



CISC Centre for Innovation &
Structural Change

www.cisc.ie

CISC Working Paper No.19 September 2005

**GLOBALISATION OF SERVICES: TRADE, FOREIGN DIRECT INVESTMENT AND REGIONAL
DEVELOPMENT**

Konstanze Hochtberger¹

Acknowledgement: This paper was written as part of Michael Storper's course *Globalization: Theory and Evidence* at the Department of Urban Planning, UCLA in the winter term 2005. The author wants to thank Michael Storper for his thoughts and comments on an earlier draft of the paper.

¹ Centre for Innovation & Structural Change, National University of Ireland, Galway, Ireland. Konstanze.hoechtberger@nuigalway.ie

Abstract

This paper examines the ways by which the process of globalisation coupled with advances in information and communication technologies (ICTs) affects technology-intensive business services sectors. By elaborating on the nature of trade, foreign direct investment (FDI) and international production strategies in technology-intensive business services, it attempts to provide a cautious assessment of the development prospects for regions incorporated into the sector's emerging international division of labour. Services firms and also manufacturing firms, which locate their internal services functions in *offshore* locations use a variety of international services delivery modes and apply them in complementary ways. Services trade and FDI statistics are of limited value to grasp this complexity. Thus, the paper draws on selected country case studies to consider centralisation and decentralisation tendencies in the services sector and regional development implications of a globalising service economy. Although global cities dominate in the sector's geography, the paper finds that services globalisation by the means of ICTs offers development prospects for less advanced regions in the world economy.

1 Introduction

The relationship between services and globalisation is twofold. First, developments in the services sector drive the current process of globalisation as services industries like those linked to information and communication technologies (ICTs) have facilitated and deepened global economic integration (Miozzo and Miles, 2003). The second aspect concerns the ways by which the process of globalisation affects services industries. The paper focuses on this latter aspect by considering the nature of international services activities and the emerging global locational pattern of the service economy.

A carefully performed analysis of international services statistics reveals substantial and partially unanticipated results regarding the nature and the extent of services internationalisation. However, this essay does not attempt to provide a statistical overview of global trade patterns and investments in the services sector. Borga and Mann (2004) illustrate in detail the nature of US services trade and affiliate sales, Daniels (2002) discusses services trade patterns of the EU and Mallampally and Zimny's (2000) analysis considers global trends and patterns of FDI in services. Rather, this essay is concerned with firms' motivations and strategies that underlie the complexity of service globalisation.

Services comprise a broad array of different activities with very different characteristics in terms of productivity levels, growth dynamics, tradability and locational behaviour resulting in a complex pattern of their global geography. However, the growth and the internationalisation of the business services sector are widely acknowledged to play a particularly important role in the contemporary world economy (Bryson *et al.*, 2004). Miozzo and Soete (2001) point to the key importance of technology-intensive business services geared to the generation, processing and distribution of information in the current process of globalisation and structural change.

By taking the sub-sector of business services related to ICTs as a case study (e.g. computer services), the paper first illustrates the different modes by which services are delivered to foreign markets. Section 3 examines the nature of international trade in technology-intensive business service sectors and provides some country case study evidence highlighting the peculiarities of services trade. Section 4 considers the value of some of the existing theoretical explanations for services trade patterns in the world economy. Subsequently, section five illustrates firms' different motivations in undertaking foreign direct investment (FDI) in services and considers the resulting international production strategies. Section 6 provides concluding remarks regarding the

regional development prospects for places incorporated into the emerging geography of services globalisation.

2 The modes of services globalisation

Rubalcaba-Bermejo and Cuadrado-Roura (2002) identify four dimensions of services globalisation that refer to international flows, networks, brands and trademarks within the services sector. The multidimensionality of this framework points to the complexity associated with the globalisation of services and highlights the significance of services internationalisation through non-equity based, network forms of organization such as franchising agreements. The following section, however, accounts just for the first and more ascertainable dimension of services globalisation, which covers international services flows by the means of international services trade and international movement of factors of production.

