supplies will eliminate physical shipments and the price will be below GG, benefiting the consumers by more than the lost tariff revenue.

Indeed, this will lead to a net efficiency gain of triangle ABC. Second, the country could choose to impose a higher domestic tax on music CDs supplied by Internet by an amount equal to the tariff on physical deliveries. As long as the country has not already committed itself to giving national treatment to imported music services, this option is available within GATS.⁴

It is useful at this point to return briefly to the temporary ban on custom duties on all electronic transmissions mentioned earlier. While this ban would be meaningful if all e-commerce is classified as goods trade, its continued existence and the current U.S. proposals to make it permanent are puzzling. At present, the only way to charge a custom duty on a service imported through Internet is through a higher domestic tax (for example, VAT) on it than that applied to the identical, domestically supplied service.⁵

If a country has not committed itself to giving national treatment to the imported service in its national schedule, it is free to impose this higher domestic tax. For such a country, the custom duty ban does nothing to prevent it from discriminating against the imported service. On the other hand, if the country has committed itself to giving national

⁴ The absence of trade taxes on services is an important and entirely neglected problem. If tariffs are imposed to raise revenue, efficiency dictates that services are brought into the tariff net as well. Yet, this issue has received no attention in the academic or policy literature presumably because academics still like to think of services as non-traded and policy analysts do not want to scare away foreign investors by taxing the services supplied by foreign sources at higher rates.

⁵ Even this option is available in the case of business-to-business transactions only. When a foreign business sells a product electronically directly to domestic consumers, it is not clear how the transaction can be subject to any domestic taxes.

treatment to the imported service, it is not clear how it can implement a discriminatory custom duty. In either case, the ban is meaningless and entirely vacuous.⁶

A second difference between GATT and GATS discipline from the viewpoint of efficiency is that the former does not allow quotas while the latter does. In the particular example I have discussed above, in principle, if WTO members decide to apply GATS discipline to services traded electronically, a country will have the option to limit the number of CDs that could be transmitted by Internet. It is not immediately clear how this restriction can be enforced. But assuming that it could be done, trade will be diverted to shipments in physical form, which may be an inferior mode of delivery. At present, such a quota is not enforceable. If it does become enforceable, the outcome can be inferior to that obtainable under the GATT discipline. This will be a cost of the clean definition I have advocated.

3. Mode 1 or Mode 2?

The GATS Agreement classifies services according to the mode of delivery, distinguishing four categories: cross-border supply (mode 1), consumption abroad (mode 2), commercial presence (mode 3), and the movement of natural persons (mode 4). Assuming the GATS discipline is applied to electronic trade, for transaction that do not take place either through commercial presence or the movement of natural persons, the member countries will still need to decide whether they are to be treated as cross-border trade (mode 1) or

⁶ One possible explanation is that in the Seattle Round negotiations, it may have been the intention of the United States to get Internet trade classified as goods trade. And if by then the countries had also committed themselves to a permanent ban on custom duty, Internet trade would have been automatically freed of all border restrictions.

consumption abroad (mode 2).⁷ There are no clear-cut objective criteria that can be brought to bear on this classification. Therefore, it is likely to be negotiated as a part of the next round of negotiations. The choice of classification has two principal implications.

First, the classification will determine the liberalizing impact of the commitments made in the UR and post-UR GATS negotiations on services. In these negotiations, countries have already made commitments based on the modes of supply of services. Therefore, it matters whether electronic trade is treated as being supply by mode 1 or mode 2. For example, if a country gave full market access under mode 2 for a particular financial service that is traded electronically, the commitment would have no liberalizing impact if electronic commerce is classified as supply under mode 1. Thus, the liberalizing impact of previous commitments will depend on the mode of supply under which electronic commerce is classified. It is my impression that countries undertook more obligations for liberalization under mode 2 than under mode 1. Accordingly, the liberalizing impact of the commitments will be greater if electronic commerce is classified under mode 2. Developed countries, which are net exporters of electronic services, stand to gain greater market access if these services are classified as being supplied under mode 2.

