

Internationalization of Services, A technological Perspective

Citation for published version (APA):

Miozzo, M., & Soete, L. L. G. (2001). Internationalization of Services, A technological Perspective. *Technological Forecasting and Social Change*, 67(2-3), 159-185. [https://doi.org/10.1016/S0040-1625\(00\)00091-3](https://doi.org/10.1016/S0040-1625(00)00091-3)

Document status and date:

Published: 01/01/2001

DOI:

[10.1016/S0040-1625\(00\)00091-3](https://doi.org/10.1016/S0040-1625(00)00091-3)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.



NORTH-HOLLAND

Internationalization of Services: A Technological Perspective

MARCELA MIOZZO and LUC SOETE

ABSTRACT

Despite the rapid pace of developments in the policy front, a major weakness of the theoretical and policy treatments of the service sector and the “trade in services” debate is their neglect of the impact of technological change on the changing nature of the service sector, the increasing internationalization of services, and the particular and dominant role played by transnational corporations in this process. This paper outlines a taxonomy of services based on their technological linkages with manufacturing and other service sectors. This taxonomy identifies a number of technology-intensive service sectors closely related to the use of information that are essential to growth. The effect of recent technological changes on the transformations in business organisation, industry structure, internationalization, and the role of transnational corporations in these technology-intensive service sectors is explored. The paper concludes with policy implications for less developed countries. © 2001 Elsevier Science Inc.

Introduction

The year 2000 will witness the next round of services negotiations in the General Agreement on Trade in Services (GATS) [as part of the World Trade Organization (WTO)], which seeks to extend liberalization of trade in services worldwide, following the conclusion of negotiations on telecommunications and financial services in 1997. Despite the rapid pace of developments in the policy front, however, a major weakness of the theoretical and policy treatments of the service sector and what is called the “trade in services” debate is their neglect of the impact of technological change on the changing nature of the service sector, the increasing internationalization of services, and the particular and dominant role played by transnational corporations (TNCs) in this process.

The idea that services are labor-intensive activities, with little scope for rapid productivity growth, is clearly a notion of the past. Attempts have been made to reassess the commonly held “haircuts view” of the sector, to understand the growing importance of information in a number of service sectors [1–4] and the peculiarities of services as technology producers [5, 6]. More recently, studies have pointed out the importance of

MARCELA MIOZZO is lecturer in Technology Management at the Manchester School of Management, UMIST, UK.

LUC SOETE is director of MERIT, Maastricht, The Netherlands.

Address correspondence to Marcela Miozzo, Manchester School of Management, UMIST (University of Manchester Institute of Science and Technology), P.O. Box 88, Manchester M60 1QD, UK.

Technological Forecasting and Social Change 67, 159–185 (2001)

© 2001 Elsevier Science Inc. All rights reserved.

655 Avenue of the Americas, New York, NY 10010

0040-1625/01/\$–see front matter

PII S0040-1625(00)00091-3

process innovations and R&D incorporated in purchases of intermediates and equipment in service activities [7, 8]. Most accounts still lament problems of delineation, and each provide a different classification scheme stressing the heterogeneity of service activities [9–11]. Nevertheless, problems of definition and inaccurate statistics persist. In particular, there is no accepted definition of services for the calculation of national accounts or for the measurement of international transactions. A serious policy debate currently raging in the United States has several economists, notably Boskin, arguing that the underestimation of major productivity growth in the service industries in traditional measures of GDP is leading to an underestimation of output and an overestimation of the inflation rate.

The rapid pace of technological change associated with the convergence of computer and communication technologies raises a number of questions that bring together the economics of services and the economics of innovation and information. Because of the various issues at stake, this paper argues that the “trade in services” debate concerns not only the services sector per se, but the broader international division of labor in the next century. To explore these questions, this paper is organized as follows. The first section outlines a taxonomy of services based on their technological linkages with manufacturing sectors and other service sectors. This taxonomy brings to the forefront a number of technology-intensive service sectors closely related to the use of information, which are essential to growth both from a domestic and international perspective. The second section examines three main qualitative effects of technological change on the structure and management of services: the increased linkages between the production of goods and services; the increased transportability of services; and the increased knowledge-intensity of services. The third section explores the effects of recent technological transformations on the changes in business organization, industry structure, internationalization, and role of TNCs in the technology-intensive service sectors identified in the taxonomy. A final section discusses some of the most important international policy implications of the analysis. In particular, current changes highlight the potential danger of less developed countries (LDCs) being left out of the rapid technological transformation of a number of infrastructural and specialized service sectors. Such exclusion could have particularly negative spillovers on the international competitiveness of existing manufacturing activities in LDCs.

A TECHNOLOGICAL TAXONOMY OF SERVICES

This section explores the pervasive influence of information technology on services. By information technology we refer to the interconnected set of technological and organizational innovations in electronic computers, software engineering, control systems, integrated circuits, and telecommunications, that have made it possible to collect, generate, analyze, and diffuse large quantities of information at a minimal cost. The rapid decline in costs over the last 3 decades in core information technologies, such as semiconductors, has led to a virtuous cycle of spillovers in cost reduction across an increasing number of technology-intensive sectors. This has an important impact on the structure and management of both manufacturing and service activities.

In a previous study [12], an attempt is made to revise the sectoral taxonomy with respect to the sources of technological change developed by Pavitt [13]. While Pavitt located all services in one of the four types of sectors that he identified, namely, supplier-dominated firms, the alternative study suggests a taxonomy of services that emphasises the close interaction between manufacturing and service sectors both in terms of the origin and application of technological change (see Table 1). This taxonomy identifies the following three groups:

TABLE 1
Sectoral Technological Taxonomy of Services: Determinants, Directions, and Measured Characteristics

Category firm	Typical core sectors	Sources of technology manuf./serv.	Type of user	Means of appropriation	Technological trajectory	Source of technology	Relative size of innovating firms
Supplier Dominated	Personal services Restaurants Laundry Beauty Public and social services Health Education	Manuf. Both	Performance sensitive Quality sensitive	Non-technical Not allowed, public	Product design Improving performance	Suppliers Suppliers	Small Large
Scale-intensive physical networks Information networks	Transport Wholesale Finance Insurance Communications	Manuf. Both	Price sensitive	Standards, Norms	Cost-cutting, networking	In-house, suppliers	Large
Specialized suppliers/science based	Software Specialized Business services	Serv.	Performance sensitive	R & D, Know-how, Skills, Copyright, Product Differentiation	System design	In-house, customers, suppliers	Small

Source: [12].

Supplier-Dominated Sectors

Supplier-dominated firms can be found mainly in personal services (restaurants and hotels, laundry, repair services, barber, and beauty services) and in public and social services (education, healthcare and public administration). Firms in the first subsector are generally small, and their in-house R&D, engineering capability, and in-house software expertise are weak. They appropriate less on the basis of a technological advantage than on the basis of professional skills, aesthetic design, trademarks, and advertising. On the other hand, firms in the second subsector are large organizations. Overall, supplier-dominated firms make only a minor contribution to their process technology. Most innovations come from suppliers of equipment, information, and materials.

Scale-Intensive Physical Networks Sectors and Information Networks Sectors

A second group consists of two sectors comprising what can be called “scale-intensive (or production-intensive) physical networks” and “information networks” firms. The first subsector involves large-scale processes with considerable division of labor, simplification of tasks, and the substitution of machines for labor. Its development is closely related to the application of modern information and communication technology, initially, at least, with the aim of reducing costs. Firms heavily dependent on scale-intensive physical networks can be found in transport and travel, and wholesale trade, and distribution. The second subsector includes firms dependent on information networks (finance, insurance, and communications). In both, while technological innovations may well originate in manufacturing firms, the nature of these innovations will be strongly determined by service use. Such “service dependent” suppliers, in turn, might provide their large service customers with specialized knowledge and experience as a result of designing and building equipment for a variety of users, often spread across a number of service activities.

There are many difficulties, however, in making these scale-intensive and information networks services work up to full capacity. As in any complex and interdependent production system, the costs of failure in any one part are considerable for the whole system. Production conditions demand not only efficient equipment performance and skilled operatives but also the control of the flow of activities. In manufacturing, trained and specialist groups for “production engineering” and “process engineering” have, therefore, been established. As Rosenberg [14] has shown, these groups develop the capacity to identify technical imbalances and bottlenecks which, once corrected, enable improvements in productivity. Eventually, they are able either to specify or design new equipment that will improve productivity still further. Indeed, one important source of process technology in manufacturing sectors is production engineering departments. In services, similar trends can be detected with “network engineering” departments being established.