In their account of the internationalisation of the US service economy, Borga and Mann (2004) distinguish two channels of international service flows to foreign markets. Cross-border services exports and imports defined as transactions between residents of two countries represent the first delivery channel. This category also covers cross-border trade occurring within multinational companies, e.g. parents' receipts of royalties and license fees from their foreign affiliates, that accounted for 29 percent of total US services exports and 23 percent of total imports in 2002. This large share provides a first indication of the central importance of international production strategies adopted within the services sector. Second, they identify direct investment as the second channel of service delivery to foreign markets the extent of which is measured by sales of foreign affiliates. Affiliate sales differ from cross-border services transactions because under the residency principle of balance-of-payments accounting, affiliates are regarded as residents of the countries where they are located rather than of the countries of their owners.

In collaboration with other multilateral agencies, the UN (2002) provides a further classification system of international services flows. The Manual on Statistics of International Trade in Services describes four modes through which services might be traded internationally. The first category of *cross-border supply* involves services transactions between residents of two countries without either supplier or consumer moving into the territory of the other. This category also covers receipts from royalties and license fees. In contrast, the second mode of *consumption abroad* involves a process by which a consumer moves to the foreign country to obtain a service.

The third mode is that of a *commercial presence* that matches Borga and Mann's (2004) category of services delivery through the channel of direct investment. They furthermore distinguish the mode of *presence of natural persons* by which a foreign services supplier moves to the consumer's country to provide a service on a *temporary base*. This category also includes intrafirm transfers of personnel and business visitors.

Roberts (1999) delivers an even more elaborated classification of business services firms' international activities and distinguishes five modes of services exports and four variations of overseas presence that in addition to foreign-owned affiliates include franchising and licensing operations. She argues, that business services firms internationalize in an evolutionary manner by using a variety of methods of exporting. The internationalisation process often begins with *domestically located exports* and progresses to the establishment of a *services production facility* for servicing the local market and can even involve the setting up of an *international production unit* that is integrated into international services production networks.

The World Investment Report pays particular attention to the phenomenon of services *offshoring* (UNCTAD, 2004). Driven by advances in ICTs, the "tradability revolution" experienced by some services sectors facilitates the production of services, or parts thereof, in locations offshore from firms' home countries. The strategic choice of locations for the different parts of the services value chain can thus be made in line with comparative advantages of individual locations. The report distinguishes two essential modes by which offshoring of services can occur. The first category that is described as *intrafirm, captive offshoring* involves internalized international production strategies by setting up services affiliates abroad and corresponds with Robert's (1999) notion of an international production unit. The second mode is called *offshore outsourcing* and is associated with the outsourcing of services production to third party services providers abroad. The third party providers located abroad can either be local firms or foreign affiliates of other Transnational Corporations (TNCs). The mode of offshore outsourcing is not only associated with UN's (2002) crossborder supply mode of services, as it can also involve the temporary movement of personnel. The complex project structures that occur in the outsourcing of IT services to Indian software services suppliers often involve offshore, crossborder service trade and onsite project work (*body-shopping*) by the temporary movement of software engineers to the client's home country in a complementary manner (Arora *et al.*, 2001).

Table 1 provides an attempt to compare the four classification schemes and identifies their overlapping. Two further distinctions are made regarding the intrafirm crossborder trade of core

and non-core services and the establishment of international production units in core and non-core service activities. The extension accounts for the complexity related to the process of economic globalisation that triggered increasing flows of shared services within both multinational services and manufacturing firms. Based on these considerations, the table identifies ten different modes of international services delivery to foreign market, of which the types ① - ⑥ represent direct services trade and the types ⑦ - ⑩ reflect indirect services trade by the means of FDI. For practical reasons, the essay's following sections refer to the identified ten types of international service delivery by using the assigned numbers. The table's last column provides examples for each type of international services delivery from the case study of the computer services sector.