⁷ Though the discussions on e-commerce are often focused on cross-border method of delivery, it can and does take place through commercial presence (mode 3) as well as the movement of natural persons (mode 4). For example, when a foreign bank offers electronic banking services to the residents of a country, the transaction is classified under mode 3. Likewise, when computer programmers move to another country and offer their services electronically there, such e-commerce will be classified under mode 4.

Second, the classification determines the country of jurisdiction for purposes of regulation and dispute settlement. For supply under mode 1, the transaction is deemed to have taken place in the country where the buyer resides. Therefore, it is the regulatory regime of the importing country that applies to the transaction. In contrast, for supply under mode 2, the relevant regulatory regime is that of the country where the supplier resides. If countries feel that they want to protect their buyers' interests, they are likely to opt for mode 1. Thus, there is some tension in the choice of classification depending on the objective. The market access objective pulls towards mode 2 while consumer protection objective pulls towards mode 1.

To the extent that in making their liberalization commitments in the UR and post-UR negotiations, countries viewed the electronic transactions between providers and recipients in different countries as cross-border transactions, it makes sense to treat them as such. Otherwise, actual liberalization is likely to end up being at variance with what the countries intended.

4. Access to E-Commerce

Access to e-commerce, which in the WTO parlance often means access to e-exports, has two components that must be distinguished sharply: access to Internet services and access to services that can be traded electronically. The former deals with access to Internet infrastructure while the latter relates to specific commitments in electronically tradable services (for example, commitments in financial services under modes 1 and 2). In goods trade, we can liken these components, respectively, to access to transportation networks (including ports, ships, roads, railways and air transport) and access to specific goods markets through a lowering of trade barriers such as tariffs and quotas. For lower trade barriers to result in more imports, access to transportation networks is necessary. Similarly, for specific

commitments in various services sectors under modes 1 and 2 to result in increased flow of imports, access to Internet facilities is essential.

4.1 Access to Internet Services

The access to Internet infrastructure depends on two factors: (i) availability of communications networks, hardware and software and (ii) access to the existing communications networks. Let us consider briefly each of these factors.

(i) Availability of Infrastructure, Hardware and Software

At the basic level, access to Internet by the residents of a country depends on the level of development of the telecommunications sector and the availability of hardware and software. In the remote villages of many developing countries, even the basic telecommunications service may not exist. To bring Internet and, hence, e-commerce to these villages, one will need to first bring telecommunications services there. But even when telecommunications services exist, additional hardware that links up the individual user to Internet must be put in place. Finally, one needs to ensure access to equipment such as computers, modems and software. Generally speaking, an open trade regime with respect to information technology equipment is likely to facilitate access to this equipment. This is perhaps the reason why some countries chose to sign the Information Technology Agreement (ITA), which requires the signatories to free up trade in a large number of information-technology products.

(ii) Access to Communications Networks

There are three principal WTO provisions that govern access to communications network: GATS Article VIII on monopolies and exclusive service suppliers, GATS Annex on Telecommunications, and the Reference Paper on regulatory principles in the Agreement on Basic Telecommunications. In addition, specific commitments on national treatment and

market access made by countries in basic telecommunications sector have implications for access to Internet.⁸ GATS Article VIII and the Annex apply to all WTO members uniformly. The Reference Paper applies to approximately 60 countries that incorporated it into their specific commitments in the agreement on basic telecommunications services. A total of 69 countries made specific commitments in basic telecommunications sector. Of these, ten countries made specific commitments with respect to Internet access providers.

Article VIII, which applies to all services, is designed to deal with monopoly suppliers who can potentially frustrate a Member's MFN and specific market access commitments. For instance, suppose telephone lines in a Member country are owned by a single entity and the Member has made market access commitments to other countries in the provision of Internet services. Article VIII requires this entity not to limit access to phone line to service suppliers from other Members or discriminates among them. It also requires this entity to ensure that the commitments made by the Member in other service sectors are not frustrated.

Article VIII is limited in its application to cases in which a monopolist supplies the service in question. GATS negotiators recognized, however, that basic telecommunications services are central to the smooth flow of trade in a large number of other services. Therefore they introduced further provisions in the Annex on Telecommunications to widen access rights in the use of public telecommunications transport networks and services (PTTNS).⁹

⁸For completeness, mention may also be made of GATS Article IX on business practices, which provides for consultation and information exchange between affected Members when suppliers resort to anti-competitive practices.