Science-Based and Specialized Suppliers Sectors

Science-based firms are no longer confined to the handful of manufacturing sectors such as pharmaceuticals and electronics. The last couple of decades have seen the emergence of an increasing number of business services closely linked to R&D, software, and the development and application of information technologies. In all these sectors, the main sources of technology are the research, development, and software activities of firms in the sector itself.

Implications

With the growing importance of services, the differentiation in patterns of technological innovation is expected to increase, and an increasing number of sectors will

develop as scale-intensive and information networks, science-based, and specialized suppliers sectors. These categories of service sectors are technology intensive, actively engaged in the development and use of data, communication, and storage and transmission of information. Examples include stock exchange institutions, banking and insurance, cellular phone services, office automation, engineering design, express package transportation, and air reservations, which use various forms of electronic data interchange. The amount of capital per worker both quantitatively as well as qualitatively has been increasing rapidly in services [15, 16]. Indeed, around 80% of information technology investments are consumed by the service sector in the United Kingdom and the United States [6]. Therefore, service sectors are now the owners of most of the information technology systems, a fact illustrating the importance of such sectors as “network” providers.

Two trends in information technology account for its growing application in a number of service sectors. The first involves the increased digitalization of information and processing by microelectronics, and the second involves the shift from data processing to information-handling technologies and to “knowledge technologies,” such as expert systems and neural networks and the application of intelligent agents to filter data in data bases and internet communications [6]. Information technology applications are, therefore, particularly suitable for those services concerned with information processing (“information network services,” which move or transform information and large-scale administrative systems); those services that demand high levels of communication between providers and customers such as business services; and for “physical network services” for the support of logistics and route planning [6].

Furthermore, there is a single distribution network for a growing number of these technology-intensive services, namely, the telecommunications infrastructure. National and international access to these networks is, therefore, essential to enter the growing technology-intensive areas in services described earlier. Access to this distribution network and to information, however, is far from free, requiring not only large initial investments, but also expenditure in R&D and the availability of highly skilled personnel. Moreover, information has clear tendencies for “locking in” and exclusion of areas or countries not linked up, and can also be protected by a number of proprietary devices.

Changes in technology and use of microelectronics have altered the structure of world business. In particular, the increased storability and transmission of information has enhanced the transportability of services, altering modes of delivery, and leading to a new technical division of labor. These transformations have led to a restructuring of the service sector, and have affected the core of all other activities, bringing into question the traditional separation of economic activity as a means of analysis. In this scenario, the role of governments and TNCs gain relevance. In contrast to mainstream economic theory, which stresses the significance of factor endowment for growth, it is the linkages between sectors (in particular technology-intensive sectors) that determine how the resources of an economy are used and transformed to attain competitive advantages. Access to information, it is argued here, plays a key role in this process. The next section will examine these issues in more detail.

TECHNOLOGICAL TRANSFORMATION OF SERVICES

This section outlines three main qualitative effects of the revolution in information and communication technologies on the transformation of the structure and management of services, which also have implications for the international relocation of service activities. These include the importance of linkages between the production of goods and services, the increased transportability of services and knowledge-intensity of services, which have led to a reshaping of all economic activities.

Linkages

Services are increasingly becoming the dominant activities in developed economies. Their growth, however, is not independent, but closely linked to the other sectors of the economy. Indeed, analyzing occupational data of France, Ireland, Italy, and the United Kingdom, Gershuny and Miles [17] argue that during the 1960s and the 1970s, changes in the occupational distribution of employment have resulted more from changes in occupational structure within economic sectors than from changes in demand patterns between them. Increased demand for professional, technical, clerical, and other specialized service occupations relative to other employees within each sector, accounts for much more of the increase of employment in these occupations than does the increase in demand for the products of services industries. This qualifies the “sectoral shift” Fisher/Clark thesis [18, 19].

Contrary to the alleged “deindustrialization” of industrialized countries, technological change is leading to a “splintering” and “disembodiment” process by which goods spring from services and services, in turn, from goods that may bias the calculations of productivity of the service sector [20]. It has been suggested, however, that a deeper change is affecting industrialized countries, characterized by a greater interdependence between manufacturing and service activities [21–23].

In particular, business services, to a significant extent, are an outcome of the increased technical and social division of labor within production. Business services can be seen as the interconnection between technological progress being incorporated in the infrastructure and the productivity of producers in the manufacturing and agricultural sectors, converting technological advances into higher productivity for the latter [24]. In other words, the linkages between manufacturing and agriculture, on the other hand, and business services, on the other, are an important way of adding value and specialized knowhow to the production process in the former. The development and location of business services is a new powerful determinant of the international division of labor and regional inequality [25].

Transportability

Two factors account for the traditional nontradeability of services. First, their nonstorability, implying that services have to be produced and consumed in the same location and point in time. Second, their intangibility, which means that the uncertainty regarding the quality of services often requires close and continuous interaction between buyers and sellers.

On the one hand, in services, information and communication technologies have a possible trade “enlarging” impact, which is rather different from manufacturing. Information technology allows for the increased transportability of service activities, particularly those that have been most constrained by the geographical or time proximity of production and consumption [26]. By collapsing time and space at decreasing costs, the new data technologies make it possible for services to be produced in one place and consumed simultaneously in another. For example, ATMs reduce the need for the physical presence of customers in the bank. Also, specialized international computer networks make possible the decentralization of a growing volume of services such as the processing of data and financial management within transnational corporations.

On the other hand, intangibility impinges a particular character to this increased transportability. Due to the intangibility of services, determined by characteristics of services such as asymmetric information, product differentiation, and dynamic scale economies [27], much of the new trade enabled by new information technologies will

be in the form of intrafirm rather than arm's-length transactions. Transborder data flows are likely to increase simultaneously trade and FDI flows. Indeed, final buyers will tend to purchase services from local branches that belong to a worldwide network and to exchange services with their headquarters by means of computer-to-computer communications technology [27]. The significance of intrafirm trade has been stressed as an important step in the gradual path of development of international capabilities of service firms in advertising, accountancy, management consultancy, and computer firms in the United Kingdom [28].

Knowledge Intensity

The growing complexity in the way modern manufacturing production and distribution is organized, resulting from the application of new technologies, and the significant increase in all sorts of coordination problems has increased the service content of many manufactured goods. A growing number of services are required in the production, maintenance, and operation of manufactured goods [29], with the manufacturing sector of advanced countries increasing its use of business services and transportation and distribution. In particular, research and development, design, marketing, distribution, and after-sales maintenance are now essential parts of the industrial production process.

Given the rate of technological change and the sophistication and variety of the services required, there has been a tendency to contract services from outside independent service producers or to set up subsidiary service firms. Typical examples of this are computer services (software and data processing), management advisory services, quality control services, and accounting. Thus, producer services, which were historically "internalized" in the large corporations (e.g., accounting, advertising, distribution) have been "externalized" over the last 3 decades in the developed economies. This enables manufacturing firms to meet peaks in demand without increasing staff or investment in capital equipment and R&D. The tendency for enterprises to divest themselves of many service functions and rely on specialized outside suppliers is leading to an increase in independent producers of specialized business services [24].

Indeed, business services currently represent around 10% of total European employment and 14% of the gross value added to the European economy. Furthermore, business services account for around 25 to 30% of EU total services exports to non-EU countries [30]. Infrastructural and knowledge-intensive activities that were previously classified as manufacturing activities are now service activities increasingly traded within and across national borders. This is a function of both a dramatic increase in services in relation to the value of physical products and the growing externalization of a number of service sectors. However, it has been pointed out that recourse to external business services involves not just a simple substitution of internal services but is, instead, a rather more complex process of knowledge transfer that requires reciprocal learning and interaction [31].

The supply of these knowledge-intensive services is highly segmented between relatively dominant TNCs and national and local small and medium-sized firms in the most developed economies. Information technology plays a crucial role as the increased use and capacity of computers stimulates the externalization of formerly in-house information processing, analytical and knowledge functions and by facilitating the operation of a number of small specialized firms [32].

A corollary of these developments has been the need for service firms to enlarge continually the number and variety of services that they are capable of providing in order to be competitive. Quinn [33] describes the distinctive and repetitive patterns

generated by new technologies in services. In the first place, new economies of scale cause many service activities to centralize into larger firms, at first concentrating into fewer larger units, and then decentralizing as smaller units flourish through new data management and communication, permitting them to reach remote locations or serve specialized markets of their own, or to organize in networks for sharing data and resources with larger enterprises. Such a pattern can be observed in healthcare, air and ground transport, insurance, banking and financial services, and communication. Small and medium-sized service enterprises, unable to afford the new technologies, have thus often been forced to merge upwards, find a “niche” or go out of business. Technologies also create economies of scope. Once properly installed, the same technology that created new scale economies will allow service enterprises to handle a much wider array of data, output functions, or customers, without significant additional costs and often with reductions through allocating technology or equipment costs over a wider range of operations. Increased complexity can often be handled efficiently by the new technologies.