3 The nature of international services trade

The growth of international services trade has received an enormous amount of attention among international policy makers and in the media. Since the Uruguay Round, trade negotiations aim at bringing international trade and investment in services under multilateral rules as summarized by the General Agreement of Trade in Services (GATS). The broader public interest in services globalisation is reflected in the numerous media reports published in recent times on the topic of international services outsourcing and captive offshoring (Amiti and Wei, 2004). The press is mainly concerned with the associated job losses in the developed countries. In this context it is often referred to services related to ICT that, by a diverse set of organizational modes and arrangements, are exported from developing countries such as India into the US economy.

Some of these reports give the impression that international services trade is exploding, while empirical evidence for the US does not confirm this trend (Amiti and Wei, 2004). Furthermore, most of the pessimistic calculations use the peak of the economic and technology boom as the base for analysis, ignore the dollar overvaluation and are thus misleading (Mann, 2003). The WTO (2004) calculates that not more than approximately 400,000 US jobs have been lost due to international services outsourcing. It is also estimated that for each dollar value of outsourcing, there is a net gain of 14 cents to the US economy due to the increased productivity generated by the offshoring of business services activities. Furthermore, home country employment in industries that are most affected by services offshoring shows dynamic growth (UNCTAD, 2004).

In contrast to press reports overstating the extent of services trade, Rubalcaba-Bermejo and

Cuadrado-Roura (2002) refer to the ‘paradox of service globalisation’ when considering international trade figures in services. While services represent about 70 percent of the most advanced economies’ GDP, commercial services trade accounted for about only one fifth of world trade in goods and services in 2003 (WTO, 2004). Thus, measured in relative terms, the trade in services still lags behind that of the manufacturing sector. The explanation for the gap between the globalisation of services and that of manufacturing is complex. First, tariff and non-tariff barriers are still a major factor hampering international services transactions. Second, the non-storability and the intangibility of many services still necessitates close client-supplier interaction and render the globalisation of services through trade less feasible. This explains the strong position of market-seeking services FDI [⑦ and ⑧] compared with direct, crossborder trade in services [particularly ②]. While the services sector accounted for just one quarter of the global FDI stock in 1970s, its share has risen to about 60 percent in 2002 (UNCTAD, 2004).

A third line of explanation for the minor importance of services in international trade statistics concerns the neglect of the services value incorporated in the international trade of goods as represented by mode ①. In his attempt to revise the concept of value, Giarini (2002) estimates that, on average, between 70 and 80 percent of the prize of an industrial good represent the cost of pre-production and post-production services such as research & development, marketing, logistics and sales. International trade of computer software is one of the most prominent examples for the embodiment of services trade in merchandise trade figures. The conventional mode of software delivery used tangible formats such as CD-ROMs and software embedded in hard drives and thus, appeared as merchandise trade within international trade statistics. However, with the increased use of electronic transmission, international trade of software is reclassified to the country’s services accounts resulting in a steep incline of software services trade (Borga and Mann, 2004; Forfàs, 2004).ⁱ

The significance of the service delivery mode *temporary movement of personnel* [⑥] has increased over recent years. This is highlighted by the fact that in 2000, computer and information technology services imported crossborder by the US from India reached only \$135 million while those delivered by the movement of Indian professional to the US is estimated to have accounted for \$2.5 billion (WTO, 2004). However, the statistical measurement of delivery mode ⑥ seems to be especially problematic given, amongst other thingsⁱⁱ, the different notions regarding the meaning of *temporary* that vary between three months and five years among WTO member states (WTO, 2004).