⁹ As defined in the Annex, a public telecommunications transport 'service' is any telecommunication transport service, offered to the public, involving the real-time transmission of customer-supplied

The Annex requires each Member government to ensure that suppliers of other Members are given reasonable and nondiscriminatory access to and use of PTTNS *for the supply of a service included in the Member's schedule*. The term "nondiscriminatory" is defined here to include *both national treatment and MFN*. The Annex, thus, goes beyond Article VIII in two respects. First, for a service listed in the Member's schedule, it gives foreign suppliers nondiscriminatory access to PTTNS even though the Member has not committed to national treatment in that service.¹⁰ Second, the access provision applies to PTTNS irrespective of whether these services and networks are supplied by a monopolist or competitive firms.

The concern that large operators, capable of frustrating market access commitments, would dominate telecommunications markets remained central during basic telecommunications negotiations. This led the participants to lay down a set of regulatory principles, aimed at reigning in the behavior of the major suppliers of telecommunications services, in a Reference paper. Some 60 participants incorporated this Reference Paper into their commitment schedules.

information without any end-to-end change in its form or content. Public telecommunications transport 'network' refers to public telecommunications infrastructure permitting telecommunications between and among network termination points.

¹⁰This means that if a country lists Internet service supplies in its national schedules even without committing to national treatment, foreign suppliers are to be given nondiscriminatory access to PTTNS. Discrimination against foreign suppliers is still possible in other areas (for example, taxation) as long as the country has not committed to national treatment in Internet service supplies.

The regulatory principles in the Reference Paper oblige major suppliers to provide interconnection on nondiscriminatory terms. They are to also provide services in sufficiently unbundled form that those seeking interconnections do not have to pay for unnecessary components and facilities. The Reference Paper also lists rules governing anti-competitive cross-subsidization, the misuse of information, licensing criteria and transparency.

Finally, Internet access also depends on the degree of liberalization undertaken by Members in basic telecommunications. 69 countries signed the Agreement on Basic Telecommunications in February 1997. Counting the European Communities as one, this produced 55 schedules. Many of the negotiated undertakings represent a pre-commitment to liberalize in the future.

A key area of liberalization from the viewpoint of Internet access is that of Internet Service Providers (ISP). In many countries, telecommunications services are supplied by a public monopoly, which often also becomes the monopoly provider of Internet access. In countries, which have liberalized their communications regimes, competing ISPs exist and offer different bundles of Internet services. In future negotiations, it will be worthwhile to incorporate ISP as an explicit sector into national schedules of commitment. This may induce further liberalization in many countries in this key area. There is no compelling argument against permitting multiple ISPs or foreign entry even in countries with monopoly provision of other telecommunication services.

4.2 *Access to Electronically Traded Services*

In addition to Internet access services just discussed, Internet offers the opportunity for trade in two additional areas. First, many services outside of telecommunications sector such as those in banking, insurance and computer programming sectors can be delivered electronically. Second, Internet can be the vehicle for the provision of distribution services

with goods and services purchased through Internet but delivered by other means. For transactions in the first category, GATS discipline applies fully. In contrast, transactions in the second category are similar to those by telephone or mail order. When delivered physically, goods are subject to the usual GATT discipline including customs duties.

While national treatment and market access commitments in national schedules do matter in that they restrain the importing country's ability to discriminate in its tax policies in favor of domestic suppliers or among various foreign suppliers, in the case of Internet trade, they play a less crucial role. To the extent that governments do not have effective control over what gets traded on Internet, especially when transactions are from business to consumers, the value of these commitments is limited.

Instead, the bulk of the expansion of e-commerce will depend on countries granting recognition to the education or experience obtained, requirements met, or licenses or certificates granted in another country. Article VII of GATS allows for such recognition even on a discriminatory basis in the sense that it allows Members to extend such recognition on a selective basis. For instance, the United States may give recognition to accountancy degrees from Europe but not India. This could signal potential buyers that it is hazardous to buy accountancy services in India even though the latter may be capable of supplying them competitively. Article VII gives some flexibility to excluded countries in this regard which developing countries should exploit as much as they can. In particular, if a Member gives recognition to the standards prevailing in another Member in a specific area and a developing country's standards in the same area happen to be at par, under Article VII provisions, it should be granted similar recognition.