The increased differentiation and specialization of knowledge has enabled service firms to yield products of predictable characteristics and quality, making possible economies of scale and scope and improved delivery times. This has occurred not only in sectors such as fast food and hotels, but also to more technology-intensive sectors, leading to increased concentration. As argued below, information technology also allows a further segmentation of the production process into phases, which may take place at different locations [32].

Implications

The qualitative effects of technological change on the management and structure of services described above suggest that the higher the degree of development of an economy, the tighter the linkage between the production of services and the demand from manufacturing industry (see also [34, 35]). Both require efficient and reliable infrastructures, especially information networks.

The situation of LDCs is not quite comparable to that in the developed economies [27]. What is also true for LDCs, however, is that the complementarity between service and nonservice activities implies that the traditional measure of contribution of services to GNP may underestimate their importance. Business services provide an essential link among economic agents that enable the interdependent functioning of markets. Technology-intensive services like banking, communications, and transportation provide infrastructure services to the entire economy. Lack of access to infrastructural and business services by firms from less developed areas puts such firms at a competitive disadvantage. Due to the mutually reinforcing interaction between the production of goods and of services, if LDCs lose their competitiveness in the production of goods, then this may also have implications for the development of the more value-added segments of the service sector. Furthermore, the development of many services is, in turn, dependent on inputs from the production of goods, particularly of the informational kind (such as computers, telecommunication, and office equipment). Evidence of the apparent “industrial base” of the services revolution, has led to a renewed advocacy of the importance of industrial policies for economic growth and stability [36].

Weakness in services has wider implications because of the growing relationship between the international trade in goods and services. “Network” services are the infrastructure for the trade in goods (transport, communication, finance, and insurance). Also, services are becoming increasingly intertwined with goods, especially in high-technology products where the choice of hardware is linked to software and maintenance

contracts. This is also true for capital equipment, turnkey projects, and construction. For example, IBM, Boroughs, Digital, and other manufacturers of computers have developed remote support centers to monitor and diagnose problems in computers operated by their customers [37]. There also appears to be a trend towards complementarity between trade in goods and services that is gradually replacing the traditional specialization of the 1950s and 1960s [38]. The “despecialization” in “trade” in services could mean that a new dynamic role of trade is developing, in which there is a link between the extension of foreign markets for goods and those for services. Clearly, therefore, it is crucial for LDCs to assess the role that those infrastructural and producer services play in the international division of labor.

For LDCs, in particular, it is essential to develop or, where necessary, to provide all the incentives for the emergence of network and specialized supplier service firms. Three features seem at first sight to be of particular importance. First, there is the physical infrastructure. Clearly, the absolute first condition for efficient network services is the availability of a modern, well-equipped, and internationally linked up communications infrastructure. Nevertheless, this physical infrastructure is meaningless without the second condition, namely, investment in the training and development of skills required to create, reproduce, and apply data services [39]. Third, access to the information infrastructure, which includes data banks, software, and value-added information processing services, is required. It is to a more detailed analysis of the impact of technological change on the particular conditions of the international rendering of services that we now turn.

In the case of international transactions, proximity between producers and consumers usually involves the presence of foreign producers in the countries of the users of services. Such presence may take different forms, including the establishment of wholly owned foreign subsidiaries, joint ventures between foreign and local producers of services, licensing agreements between foreign and local producers, and franchises. Most services can only be delivered to a foreign market by establishing a presence there—either permanent (as foreign direct investment in banking, retailing, advertising or accounting), through the temporary relocation of the producer of the service (as in consulting), or through a temporary presence to facilitate the acquisition of services (such as airline ticket offices or bank representative offices) [40]. Developments in information technology are increasingly relaxing the need for close physical proximity between supply and demand of services. This may alter the way services are internationally rendered. The way delivery modes are being restructured may be particularly important for the international division of labor, because it affects the location of service suppliers and the place where value is added and retained.

The diverse modalities for rendering services internationally and the different types of economic mobility across national boundaries raise serious questions about the appropriateness of treating the whole matter under the general heading of “trade in services.” There are multiple and often overlapping forms of service delivery, not all of which are accounted for or considered as trade, as they involve the movement of consumers or factors, rather than of actual service output. Aside from the convenience that the heading “trade in services” has for promoting intergovernmental negotiations under the GATS, conceptually, we have been misled by the interpretations of the “tradeability of services.” In fact, what we have experienced can be better termed as an increase in the “transportability” of service activity as well as in the “transportability” of service substitutes. The collapsing of time, space, and cost of international flow, management, and use of data and information do enable an increased “tradeability”

of services, but whether trade opportunities for such services will materialize depends on a number of conditions. Among these are the corporate strategies and the nature of geographical specialization and sourcing of service activities, the types of international regulations, and the capacity of national governments to strike bargains with TNCs and affect the division of labor. At the same time, the liberalization of flow of data across national boundaries does not simply mean liberalization of “trade” in services. A multiple of issues other than “trade in services” might be at stake. As argued above, trade in services traditionally requires the presence of the service provider to consummate the transaction and thus raises issues of right of establishment and foreign investment [37]. In all these areas, understanding the new position of LDCs in the new technical division of labor and the dominant role of TNCs could prove quite crucial.

THE IMPACT OF INFORMATION TECHNOLOGY ON TECHNOLOGY-INTENSIVE SERVICES

This section examines the impact of information technology on the changes in business structure, industrial organization, and in the internationalization of sectors identified as technology-intensive earlier. It is not only the advances in communications and information technology that have increased the “tradeability” of services. Growth in the “tradeability” of data—as enabled, for example, by electronic data interchange—is greatly responsible for facilitating the internationalization of many services, because access to such “network” services and goods allows firms to supply their own services efficiently in any part of the world. Moreover, the “tradeability” of data encourages firms to increase their presence abroad through various forms of investment so as to be able to supply services in several local markets. Not surprisingly, foreign direct investment in services has increased substantially during the last decades [40].

IT and Organizational Changes in Services

The developments in information and communication technologies have affected the business organization and industrial structure of technology-intensive service sectors in different ways. Table 2 illustrates the different effects of new technologies in a number of scale-intensive and information networks sectors and specialized suppliers/science-based services identified earlier. Technological transformations have eroded barriers between industries, resulting, in some areas, in pressures for deregulation. Also, they have weakened the traditional boundaries between public and private services sectors, allowing governments to turn to the private sector for such functions as management consultancy and information technology support. Moreover, information technology applications have produced changes in process and customer relations. They have led to an adaptation of the front office, often manifested in the removal of “customer-facing” personnel as in the case of ATMs, reservation services on the internet, and electronic trade. Importantly, many of these changes may require an adaptation of the relationship with customers (see [5] for a more general survey on the particular importance of customer participation in the production of the services). For example, use of internet services requires customers to develop new skills to follow instructions that assist in carrying out the transactions. Hence, firms may be obliged to inform and train customers as they would their work force [41] involving a reallocation of resources.

The arguments with respect to increased international “tradeability” go, of course, well beyond the traditional cross-the-border transactions and sales by local subsidiaries. As we argued above, telecommunications make possible the delivery of services that previously required face-to-face interaction between customers and service suppliers, especially in those cases in which the substance of the service consists of information

TABLE 2
Effects of Information Technology on Business Organization, Market Structure, and Internationalization in Technology-Intensive Services