Another distortion of international trade statistics results from intrafirm services trade [③ and ④] that, due to emerging international production strategies in services industries, is rising. For instance, receipts generated from software licensing agreements between companies' headquarters and their foreign affiliates are included in statistics of royalties and license fee transactions and their value cannot be separately identified from other transactions not related to the trade of computer software (Borga and Mann, 2004). Services exports from Ireland illustrate the consequences of the increasing amount of intrafirm trade quite well. According to international trade statistics, the country ranked first as the largest services exporter in per capita terms globally in 2003 (WTO, 2003). Moreover, Ireland generated a net trade balance surplus of 10,400 € million in the category of computer and information technology services in 2002, while the US accounted for just 4,100 € million (Eurostat, 2004). These figures however, must be treated with caution as numerous US multinational software firms use Ireland as their export base to the European market, and undertake just the very final steps of the software commodity chain, i.e. packaging and localization, in the country. While the bulk of the higher value-added activities (e.g. software development) are performed in the US, the profits made from European sales appear in Ireland's trade statistics. The Irish net trade balance deficit of -10,700 € million in royalties and license fee payments recorded for the same year bears light on the extent of intrafirm trade that provides the rationale for the country's exceptionally strong position in IT services exports (Eurostat, 2004).

4 Explaining international trade in services

Bearing the difficulties with international trade statistics in mind, the following seeks to examine the value of established theories in explaining services trade patterns and their implications for regional development. For a long time, services were perceived as non-tradable and this characteristic has had decisive implications for the conceptualization of services in theories of regional development. Export base theory divides industries into two categories. The first category comprises the so-called basic industries that export their products to another area. The second category includes the non-basic industries that have a purely local market for their products (Pfouts, 1960). This division implies that only basic industries create wealth as total employment and investment growth is a multiple of employment and investment growth in the basic sector while the non-basic industries play a somewhat more passive role.

Traditionally, basic industries have been equated solely with manufacturing while all services industries have been classified as non-basic. Due to the increased tradability of some services sectors, this assumption has already been put under question by Price and Blair (1989). By drawing from the case study of the regional concentration of advanced producer services in the South of England in general and London in particular, Juleff (1993) suggests that there is a case for treating these services as part of the basic rather than the non-basic sector. Thus some services sectors have to be regarded as having an important role to play in regional income generation.

In order to understand inter- and intrafirm services trade patterns between countries and regions a consideration of international trade theory seems reasonable. The influential Heckscher-Ohlin-Samuelson theorem predicts that economies will tend engage in trade in those goods that require intensive use of those factors for their production with which the country is relatively well endowed (Krugman and Obstfeld, 1991). To a certain extent, this helps to explain, why many countries that dispose of large, well educated and comparably inexpensive labour pool have managed to benefit from the outsourcing of lower-value services from the industrial countries. New data technologies made it possible for these kinds of services to be produced in one place and consumed in another by collapsing time and space at decreasing costs (Miozzo and Soete, 2001).

India's software services industry that involves dominantly lower value activities in the software commodity chain such as coding and testing activities serves as a prime example for international services trade based on differences in the factors of production costs (Heeks, 1998; Arora *et al.*, 2001). The growth of the call centre sector in Ireland in the early 1990s and also that in North East England provides further evidence for this hypothesis (Breathnach, 2000; Richardson *et al.*, 2000). In summary, the factor proportion theorem provides the rationale for international service trade between high wage countries and regions with a scarcity of labour and less developed, low wage countries or regions with an abundance of labour through the delivery modes ②, ④, ⑥ and ⑩ in less sophisticated service activities.

However, the argumentation of international trade theory cannot explain why the decentralization of such services activities has affected only a small range of countries and regions, while many other places featuring similar factor endowments have been left out. In 2001, Ireland, India, Canada and Israel, in that order, accounted for over 70 percent of the total offshored services market that comprises shared services, call centre activities, IT services and regional headquarters (UNCTAD, 2004). Theories of comparative advantage are also of less value in explaining how

certain regions in developing countries or some peripheral regions in the industrialized world that have initially exported less-sophisticated, labour-intensive services activities managed to move gradually towards the export of higher-value, labour intensive services activities.ⁱⁱⁱ