5. E-Commerce and Developing Countries

In this section, I discuss the issues more directly relevant to developing countries. I begin with an analytic discussion of the ways in which Internet generates benefits for the countries and interacts with other modes of delivery of services, especially the movement of natural persons. I then consider policy actions that developing countries may consider taking to enhance the benefits from e-commerce.

5.1 *The Gains from Internet to Developing Countries*

While virtually all countries stand to gain from the opportunities offered by Internet, according to one view, developing countries stand to gain more from it than developed countries. Developing countries are far behind developed countries in terms of information-technology infrastructure. Given the cost savings offered by Internet technology and relative ease with which it can be provided, they can now skip several stages of technological development through which developed countries had to go. Stated differently, developing countries are much farther inside the current technological frontier and, therefore, have larger potential benefits from moving to it.

In the long run, this is a defensible statement. But it must be acknowledged that the benefits of e-commerce are distributed unevenly not only across countries--both between and among developing and developed countries--but also over time. Given that three fourths of the current e-commerce is concentrated within the United States, perhaps this single country has benefited most from it. In contrast, for many poor countries in Africa, the telecommunications infrastructure is so poorly developed that it will take a long time before they are able to benefit significantly from e-commerce.

The benefits from e-commerce to a particular developing country, both domestically and internationally, depend on the volume of demand for and supply of goods and services

that can be potentially traded on Internet. Despite all the excitement surrounding Internet, it is likely that for many developing countries the demand and supply factors do not promise large gains, at least in the foreseeable future. Due to a lack of electronic means of payment such as credit cards, payments will still have to be made by conventional mediums. This factor alone is likely to limit considerably the scope of domestic electronic transactions. Moreover, the domestic demand for services that are electronically delivered is likely to be limited. Due to low costs of internal movement of natural persons, even businesses, which have heavy needs for customized software, are likely to rely on the physical presence of the personnel. In these countries, even if Internet was widely available, e-commerce, as distinct from email and other communications, will not achieve big success immediately.

In assessing the potential benefits from international e-commerce to a country, analysts often focus only on the goods and services that it can export. This is an incorrect approach, however, since benefits can arise from a reduction in the cost of imports as much as from an increase in the price received for exports. Even if a country does not export any services, it can benefit from imports of services, paying for them in terms of goods. Cheaper availability of medical, engineering and architectural services, long-distance learning and reduced costs of transactions can confer benefits even if the country does not immediately export the services traded through Internet.

To the extent that Internet effectively opens markets that were previously closed, it is tempting to think of it as another form of trade liberalization. But, in fact, it is much more: it amounts to a technical improvement that lowers costs of transaction and, as such, generates far larger benefits than the triangular efficiency gains that accrue from trade liberalization. Indeed, the decline in costs increases potential benefits from trade liberalization in many services sectors.

Among developing countries, the countries best positioned to benefit from e-commerce through export expansion are those with a substantial pool of skilled labor, capable of working on or near the frontier of computer technology. The case of India, which is already benefiting from e-exports in a big way, best illustrates this point.

I had long held the view that India had over invested in higher education at the cost of primary education. At one extreme, the most talented individuals left the country in search of better opportunities abroad while at the other extreme the country was left with a large pool of educated workers who could not be absorbed into the economy. Even today, the lowest-level clerical jobs attract a large number of applications from graduates and post-graduates.

The advent of computer technology in general and Internet in particular has turned what once seemed a bad investment into a valuable resource. The migration of some of the country's most talented individuals to developed countries notwithstanding, the country has the world's second largest pool of English speaking scientific manpower. Each year, Indian universities graduate as many as 115,000 engineers. This pool, Internet and the opening to direct foreign investment by India have combined to yield annual exports of as much as \$4 billion.¹¹

Because the international movement of natural persons is subject to severe restraints, the value of marginal product of skilled labor in developed countries is far higher than in developing countries. Though numerical estimates are not available, the potential gains from increased mobility of the movement of natural persons are astronomical. Developing countries in general and India in particular have long sought a relaxation of restrictions in

¹¹ This information was provided by Dewang Mehta in his presentation at the WTO conference "Potential for Electronic Commerce for Businesses in Developing Countries" on February 19, 1999 and summarized in the WTO document WT/COMTD/18.

developed countries on the movement of natural persons. But they have not achieved a notable success in this effort.