Service sector	Trends in application of IT	Effects on business organization	Effects on industry structure and internationalization
Financial services	<p>Telephone and PC/internet banking. ATM networks and smart cards or electronic purse. Client/server computing environments (e.g., COREBANK, based on a number of IBM tools), public access networks.</p> <p>Worldwide trading networks (e.g., SWIFT).</p>	<p>Centralization of the automated processing of payments. Real time operations. Branch networks transformed from data processing to sales centers. Self-service retail banking. Outsourcing of tasks such as check processing. More pronounced in the USA and the UK and less in the "cash economies" of continental Europe. Even in the USA and UK, however, it has been easier to set up new firms providing remote banking than to adapt traditional banks (e.g., Midland and First Direct in the UK).</p>	<p>Distinction between banks, brokers, exchanges, and electronic markets is less clear.</p> <p>Deregulation has opened up the market for new entrants from other industries such as supermarkets, airlines, and retailers experimenting with electronic distribution and virtual organization (pioneered by Sears, USA). Deregulation and opening of markets (e.g., abolition exchange control regulations) and removal of legal barriers has allowed acquisitions, mergers, and alliances within and across nations.</p> <p>"Europeization," however, has not occurred as acquisitions supersede buyouts.</p> <p>Diversification (e.g., Allfinanz) and crossborder expansion of large financial services groups. Financial intermediaries (Goldman Sachs, Credit Suisse First Boston, S.G. Wargurg) have set up an international network of offices.</p>
Insurance	<p>Private company computer networks: internal communication and direct links with tied agents or independent brokers.</p> <p>Industry networks: link insurance firms with intermediaries, other companies and reinsurers for exchanging proposals, renewing policies, providing accounts or printing and rekeying data (e.g., IVANS, ASSURNET, MEGANET, INFONET, INVIEW, ISTEEL, BROKERNET).</p>	<p>Early automation and standardization of labor-intensive premium and claims processing. Underwriting decision decentralized geographically and automated. Marketing and sales done on-line by using networks, providing access to information on policy and premium details, portfolio management and billing through IT.</p> <p>Reinsurance by networks as it facilitates distribution of risks on an international basis.</p>	<p>Limited evidence that the functional tasks in the provision of insurance are being split up and carried out internationally in foreign affiliates or unrelated associates. A few insurance companies have established processing facilities to take advantage of lower-cost labor and skills (Citicorp data processing for Asia-Pacific in India; Metropolitan Life, NY Life, and others claims processing operations in Ireland).</p>

(continued)

TABLE 2
(cont'd)

Service sector	Trends in application of IT	Effects on business organization	Effects on industry structure and internationalisation
Telecommunications	<p>Foundations for a fully international network linking all insurance companies (e.g., RINET, LIMNET), creating a standard file-transfer facility, directly accessible from any member's internal electronic facility; committed to international exchange standard designed for insurance, comparable with EDIFACT, a new international syntax standard sponsored by UNECE.</p> <p>New technologies derived from microelectronics, optics and IT, such as digitalization of exchanges and transmission (that make it possibility to transmit either voice, data, and image as a flow of bits that can be read by computers), fiber optics (that permit broadband transmission) and advanced software.</p> <p>New networks (ISDN, GSM, satellite, optic fiber, ADSL) and data compression technology.</p> <p>Combination of telecommunications and computer technologies lead to product and process developments: mobile data, internet, multimedia (broadcasting), interactive services.</p>	<p>Automation of back office tasks and their unbundling for processing purposes well advanced, especially in the USA.</p> <p>Transformation of exchanges from electromechanical to digital has led to automatic fault testing and fixing and remote monitoring. Obsolescence of engineering and operators' skills and second line management. Development of "business solution" models. Better support for CSCW (computer-supported corporate working).</p> <p>Outsourcing of IT functions, collection of payments, installation of lines.</p> <p>Increase in "front end" staff to meet "data traffic" such as sales, solutions, helpdesk, product development, design, media, and marketing. Improved monitoring and call re-routing equipment enables retail firms to switch emphasis from high street shops to call centers to meet "voice traffic."</p>	<p>Increase in pure trade and licensing rather than foreign direct investment.</p> <p>Takeovers and mergers between banks and insurance companies ("bancassurance").</p> <p>Global players (e.g., AT&T (USA), BT (UK), NTT (Japan)).</p> <p>Liberalization in USA and the UK.</p> <p>Prospects of dramatic change. Advent of cellular mobile telecommunications networks and independent data networking services (e.g., internet) has introduced new players into the market. Broadcasters, through cable and private networks, may play important role.</p> <p>Competition between telecommunication and internet and cable providers.</p> <p>Internationalization strategies as carriers from advanced countries involved in privatization of many national carriers all over the world.</p>

(continued)

TABLE 2
(cont'd)

Service sector	Trends in application of IT	Effects on business organization	Effects on industry structure and internationalisation
Software/Computing and Electronic Information Services	<p>Systems software: increased use of open standards like X/OPEN and UNIX and enduring lead of PC operating systems in connection with graphical user interfaces.</p> <p>Object-oriented solutions and move towards relational and distributed database management systems. Applications around internet and standards towards JAVA, HTML.</p> <p>Applications software: provide tools and serve the professional users' need for interactive communication, information, coordination and cooperation via local or wide-area networks, to facilitate groupware concepts, management information systems and work flow automation.</p>	<p>Increasing hybridization as original providers of software or computer services compete with management consultants. Three groups: software and systems firms (such as Cap Gemini Sogeti and Logica) that have gained a profile as consultants—providers of strategic and functional analysis of information systems and have experienced mergers and set up specialized departments; international consultants with engineering or accounting background (e.g., Arthur Andersen, which has half of its activities in IT services and consultancy); and computer and communications hardware producers (IBM, ATT, Bull) developing software and systems integration later and smaller IT consultants.</p> <p>National markets.</p>	<p>Growing concentration following the integration of IT with other advanced producer services markets. Smaller consultants are forced to "hyperspecialize" to form regional networks.</p> <p>Software and computing services largely composed of SMEs operating at local level. Even multinational groups are composed of independently operating national subsidiaries. In the electronic information services, the process towards concentration is very strong. Intense merger and acquisition process.</p>
Advertising	<p>Direct Satellite Broadcasting.</p> <p>Interactive media and automated response in the field of direct marketing.</p>	<p>Growth of direct marketing agencies, including list brokers and telemarketers, which build client databases, offer database management services.</p> <p>Advertising and direct marketing as major sources of finance for other service sectors (such as the internet).</p>	<p>High concentration as mergers lead to mega advertising groups, in which more than one world-wide agency network is managed under the same corporate umbrella. There is evidence, however, that this had led to instability such as in the case of Saatchi and Saatchi and WPP Plc.</p> <p>Concerns with cultural identity and economic effects when advertising revenues are obtained by a foreign company.</p>

(continued)

TABLE 2
(cont'd)

Service sector	Trends in application of IT	Effects on business organization	Effects on industry structure and internationalisation
Accounting and management consulting	<p>In accounting, microcomputers programs that combine accounts, billing, and management reporting systems.</p> <p>Tailoring of EDI (electronic data interchange) to accounting (EDIFICAS).</p> <p>Information systems for retrieval of management and performance management systems in management consultancy.</p> <p>Data banks: Trigger by Alexander Proudfoot (data bank of past projects allowing "cross functional" consulting); "experience center" of Bain (which chronicles the past 15 years of work); data banks with psychological information.</p> <p>Solutions center by Andersen Consulting in Illinois to experiment with computers (to try new ideas or marketing tools).</p> <p>CASE (Computer-aided software engineer) by Arthur Young (helps computers design their own software); "business solutions" by Andersen Consulting) official installer of SAP).</p>	<p>Automation of client services such as bookkeeping, management of accounts, calculation of accounts from incomplete records or advice on selection and implementation of computer systems.</p> <p>Prospect of compatibility between client and accountant's computer systems, leading to more efficient audits and scope for developing new sources of fee income.</p> <p>In consultancy, three types of firms: general/sector specialists (e.g., McKinsey); business functional specialists (e.g., Olive Wyman) and IT consultants (e.g., CMG Computer Management Group).</p>	<p>Transnational firms use electronic data processing. SMEs can internalize service through microcomputer programs.</p> <p>Increased concentration through mergers. Big accountancy-based consultancy firms (Andersen Consulting/Arthur Andersen (USA); Touche Ross (USA); Ernst & Young (UK); KPMG (NL) and Price Waterhouse Coopers (UK)).</p> <p>Diversification, with large accounting firms moving into areas of the corporate finance market previously exclusively covered by merchant banks, providing advice on takeovers and mergers or preparing companies for the Unlisted Securities Market listings; provision of tax and related advisory service.</p> <p>High concentration especially in audit (IT has driven prices down; audits are used as "loss leaders" to attract clients to other more lucrative services such as tax and management consulting services).</p>

Source: [25, 42-44].

and messages—numerical, textual, voice, or image. Databases, telebanking for corporations and households, teleshopping, and on-line airline and hotel reservation systems have developed recently through telecommunications lines. These have grown and diversified even more, into such areas as interactive educational programs and remote health diagnosis. The decrease in the cost of telecommunications is an important factor reducing geographical distance costs.

In cases where face-to-face interaction with local customers requires experienced local personnel, joint ventures with local firms, mergers, acquisitions, and partnerships are increasingly becoming the dominant form of internationalization in skill-intensive services. Internationalization in investment banking, accounting services, management consultancy, and advertising have frequently adopted the form of partnerships over the past decade. Also, in various skill intensive activities, the best organization for a competitive firm is one that gives direct incentives to its key personnel. Franchising, for example, has been an organizational innovation in service industries, where the core firm supplies key inputs to the franchisee through long-term contracts that allows the use of its brand name under restrictive conditions. This form of organization is dominant in personal or consumer services areas such as hotel services, fast-food distribution, and fashion retail shops. The picture is more complex in technology-intensive services, as described in Table 2.