By making the sales of skilled labor abroad possible without actually moving natural persons physically, Internet has at last brought developed-country demand for skilled labor to developing countries. This has resulted in a large capital gain on the investment India has made in higher education during the last four decades. Thus, what had seemed to be a poor allocation of resources for decades, *ex post*, promises to turn into an excellent investment.¹²

Figure 2 offers an analytic representation of the benefits from the opening of the market for skilled labor through Internet. For simplicity, divide the world into two countries and call them the United States and India. Use an asterisk to distinguish the variables of the United States from those of India. Let M^*M^* represent the potential excess demand for skilled labor in the United States and EE the excess supply of it in India. In view of the fact that the United States is very large in economic terms, M^*M^* is shown to be relatively elastic.

In the absence Internet and the movement of natural persons, skilled wages in the United States and India settle at W_A^* and W_A , respectively. The introduction of Internet allows "trade" in skilled labor between the United States and India provided the United States has opened up its imports of some services through modes 1 and 2. To the extent that Internet is an imperfect substitute for the movement of natural persons and trade in services under modes 1 and 2 is not entirely free, we will not expect the equilibrium to move to the

¹² The simultaneous liberalization of direct foreign investment has also helped this process. The presence of foreign firms in India has played an important role in linking the demand for various services in their source countries with the supply in the host country (i.e., India).

fully integrated equilibrium, I. Instead, trade is likely to be limited up to, say, Q_1 , generating gains from trade equal to the area between M^*M^* and EE over quantity OQ_1 .

The important question is how these gains are going to be divided between the United States and India. The answer to this question depends on where the wage settles. When natural persons are allowed to move, the answer is clear. The wage is determined on the demand curve, M^*M^* . This is because the U.S. firms must compete for the limited number of workers who have been granted the entry visa. It is also the case because the U.S. laws do not permit local firms to hire foreign workers at a wage lower than what is paid to U.S. citizens to ensure that firms do not opt for the former because they can employ them cheaper.

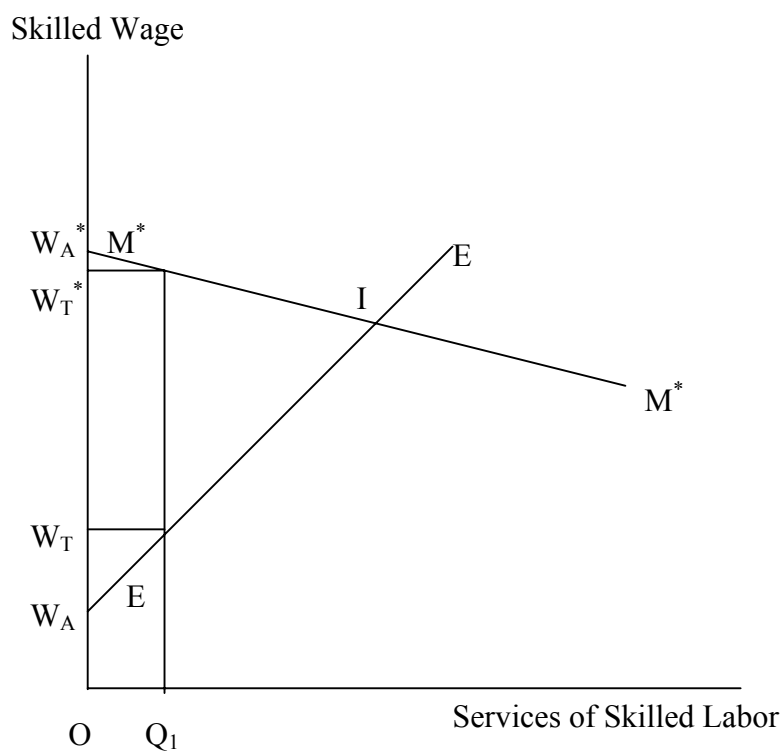


Figure 2

The outcome is likely to be different when Internet is the medium of exports of skilled labor. Now the wage will be closer to the export-supply curve, EE. This is because the wage must be determined within the Indian market based on how much can be exported. The more liberalization in services the United States undertakes under modes 1 and 2, the greater the

demand for the Indian skilled labor and the higher the wage. Thus, benefits to India depend directly on the extent of liberalization undertaken by the United States in services that can be potentially exported by India on Internet.

This analysis is, of course, highly stylized. Cross-border trade will not substitute for the movement of natural persons in all cases. Often confidentiality or security considerations require consultants to move to the site where service has to be provided. The most striking recent example relates to the Y2K contracts. In other circumstances, the movement of natural persons may even be complementary to exports via Internet. For instance, installation and maintenance of software may require physical presence of the supplier. Finally, natural persons may also be employed in sectors that remain largely non-traded. This is clearly true, for instance, of medical and health services.

We may also ask whether trade on Internet might substitute for direct foreign investment. Sometimes it is suggested that if the delivery by modes 1 and 2 becomes a substitute for delivery by mode 3, Internet will become a substitute for direct foreign investment. Although examples of modes 1 and 2 deliveries substituting for mode 3 deliveries are not pervasive, this does not rule out the possibility that Internet may have an adverse impact on direct foreign investment. Substitution between modes impacts only sectoral composition of direct foreign investment, not its aggregate level. Instead, the aggregate level will depend on whether Internet raises the return on capital more in the source countries or the host countries. If the former as is likely at least in the short run, more capital will choose to stay in the source countries. This is clearly an empirically testable hypothesis and is worth studying further. Internet has expanded sufficiently already in developed countries that its impact on investment abroad may be detectable in the data.

5.2 *Policies for the Expansion of E-commerce*

Development of e-commerce should not be treated as a goal in itself. Some countries are better positioned than others to achieve a rapid expansion of e-commerce for the same amount of resource invested. Since resources have alternative uses, one must compare the rate of return in e-commerce to those in other activities before committing resource in this sector. This consideration remains valid even if investment decisions are made by private agents but the policies chosen by the government have significant effects on those decisions. For instance, policies facilitating the development of e-exports are likely to yield higher returns in a country like India, which has a significant pool of skills to export, than in a country lacking such skills.

For developing countries that find the expansion of e-commerce a desirable instrument of achieving its social and developmental goals, action must be taken at three levels. First, the hardware and software necessary to develop electronically sellable services should be available at reasonable prices. Second, basic infrastructure necessary for smooth functioning of Internet must be in place. Here “infrastructure” is defined broadly and includes facilities to conduct financial transactions on Internet. Finally and most importantly, developing countries must negotiate access to developed country markets in sectors in which they can export service by the electronic medium. Let me take each of these areas in turn.

Countries can ensure the access to hardware and software by liberalizing the imports of the relevant products. They can accomplish this by either signing the Information Technology Agreement or liberalizing the imports of the relevant products outside of that agreement. Note here that this recommendation is made taking as given the desirability of the expansion of e-commerce in the first place. We must bear in mind that when there are high trade barriers on other products as is likely to be the case in many developing countries, this liberalization itself may misallocate resource and the consumer expenditure. In such

circumstances, the benefits from the expansion of e-commerce must outweigh the costs of the misallocation.

It is presumably in the area of infrastructure development that developing countries need to do most to assist in the development of e-commerce. Without adequate telecommunications system and the availability of inexpensive telephone service, Internet and e-commerce cannot flourish. At present, the telecommunications network in many developing countries is rather poorly developed. A large majority of individuals do not have access to even telephones.¹³ And those who do must pay very high rates on telephone calls. Unlike in the United States, local telephone calls are metered and charged at fairly high rates so that even if the Internet access is cheap, the expenses on local telephone calls, necessary to connect to the Internet access provider, can raise the overall cost of Internet use.

There is also the issue of power supply. In India, for instance, publicly supplied power has been sufficiently unreliable that many software firms in Banaglore had to resort to their own generators to ensure continuous flow of power. Frequent and long interruptions in power flows can have a devastating effect on the transmission of data.