In many accounts, the potential for a growing separation between the production of services and their consumption is associated with a powerful centralizing tendency as firms strive to enhance the “tradeability” of services. Given that the largest share of a service’s value can, therefore, be created in a centralized location, some argue that “trade” in services can be dealt mainly from the perspective of access to distribution networks. The implicit assumption, however, is that computerization has decreased the amount of value added contributed through distribution networks. But this is not always true. New information technology creates both centralizing and decentralizing trends. Computerization of routine production procedures may enhance the ability to segment markets and tailor and customize the output; it may also help to generate new opportunities to create more value added in the distribution process, close to the market, in the relationship between customers and distributors [45]. Also, it may well lead to a geographic polarization of tasks.

The emergence of global digital networks has generated developments in a number of unanticipated places, such as the expansion of off-shore banking centers, and has concentrated high-skill value-added services in global cities while dispersing low-skilled low value-added (“back office”) services to Third World locations [46]. Although there are some success stories of LDCs such as Singapore in financial services, India in software, and Brazil in engineering [36], there is a growing gap between developed and LDCs in terms of the material base and infrastructure to support technology-intensive services. The international distribution of systems and infrastructure necessary to increase the productivity of manufacturing and services is uneven, as well as the competence and organizational characteristics of services firms. These developments pose a potential danger for a number of LDCs, which may be left out of the rapid technological transformation of the service sectors. Moreover, host countries with limited or no access to the underlying management of information networks of global companies remain in a relatively weak bargaining position when it comes to distributing profits, transferring technologies or improving their own competitive edge. Given the organic linkage between goods and services, losing the competitive advantages in the production of goods could affect the demand and type of services required by an economy. Conversely, limited development of services may weaken the ability to support the production of goods.

IT and the Internationalization of Services

Most of the advanced countries have increased dramatically their international transactions in services in the last 3 decades. Table 3 shows that while employment and gross value added in total services has increased substantially between 1970 and 1994 for a selection of OECD economies, it is international transactions that have experienced the most dramatic increase. This is also true for technology-intensive service sectors.

Nevertheless, figures for “trade” in services as defined in the balance-of-payments statistics have become increasingly meaningless as an indicator of the internationalization of services. These statistics (generally compiled by the IMF in its Balance of Payment Manuals) cover the so-called invisible trade transactions and include mainly payments that correspond to cross-the-border provision of services and factor income payments between residents of different countries. Their major limitation is that they do not include sales of services channelled through foreign affiliates (often referred to as “establishment trade”).

Statistics do not account for intracorporate transactions in services. TNCs transfer services within their own corporate boundaries, providing foreign subsidiaries with firm-specific assets, such as technological and marketing knowhow, as well as managerial, financial, and accounting services. One proposal is to consider returns on foreign direct investment as a proxy for internalized service trade, because they reflect payments for proprietary knowledge of TNCs, and to include them as a category of trade [49]. This mode of service delivery has rather important implications with regard to the development of host countries of TNCs, because it is an exclusive crossborder transfer that relies on the use of proprietary knowhow and firm-specific services, often through a private infrastructure not available as an externality to other local users [32].

The elimination of distance and the capacity to gain economies of scale, by combining centralization of automated process and wide distribution networks or sales centers, and economies of scope have contributed to the recent acquisitions and mergers, not only between service firms but also between services and manufacturing firms. Recent examples include the telecommunications sector, which has been marked by extraordinary merger activity, with long distance carriers integrating with cable. In the United States, AT&T has acquired cable companies such as TCI and MediaOne, as well as joining forces internationally with BT. WorldCom and MCI, two relative newcomers to the telecommunications business, have come together to create the world's largest cellular phone corporation. National phone groups such as Telecom Italia (purchased by Olivetti) have become the objects of trans-European bidding wars, which have driven their stock price up. Microsoft has purchased a share of AT&T, the U.K. cable network Telewest, and the small Swedish wireless firm SendIt. In banking and financial services, acquisition strategies have been pursued within countries to create “national champions” and across borders to form alliances. Such is the case of ABN Amro—the largest financial institution in The Netherlands. Others such as Germany's Deutsche Bank have moved across Europe buying Credit Lyonnais in Belgium, taking stakes in Italian banks (that have also merged), attempting to enter into French banking and purchasing Bankers Trust in New York. The moves by ABN Amro and Deutsche Bank may be understood as strategic responses to avert the U.S. banking giants. The London-based HSBC has acquired Seoul Bank of South Korea and the Republic Corporation of New York.

Also, European telecommunications carriers are active participants in the process of privatization taking place all over the world. France Telecom and the Italian firm STET and Spanish Telefonica have bought shares of the privatized Argentinean telecom-

TABLE 3
International Transactions, Employment, and Value Added in Services in 1970 and 1994

	1970					1994				
	USA	Japan	Germany	France	UK	USA	Japan	Germany	France	UK
Total services										
a. Net international trade (current account US\$millions)	-1,168	-1,218	-1,325	525	1,233	44,331	-47,190	-37,684	20,590	4,505
b. Exports (US\$millions)	12,839	3,244	6,885	5,095	7,777	176,124	56,120	62,805	90,440	56,715
c. Imports (US\$millions)	14,004	4,462	8,210	4,571	6,544	131,793	103,310	100,489	69,850	52,210
d. Total employment (thousands)	50,562	24,208	11,311	10,197		89,745	38,785	17,533	15,254	
e. Gross value added (current prices—billions)	647US\$	37,042Y	290DM	392FF	24,513£	4,926US\$	305,687Y	1,913DM	4,952FF	417,018£
f. Total employment in services as % of employment in all sectors	64.5	44.5	42.6	48.8		75.1	58.3	61.6	69.1	
g. Total services as % of GDP	62.4	50.5	43.0	49.4	55.33	71.1	63.8	62.2	67.0	72
Communications										
a. Net international trade (current account US\$millions)	13		-21		-14	-4,071		-800	-41	-317
b. Exports (US\$millions)	304		12		91	2,757		661	363	1,519
c. Imports (US\$millions)	291		33		106	6,828		1,461	404	1,835
d. Total employment (thousands)	1,068		450	342		1,262		496	423	
e. Gross value added (current prices—billions)	24.4US\$		11.7DM	10.9FF		188.2US\$			171.6FF	
Insurance										
a. Net international trade (current account US\$millions)	-83	-56	-88	-14	504	-1,765	-751	566	958	756
b. Exports (US\$millions)	77	246	188	195	504	1,640	555	1,404	14,556	1,439
c. Imports (US\$millions)	160	292	276	210		3,405	1,306	838	13,506	683
d. Total employment (thousands)	1,341		186	103		2,323		234	158	
e. Gross value added (current prices—billions)	16.5US\$		4.6DM	6.9FF		149.4US\$		45.4DM	59.9FF	

(continued)

TABLE 3
(Continued)

	1970					1994				
	USA	Japan	Germany	France	UK	USA	Japan	Germany	France	UK
Financial services										
a. Net international trade (current account US\$millions)						127		1,001	618	
b. Exports (US\$millions)						6,962		1,446	11,067	
c. Imports (US\$millions)						6,835		444	10,449	
d. Total employment (thousands)	1,631	1,316	411	279		3,299	2,093	724	444	
e. Gross value added (current prices—billions)	25US\$	3121Y	17DM	21FF		322US\$	24,779Y	118DM	291FF	
Computer-related services										
a. Net international trade (current account US\$millions)						2,160		2		257
b. Exports (US\$millions)						2,546		871		1,369
c. Imports (US\$millions)						386		869		1,111
Consultancy and technical cooperation										
a. Net international trade (current account US\$millions)				121		256			1,360	1,113
b. Exports (US\$millions)				277		537			5,654	1,113
c. Imports (US\$millions)				156		281			4,294	
Advertising										
a. Net international trade (current account US\$millions)					34	-337				155
b. Exports (US\$millions)					34	399				155
c. Imports (US\$millions)					0	736				0
					62					794

Source: [47,48].

munications carriers. Telefonica is also managing networks in Chile, Peru, and Brazil, and France Telecom in Mexico. France Telecom has also set a joint venture with Deutsche Telekom and Sprint, and bought private data carriers in the United Kingdom, Germany, and Italy. BT, allied with MCI, joined with Banco de Santander to offer new data services to the Spanish market [42].