At present, in the large majority of developing countries, Internet access is also expensive and unreliable. Often telecommunications services are supplied by a public monopoly, which also becomes the monopoly provider of Internet access. Unable to expand

¹³ In China and India, there are 2.3 and 1.1 telephones per one hundred inhabitants. This compares with 59.5 telephones per hundred inhabitants in the United States. Among developing countries, only Hong Kong and Singapore have telephone availability that is comparable to that in developed countries. See Table 2, p. 7, Bacchetta et al. (1998).

service sufficiently, under public pressure, it finds itself giving many more connections than the capacity of the system. The result is a failure of many customers to access the service for which they have paid.

The solution to this problem is to simply allow private Internet service providers into the market. As long as these access providers can be obliged to give inter-connections to one another through proper regulation, there are no benefits to having a monopoly supplier of the access service. This is clearly an area in which private market can function efficiently.

Prevalence of a legal framework, centered on paper-based contracts and handwritten signatures can also impede the growth of e-commerce. The United Nations Commission on International Trade Law (UNCITRAL) had drawn attention to this issue as early as 1985 and called upon Governments to consider the possibility of permitting, where appropriate, the use of electronic means of authentication. Subsequently, UNCITRAL has developed a Model law on Electronic Commerce, which was approved by the United Nations General Assembly in December 1996. The Model law lays out what constitutes the equivalent of a written document, signature and original in the electronic environment. It also sets forth rules governing the admissibility and evidential weight of electronic messages, the retention of data messages, the formation and validity of contracts, and attribution. Many countries have either adopted the Model law or introduced legislation related to electronic facilitation issues. The countries that have not yet introduced legislation along these lines are likely to need to do so.¹⁴

¹⁴ For further details, see UNCTAD (1999).

Finally, assuming the provision of reliable Internet service at reasonable rates domestically can be ensured, additional policy measures are required to facilitate e-commerce. In many developing countries, electronic means of payment, including credit cards, are virtually non-existent. This means that even when products can be ordered or services delivered by Internet, payment must be made by conventional means. This slows down the completion of transaction considerably, reducing potential benefits.

In the case of foreign purchases, this problem becomes even more acute. Many developing countries do not have current-account convertibility so that ordering goods on Internet from abroad is not a practical option except perhaps in the case of large firms, which may have ready access to foreign exchange. Even in countries such as India, which have current-account convertibility but not capital-account convertibility, individuals do not have ready access to foreign exchange. Thus, as far as imports of goods and services are concerned, the Internet option is likely to remain limited to larger firms. The solution here is not entirely clear since the issue of giving access to foreign exchange to individuals has serious implications for the ability to control capital outflows, especially in times of a crisis. Even if the access is provided for current-account transactions only, it becomes easy to disguise capital-account transactions as current-account transactions. This may be even easier when the purchase is that of a service rather than good.

Ready access to foreign exchange is not a problem, however, in so far as exports are concerned. Normally, exports require receipt of foreign exchange for which restrictions on electronic transmission are likely to be less of a problem. Moreover, exports are likely to be undertaken almost exclusively by commercial entities rather than individuals, which are generally equipped to deal in foreign exchange. Even if they need to import certain products, they are likely to be able to make payments electronically in countries with current-account convertibility.

The final step in ensuring access to international e-commerce is to have access to communication networks and markets for electronically tradable goods in foreign countries. The access to communication networks is essentially guaranteed under GATS and the Agreement on Basic Telecommunications as discussed in Section 4.1 of this paper. At present, there is sufficient excess capacity in the networks in developed countries. Therefore, the access is unlikely to be a problem. It is possible, however, that as the use of Internet grows worldwide, expansion of capacity may fail to keep up with demand. Normally, one will expect that price mechanism will work to clear the access demand but there may be phases when networks begin to congest heavily. Under such circumstances, developing countries will need to ensure that their access rights are not violated. While, personally, I do not expect this to turn into a serious problem, some caution in this regard may prove valuable.

The more important access issue relates to liberalization commitments by developed countries in the services that developing countries can export electronically. To-date, liberalization commitments by both developed and developing countries have been concentrated in services traded by mode 3. In these services, developing countries are largely importers. Commitments in electronically traded services, which developing countries can potentially export, have been limited.