Telecommunications and finance, however, are not the only sectors experiencing concentration and attracting conglomerates. Electronic information services are experiencing mergers and acquisitions such as the takeover by U.S. West (USA) of Thompson Directories (UK) (telephone directories); the expansion of Pearson (U.K.) into Software Toolworks (USA) multimedia software/videogames) and Thames TV (U.K.) (TV broadcasting); the expansion of Reed/Elsevier (U.K./NL) into Official Airline Guide (USA) (airline data and reservations); the purchase of Questel (F) of shares in InfoPro (USA) (online host); the purchase by Financial Times (U.K.) of shares in Extel (U.K.) (financial data services); the expansion of Reuters (U.K.) into the U.S. market share through Quotron (USA) (real-time financial data services), and into Vamp Health (U.K.) (computer services for doctors); the acquisition of Knight Rider (USA) of Data-Star (online host); and the merger of Reed (U.K.) with Elsevier (NL) (publisher) [42].

Such mergers have enabled increasingly huge international services conglomerates of a hybrid nature, "transnational service conglomerates" [29, 50] to acquire the capacity to penetrate foreign markets with a diversified, albeit integrated, range of services or goods. The transnationalization process is more advanced in advertising, accounting, tourism, banking, insurance (the last two largely a reflection of the expansion of transnational banking networks) and wholesale and less in areas such as healthcare [40]. The development of information and communication technologies has made it possible for such service transnational firms to provide services all round the world. Some sectors, such as engineering and architectural firms, were internationally oriented earlier than other were. The most rapid recent internationalization is in the management and computer-based service firms. Many specialist firms expand into foreign markets following the integration of national economies such as the EU. This is often achieved through following the international activities and contacts of home-based clients including TNCs [51].

Service TNCs with access to efficient information systems can offer a great variety of services because the incremental cost of adding information-based services is very low. They, therefore, have the capacity to acquire and integrate information and to codify competitive advantages in management contracts and franchises. All this impinges a particular dynamism to service TNCs. These small number of large transnational corporations, especially from the United States (home country of 45% of service TNCs), Japan (home country of 22%), and Europe (home country of 28%), which entered the service sector are the driving force behind the internationalization process [40]. The TNCs from the United States (in accounting, advertising, retailing, hotels and fast foods, market research, accounting) and Japan (in trade and banking) [40] are important proponents of deregulation. Deregulation, as will be discussed later, strengthens the position of dominant actors, especially those that benefited from a head start in the development and use of information networks (especially the main operators in transport, telecommunications, and financial networks).

But the economic revolution created by the impact of information technology on various service sectors carries further implications in which the TNCs also constitute a central actor. Economies of scale in basic infrastructural activities and economies of scope are accompanied by a dramatic increase in the centralization capabilities by parent

firms over world-wide activities of affiliates, which could reinforce particular patterns of international division of labor at the corporate and international level. In contrast to other processes of industrial concentration, the current growth of corporate size in these industries (through acquisition, mergers, or direct investment) seems to accompany physical dispersion of operations, because branches may be kept open in less central regions [32]. Some of these peripheral branches may be only involved in data processing, dependent on central headquarters for knowledge and information transfers. Furthermore, these effects on TNCs are not only visible in the service sector but influence all other sectors. The embodiment of services and complementarity with high-technology goods has the effect of blurring the distinction between various sectors, leading to an increase in tie-in arrangements and an acceleration in the obsolescence of products due to technical change [52].

Therefore, new business opportunities for the service industries seem to have arisen from the development of new geographic markets, the expansion of service sales to a much wider range of customers and the diversification of offerings. Nevertheless, these trends towards diversification of dynamic firms developing so-called "service supermarket" strategies, in which they are refocused and reorganized to supply an ample range of services to targeted market segments, rather than a few services to the entire market, may require combining different areas of professional expertise in ways that are currently illegal in some countries. Therefore, the extent to which these firms are allowed to proceed will be determined by the extent to which domestic regulation constraints can be relaxed [45]. The protectionist action of states in major infrastructural services such as transportation, communications, and banking has determined a more diffused international division of labor (although LCDs still have a deficit in these activities) and has also favored national monopolies or oligopolies. Some professional services (such as legal services) have been sheltered from international competition by national licensing norms. Within each country, however, the structure of many professional services is often quite fragmented. In some of the most advanced and specialized business services, which are less regulated than the more traditional professional services, the international geography is extremely polarized, with a strong concentration of production in developed countries alone. The overall concentration of business services production in the industrialized countries is thus mostly a consequence of the linkages between services and manufacturing. We will now turn to a more in-depth consideration of international policy implications.

INTERNATIONAL POLICY CONSIDERATIONS

The "trade in services" debate presently underway in the GATS concerns not only the service sector per se, but the broader international division of labour in the next century. Paradoxically, the main thrust in the negotiations for a framework governing trade in services has come not from the beneficiaries of the recent increased tradeability of services, but rather from sectors such as banking, where the traditional long-distance practices and reasonable tradeability are considered no longer adequate because technological change has revolutionized the nature of banking services, making it very profitable to have physical proximity between the provider and the customer [53]. Also, while some services have always required provider mobility of unskilled labor from LDCs, it is, however, the mobility of skilled labor rendered feasible by organizational and technological innovations from industrialized countries that has powerful spokesmen [53].

This explains why the United States has been the main proponent of extending the General Agreement on Trade and Tariffs (GATT) to include "trade" in certain

services. Its enthusiasm was fired by a vociferous services lobby (chiefly TNCs) and a determination to reap the benefit of U.S. comparative advantages in services by gaining access to world markets. A measure of this enthusiasm is related to economic philosophy or ideology. But this enthusiasm is also a by-product of domestic deregulation in the telecommunications sector, which increased internal competition and forced firms to seek market niches outside the United States. Behind the rhetoric, the basic conflict of interest is now the OECD area, but in the longer run, the attention is focused on the role of the LDCs, as producers and consumers of information-related industrial goods and services.

The diffusing impact of new technologies may be threatened by the polarization created by the operation of TNCs [32]. On the one hand, information technology facilitates the externalization of information processing and analytical operations in smaller firms. On the other hand, TNCs are able to reap the advantages of economies of scale and scope of service activities. Whereas technological standardization has been achieved by TNCs in terms of the physical infrastructure, and the international language of software and information technology skills, it is the institutional standardization that now becomes the main barrier for their further efficiency improvements. For such international service firms, it is essential not be placed at disadvantage vis-à-vis local suppliers. They, consequently, pursue, in the first instance, the right of establishment, equal national treatment, and free access to information from their central databases. As emphasized, amongst others, by Gibbs [29], this could well explain why much of the focus of recent trade negotiations has been the elimination of nontariff barriers to "trade in services."

It is interesting, though, to note that the reduction of distance and time by information technology has taken place concomitantly with the erection of new barriers to entry and trade distortions (through monopoly conditions, market segmentation and concentration, tied markets, and product differentiation). These new barriers reinforce discriminatory behavior embedded in the nature of services, favoring an environment of oligopolistic competition. It is, at the same time, somewhat ironic that liberalization of international trade will now be pursued by the increasing global monopolization of one of the most important factors of production, namely information, a process facilitated by the absence of agreed antitrust rules. There is a conflict between the owners of the new technology that want to capture global oligopolistic benefits and those that need it for development. For the former, the problem is one of competitiveness in international markets, while for the latter it is one of national development and of insertion and linkage to the international trading system. The world is, therefore, facing a new form of protectionism. In the past, protectionism could be seen as the effort of national economies to preserve the domestic market for their infant industries. At present, the focus seems to be to protect global markets for the owners of high technological innovations. This is not simply an "innovator-followers" conflict, but a conflict among innovators for the control of global markets. In the area of services and new information technology, a major item of negotiation is regulation concerning intellectual property rights. This reflects an attempt by TNCs operating with new technologies to reinforce their competitive advantages, gaining oligopolistic power by covering a wide range of diverse knowledge and information elements under the net of property rights. Therefore, norms regulating trade in services, foreign direct investment, technology transfers, and intellectual property rights cannot be completely separated.

Unless one understands the role exercised by the TNCs in the new conditions thrust upon the service sector by the technological revolution, intergovernmental

negotiations could be highly limited by being constructed in a conceptual vacuum about the substantive issues involved. The radically new conditions concern not only services but also all other sectors. A central factor affecting the conduct of TNCs in their world activity is the increasing importance of transborder data flows. This does not only change market structures and the international division of labor, but also raises fundamental concerns over power relations, national sovereignty, and vulnerability of citizens' rights to privacy at the national or foreign level. The evolution of the international data market, the manufacturing of technology-intensive equipment, the construction of centralized data bases, and transborder use of machine-readable data is essentially the domain of TNCs that have headquarters in key developed market economies. It is in this context that the proposed multilateral negotiations for liberalizing the flow of data and information at the international level have to be evaluated.