For some developing countries, the potential for exports of services through electronic means is very substantial. For instance, the market for customized software alone is growing at more than 20 percent annually and is projected to reach \$250 billion by the end of 2000.¹⁵ Back office services offer another area in which developing countries can and have been

¹⁵ The information in this and the following paragraph is taken from UNCTAD (1998).

supplying services to developed countries. Starting with simple data entry services in the 1980s, the supply of back office services from developing countries has grown to include electronic publishing, website design and management, customer call centers, medical records management, hotel reservations, credit card authorizations, remote secretarial services, mailing list management, technical on-line support, indexing and abstracting services, research and technical writing, and technical transcription.

As reported in UNCTAD (1998), based on OECD (1997), the global market for back office services (including Y2K code conversion) that could be potentially supplied by developing countries amounted to as much as \$438 billion in 1998. This figure is at least 20% of total 1996 exports of developing countries. The United States corporations alone spend \$50 billion a year on information processing, of which at least 20% can be provided in a back office environment.

Developing countries should also identify sectors in which they could export services electronically and have not been liberalized so far by developed countries. One such area would seem to be accountancy services. Negotiations in this area could potentially be extremely beneficial to some of the developing countries since this is a very large market.

Internet also offers developing countries the opportunity to become exporters of products purchased by foreign governments. In the past, it would have been difficult for potential developing country suppliers to find out information on these purchases. But many developed country governments are now beginning to post tenders for procurement of goods and services on Internet. This gives suppliers from developing countries a better access to yet another sector in developed countries. Though the establishment of credibility may take some time for the small and medium firms, large firms in developing countries can certainly bid and compete successfully for these contracts.

6. Conclusions

In this paper, I have discussed the main economic issues raised by e-commerce for the WTO and developing countries. I advocate three policy prescriptions. First, all things considered, it will be most appropriate to classify e-commerce as trade in services with GATS discipline applied to it. In particular, since this matter is still under negotiation, developing countries should be sure that e-commerce is not classified as goods trade with zero custom duty pact made permanent. Such an outcome would liberalize all e-commerce by default, undermining their bargaining power.

Second, at present there is some disagreement about whether international Internet transactions should be classified as cross-border trade or consumption abroad. In making their commitments in the UR and post-UR negotiations in services, countries presumably viewed these transactions as cross-border trade. For if they are defined as consumption abroad, the category of transactions described as cross-border trade in services will be virtually vacuous. Therefore, it makes sense to classify international Internet trade as cross-border trade.

Finally, developing countries such as India that have the capacity to export skilled services through Internet should aggressively negotiate market access with developed countries in future negotiations. This involves negotiations on two fronts. One, they should seek liberalization by developed countries in sectors in which they have comparative advantage. And two, they should seek recognition of their education, qualifications, requirements met, or licenses or certificates granted in the markets of other countries.

Policy issues confronting developing countries in e-commerce are not limited to the negotiating issues, however. Indeed, for most developing countries, the binding constraints on the development of e-commerce are internal. These countries lack adequate telecommunications facilities with the density of telephone lines being less than three per one

hundred people. E-commerce can, of course, grow rapidly even when this density is low as the Indian experience illustrates. But such growth is likely to be confined to an enclave and will fail to achieve its full potential. Most observers would agree that with superior telecommunications infrastructure and regular power supply, even the Indian software exports would have grown at a much faster pace than they did. Efficiency considerations dictate that, assuming e-commerce lowers costs of transactions, its expansion not be confined to external trade but also extended to domestic trade. That, in turn, requires an expansion of telecommunications facilities. Also critical to the expansion of both internal and external e-commerce are financial sector reforms. In particular, unless electronic means of payment such as credit cards are developed, the expansion of e-commerce will be slow.

Electronic commerce offers unprecedented opportunities to both developing and developed countries. In the short run, the gains are likely to be concentrated in developed countries but, in the long run, developing countries have more to benefit. This is because, in the short run, developing countries lack the infrastructure necessary to take full advantage of Internet. But in the long run, they can leap frog, skipping some of the stages in the development of information technology through which developed countries have had to pass.

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