For host countries, the whole issue raises strategic concerns regarding the relative bargaining power of government and nongovernment institutions (including trade unions) vis-à-vis the TNCs, the strengthening of imbalances between "information rich" and "information poor" nations as well as the "migration of key decision-making functions" [52]. Even if "trade in services" could be small in relation to total trade, the significance of it for LDCs may be qualitative rather than quantitative, and may have important macroeconomic implications for the process of investment. As we know, the free trade argument for goods, which is the analytical underpinning for the advocates of liberalization of "trade" in services, stresses the welfare gains from international specialization and exchange accruing from an optimum allocation of resources. It is possible to argue that LDCs may possess potential comparative advantages that could not be realized by an immediate liberalization of "trade" in services, denying them the time to learn and become internationally competitive in "network" and specialized/science-based service sectors.

Moreover, banking, insurance, shipping, transport, and telecommunications are the core of the infrastructure that has a strategic role in the process of development. The control over banking and insurance sectors allows for the mobilization and allocation of resources to finance development. Similarly, shipping, transport, and communication sectors are areas for which national sovereignty, security and development are of prime importance. Moreover, consumer services are not only a way of improving quality of life but also represent a "package" of TV, fashion, advertising, music, fast food, and so on, which is likely to influence national culture and the pattern of development. Therefore, it is evident that in many cases, liberalization of "trade" in services may adversely influence economic development.

Negotiations over trade in services have been contentious from the beginning, because, although developed countries (especially OECD members) are by now united in favoring a strong agreement that would liberalize "trade" in services, they differ on some of the elements and mechanisms of such an agreement. LDCs remain hostile to a liberalization-oriented service agreement. The United States has presented the first comprehensive proposal featuring binding obligations for signatories to provide market access and national treatment with allowance for some reservations to such principles, but LDCs have made it clear that progress in services depends on the willingness of developed countries to make concessions in areas of interest to them. This suggests that linkages of services and goods may be necessary to assure credibility in the dispute settlement procedures for services.

A few of the important sectors in services, such as telecommunications, civil aviation, and shipping, are already covered by specific existing arrangements and organizations

(ITU, IGBI, or UNCTAD in the first sector, ICAO and IATA in the second, and UNCTAD in the third) but, in general, agendas proposed for general negotiations on services have been characterized by a symmetry unacceptable to LDCs. Proposals for negotiations were eventually confined to capital-related services, the production of which is capital intensive and technology intensive. These are the segments in which developed countries hold an overwhelming comparative advantage. Labor-related services, in which LDCs have a potential or revealed comparative advantage, were simply not part of the agenda for negotiations.

In this context, specialists from LDCs such as Nayyar [54] have voiced the claim that negotiations on services should be more balanced, which it is not enough to include sectors of export interest to developed countries that need temporary movement of corporations and capital across national boundaries for rendering services, but it is also necessary to incorporate sectors of export interest to the LDCs, requiring the temporary movement of labor across boundaries to deliver services. Given the international differences in wages, such temporary movements of labor are likely to be from the low-wage to the high-wage countries. This would provide symmetry to international “trade” in services, insofar as capital-intensive services such as banking, insurance, or telecommunications are likely to move in the opposite direction. Other LDCs may want to ensure an increase in their exports of agricultural goods. This is the only way to ensure a balance of benefits for all negotiators. Any legally binding multilateral framework that does not begin with the recognition of the implications of disparities in the level of development may seriously hinder the capacity of LDCs to pursue their own socio-economic objectives. Therefore, LDCs need to have the right to include or exclude sectors according to their development objectives.

But, as argued above, it seems that restrictions on international transactions in services are not the preserve of governments alone. There are other factors, such as restrictive business practices adopted by TNCs, which also have to be considered. Market sharing, price manipulation, barriers to entry, and other noncompetitive arrangements eliminating arm’s-length transactions are characteristics of the oligopolistic market structures of international banking, insurance, transport, communications, and other sectors. These practices have serious implications for LDCs not only in terms of distribution of gains from “trade” in services, but also in terms of the possibilities of learning and development. It is also important for LDCs to ensure the development of local partners or suppliers to TNCs and that TNCs engage in value adding activities within their borders.

The best illustration of the problems associated with liberalization of international “trade” in services is the EU, which comprises countries at relative similar levels of economic development and seeks economic integration. The transition from a situation of national barriers to trade in goods to one of free trade and a common external tariff was slow but manageable. The liberalization of “trade” in services in sectors as banking, insurance, telecommunications, and informatics, embodied largely in corporate entities, as well as professional services, embodied mostly in individuals, was very difficult. In fact, it was only the transition from a customs union to a common market, which removed obstacles on the movement of factors across national boundaries, which made it feasible for the EU to liberalise “trade” in services.

As Petit [38] also points out, the problem of liberalizing “trade” in services cannot be reduced to a conflict of interests between developed and LDCs. As we have argued, the liberalization of “trade” in services had been advocated by the OECD and the EU for the past 2 decades, but met outright opposition or lack of enthusiasm on the part of several countries. The campaign led principally by the United States at the end of

the 1970s during the GATT negotiations in Tokyo marked a turning point. The aim behind the liberalization of “trade” in services was to facilitate an increase in the specialization of trade. Thus, increased market shares in “trade” in services would offset the loss of market shares in manufactured goods. The argument was based on the theory of comparative advantages and on the fact that “trade” in services is subject to restrictions from governments wishing to retain strict control over such strategic activities. The opposition to the campaign developed among the industrialized countries themselves. The slowly increasing trend towards a “despecialization” within the developed countries regarding foreign “trade” in services seems to be calling into question the dominant positions of the past, without new markets in the LDCs being opened up. In other words, the tendency towards a more balanced service “trade” structure of countries that used to run deficits in their “trade” in services (West Germany, Japan) threatens the relative position of countries that used to achieve a surplus in this “trade” (e.g., the United States in intellectual property, the United Kingdom in insurance, France in consultancy and technical cooperation, The Netherlands in transport, Italy in tourism). Therefore, the redefinition of markets is less a result of policies than of direct pressures from TNCs operating on a world scale. An additional fact that needs to be emphasized is that liberalization of “trade” in services goes hand in hand with a liberalization of capital movements.

Another point of importance is the extent to which some segments of the world market for some services—especially business services—are dominated by U.S. firms. This has been prompted both by historical and technical factors. Historically, U.S. business firms have benefited from the fact that the U.S. market developed earlier than others (the decade following WWII was marked by a growing demand for public sector, educational, and medical services because of the growing wealth of the country, the increased discretionary spending, and the formidable growth of demand for “intermediate services” outputs) and, technically, U.S. firms have developed a level of sophistication required to gain access to markets well in advance of that of most firms from other countries (obeying in some cases to the strategies of customization, and in others to the size of the domestic market). Therefore, some authors [45] argue that the United States might need to make special efforts not only to open its own markets, but also to suggest constructive solutions whereby other countries might expect a high level of competition for their firms and domestic development in opening up their markets.

In addition to these considerations, as we have seen, although new technologies are making it increasingly possible to “transport” service outputs in the form of electronic digits and separate the production of services from the point of final consumption, this does not mean that services will “behave” increasingly like goods, in contrast to what is generally believed. There are powerful developments both in the technology of service production itself and in the evolution of markets that require the above-mentioned interaction between producers and consumers and, moreover, that a significant part of trade continue to involve movement of people as carries of expertise as much as movement of material objects. Therefore, negotiations on liberalization of “trade” in services must address issues not traditionally dealt with in discussions about trade in goods, which have focused almost exclusively on “pure trade” issues. If trade in services is dealt mainly from the perspective of access to distribution networks, it overlooks the fact that many outputs are regulated according to local performance standards as well as all the other arguments that we have put forth. In addition, as we have mentioned, it also overlooks the fact that, through the segmentation of markets and the customization of outputs, new technologies have enhanced the strategic importance of local branch

offices. For these reasons, negotiating strategies should be multiple track, and should address, as we have said before, issues of local investment and mobility of labor, as well as “pure trade” matters.

The present “trade-in-service” debate has some important new features, linked to the particular impact of technological change on the service sector and the embodiment of “trade” in the TNCs and the particular business practices of these firms. It appears, therefore, essential that such debate be carried out on the basis of a complete understanding of the implications surrounding the development of “network” and specialized/science-based service sectors. The outcome of the conflict of these complex power relations in the information sector will determine whether LDCs will be able to redress the overall international division of labor. Therefore, the agenda for negotiations in the GATS and other multilateral and bilateral fora is of strategic importance, and calls for major participatory work by LDCs in industrial or regional cooperation schemes, in an enlargement of the scope of negotiations to tackle movements of labor or other exports from LDCs, and to balance the form of acquisition of infrastructural services to facilitate development. Devising a long-run strategy for LDCs in the service sector and particularly in the information-related industries requires an understanding of the new trends in the service sector. LDCs would benefit by enforcing trade policy and regulatory provisions that allow for cooperation with foreign enterprises only if access to technology, skill, and information networks can be secured in exchange for market access. Such an agreement would potentially secure efficient protection and the strengthening of their national information and communication industries, and include explicit policies that address the role of TNCs.

References

1. Barras, R.: *Information Technology and Economic Perspectives: The Case of Office Based Services*. OECD, Paris, 1984.
2. Barras, R.: A Comparison of Embodied Technical Change in Services and Manufacturing Industry, *Applied Economics* 18, 941–958 (1986).
3. Barras, R.: Towards a Theory of Innovation in Services, *Research Policy* 15, 161–173 (1986).
4. Elfring, T.: *Service Employment in Advanced Economies: A Comparative Analysis of Its Implication for Economic Growth*. PhD thesis Rijksuniversiteit Groningen, 1988.
5. Gallouj, F., and Weinstein, O.: Innovation in Services, *Research Policy* 26, 537–556 (1997).
6. Miles, I.: *Services Innovation: Statistical and Conceptual Issues*. Mimeo, PREST, University of Manchester, report to OECD NESTI Working Group on Innovation Surveys, 1995.
7. Amable, B., and Palombarini, S.: Technical Change and Incorporated R&D in the Service Sector, *Research Policy* 27(2), 655–675 (1998).
8. Evangelista, R.: Innovation and Employment in Services: Results from the Italian Innovation Survey, in *The Employment Impact of Innovation: Evidence and Policy*. M. Vivarelli and M. Pianta, eds., Routledge, London, 1999.
9. Browning, H. L., and Singlemann, J.: The Transformation of the US Labor Force: The Interaction of Industry and Occupation, *Politics and Society* 8(3/4), 481–509 (1978).
10. Gershuny, J.: *After Industrial Society: The Emerging Self-Service Economy?* Macmillan, London, 1978.
11. Miles, I.: Innovation in Services, in *The Handbook of Industrial Innovation*. M. Dodgson and R. Rothwell, eds., Edward Elgar, Aldershot, 1994.
12. Soete, L., and Miozzo, M.: *Trade and Development in Services: A Technological Perspective*. MERIT Research Memorandum 89-031, MERIT, The Netherlands, 1989.
13. Pavitt, K.: Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory, *Research Policy* 13(6), 343–373 (1984).
14. Rosenberg, N.: *Perspectives on Technology*. Cambridge University Press, Cambridge, MA, 1976.
15. Riddle, D. I.: *Critical Issues in Services Research: A Literature Review*. Southern Marketing Association, Orlando, 1985.
16. National Academy of Engineers.: *Technology in Services: Policies for Growth, Trade and Employment*. National Academy Press, Washington, DC, 1988.

17. Gershuny, J., and Miles, I.: *The New Service Economy*. Pinter, London, 1983.
18. Fisher, A. G. B.: Production, Primary, Secondary and Tertiary, *Economic Record* 15, 14–38 (1939).
19. Clark, C.: *The Conditions of Economic Progress*. Macmillan, London, 1940.
20. Bhagwati, J.: Splintering and Disembodiment of Services and Developing Nations, *The World Economy* 7(2), 133–144 (1984).
21. Lawrence, R. Z.: Is Trade Deindustrialising America? A Medium-Term Perspective, *Brookings Papers on Economic Activity* 1, 129–171 (1983).
22. Tomlinson, M.: *Knowledge and Technology Flows from the Service Sector: A UK–Japan Comparison*. Paper presented at the Science, Technology, Society Conference, March 17, Tokyo, 1998.
23. Diaz Fuentes, D.: On the Limits of the Post-Industrial Society: Structural Change and Service Sector Employment in Spain, *International Review of Applied Economics* 12(3), 483–495 (1998).
24. Gibbs, M.: Means to Enhance the Competitive Position and Export Capacity of Service Industries of Developing Countries, in *Services and Development: The Role of Foreign Direct Investment and Trade*. UNCTC, UN, New York, 1989.
25. Daniels, P., and Moulart, P.: *The Changing Geography of Advanced Producer Services: Theoretical and Empirical Perspectives*. Belhaven Press, London, 1991.
26. Soete, L.: The Newly Emerging Information Technology Sector, in *Technical Change and Full Employment*. C. Freeman and L. Soete, eds., Blackwell, Oxford, 1987.
27. Sapir, A.: International Trade in Services: Comments, in *The Emerging Service Economy*. O. Giarini, ed., Pergamon Press, Oxford, 1987.
28. Roberts, J.: The Internationalisation of Business Service Firms: A Stages Approach, *The Service Industries Journal* 19(4), 68–88 (1999).
29. Gibbs, M.: Continuing the International Debate on Services, *Journal of World Trade Law* 19(3), 199–218 (1985).
30. EC: *Industrial Competitiveness and Business Services: Report to the Industry Council*. EC, Brussels, 1997.
31. Gadrey, J., and Gallouj, F.: The Provider–Customer Interface in Business and Professional Services, *The Service Industries Journal* 18(2), 1–15 (1998).
32. Martinelli, F.: Services, Trade and Development, in *Services in Asia and the Pacific: Selected Papers*. UNCTAD, Geneva, 1991.
33. Quinn, J.: Technology in Services: Past Myths and Future Challenges, in *Technology in Services: Policies for Growth, Trade and Employment*. National Academy of Engineers, ed., National Academy Press, Washington, DC, 1988.
34. Noyelle, T. J.: Transnational Business Service Forms and Developing Countries, in *The Changing Geography of Advanced Producer Services: Theoretical and Empirical Perspectives*. P. Daniels and P. Moulart, eds., Belhaven Press, London, 1991.
35. OECD: *Employment and Growth in the Knowledge-Based Economy*. OECD, Paris, 1996.
36. Lanvin, B.: Services and New Industrial Strategies: What is at Stake for Developing Countries? in *The Changing Geography of Advanced Producer Services: Theoretical and Empirical Perspectives*. P. Daniels and P. Moulart, eds., Belhaven Press, London, 1991.
37. Rada, J.: Information Technology and Services, in *The Emerging Service Economy*. O. Giarini, ed., Pergamon Press, Oxford, 1987.
38. Petit, P.: *Slow Growth and the Service Economy*. Pinter, London, 1986.
39. Sauvart, K.: Trade in Services: The Impact of Data Technologies, in *Services and Development: The Role of Foreign Direct Investment and Trade*, UNCTC, UN, New York, 1989.
40. UNCTC: *Foreign Direct Investment and Transnational Corporations in Services*. UN, New York, 1989.
41. Bancel-Charensol, L.: Impacts of Information and Communication Technologies on Service Production Systems, *The Service Industries Journal* 19(4), 147–157 (1999).
42. EC: Panorama of the EU Industry 95–97. EC, Brussels, 1995.
43. UN: *International Tradeability in Insurance Services: Implications for Foreign Direct Investment in Insurance Services*. UN, New York, 1993.
44. UN: *Management Consulting: A Survey of the Industry and Its Largest Firms*. UN, New York, 1993.
45. Noyelle, T., and Dutka, A.: *The Economics of the World Market for Business Services: Implications for Negotiations on Trade in Services*. Mimeo, Columbia University, 1986.
46. Warf, B.: Telecommunications and the Changing Geographies of Knowledge Transmission in the Late 20th Century, *Urban Studies* 32(2), 361–378 (1995).
47. OECD: *Services: Statistics on International Transactions*. OECD, Paris, 1996.
48. OECD: *Services: Statistics on Value Added and Employment*. OECD, Paris, 1997.
49. Rugman, A. M.: Multinationals and Trade in Services: A Transaction Cost Approach, *Weltwirtschaftliches Archives* 123(4), 651–667 (1987).

50. Clairmonte, F., and Cavanagh, J.: Transnational Corporations and Services: The Final Frontier, *Trade and Development: An UNCTAD Review* 5, 215–273 (1984).
51. EC: *The Globalising Learning Economy: Implications for Innovation Policy*. EC, Brussels, 1997.
52. Vaitsos, C.: *Transnational Rendering of Services, National Development and the Role of TNCs*. UN, New York, 1988.
53. Bhagwati, J.: International Trade in Services and Its Relevance for Economic Development, In *The Emerging Service Economy*. O. Giarini, ed., Pergamon Press, Oxford, 1987.
54. Nayyar, D.: Towards a Possible Multilateral Framework for Trade in Services: Some Issues and Concepts, in *Technology, Trade Policy and the Uruguay Round*. UN, New York, 1990.

Received 31 August 1999; accepted 13 March 2000