Moreover, theories based on comparative advantage also fall short in explaining the bulk of services trade that is occurring between developed countries that feature rather similar factor endowments. In particular, the US occupies a dominant position in global services trade as shown by its strong, positive net balance in services trade and its share of around 20 percent of total world services exports. Miozzo and Soete (2001) suggest that the overall concentration of business services production, and thus also the trade thereof, in the industrialized countries is mostly a consequence of the increased interdependencies between manufacturing and services activities. By emphasizing that many technology-intensive business services sectors are essentially an outcome of the increased technical and social division of labour within the manufacturing sector, they point to the need to consider the internationalisation of manufacturing and that of the services sector in a complementary manner. The trend amongst computer hardware assemblers to outsource increasing shares of their manufacturing operations to the growing contract manufacturing services sector illustrates that business services geared to supply chain management replace the vertically integrated manufacturing model (Zysman, 2002; Felker, 2003).

Roberts (2002) argues that it is absolute and competitive rather than comparative advantage what explains the high volumes of services trade between developed countries. Services TNCs' product differentiation strategies through firm-specific knowledge and use of technology as well as the oligopolistic market structures within the services sector are considered to be key factors influencing international services flows between the triad nations (Rubalcaba-Bermejo and Cuadrado-Roura, 2002). In this context, Miozzo and Soete (2001) emphasize that due to the intangibility of many business services, determined by services characteristics such as asymmetric information, much of the crossborder services trade occurs in the form of intrafirm rather than arm's-length transactions. The high volume of intrafirm services trade highlights that complementarities exist between crossborder services trade flows and market-seeking FDI. This relationship and other explanations regarding the motivations and strategies behind FDI in services are considered in the following section.

5 Services FDI and international production strategies in the services sector

FDI growth that has been the driving force behind globalisation can be largely attributed to increasing share of services FDI. In the light of the minor importance of services trade compared to that of goods, the importance of FDI as an instrument of globalisation is thus greater in services industries than in manufacturing. Services FDI can be geared to the international delivery of services firms' core activities, but it can also reflect the strategy of both manufacturing and services firms to produce and deliver corporate services internationally (Mallampally and Zimny, 2000). This again underscores the need to view the globalisation of services and that of manufacturing in a complementary manner.

Similar to the international services trade patterns illustrated earlier, the expansion of technology-intensive services FDI has taken place mainly in the developed countries. Structural changes and economic growth in the triad nations have increased the demand for services. On the supply side, corporate restructuring through externalization of intermediate service functions has resulted in the growth of specialized business services firms that internationalize their activities at a fast pace in order to achieve economies of scale and scope. Merger and acquisitions appear as the preferred mode of entry in international business services markets rather than greenfield investments (Roberts, 1999).

Much of the service activity related to ICT, like IT consultancy, necessitates close proximity between service providers and clients, which explains why the majority of these services affiliates sell their services products exclusively to the local market [⑦ and ⑧]. They have therefore less impact on international services trade other than intrafirm trade and are accordingly best classified as market-seeking investments (Borga and Mann, 2004). Geographically, this category of market-seeking service FDI is predominantly drawn into a network of global city regions that do not only represent concentrations of services demand and supply of qualified labor, but also have productivity and innovation enhancing effects on business services firms through a diverse set of agglomeration economies (Scott *et al.*, 2001).

Mallampally and Zimny (2000) analyze the market-seeking investment pattern by drawing from Dunning's framework of the eclectic paradigm. The increased technical sophistication of many services sectors has created a pattern of firm-specific ownership advantages in favour of those services TNCs at the forefront of technological change and knowledge accumulation enabling them to operate internationally. Furthermore, business services firms have come under increasing pressure to follow their multinational clients overseas in order to meet their complex needs

(Roberts, 1999). The uncertainties that clients face regarding the assessment of service quality has increased the importance of services firms' international reputation, thus further intensifying the drive for market-oriented services FDI (Aharoni, 2000).

However, the share of resource-seeking services FDI [⑨ and ⑩], particularly in business services related to ICT, shows dynamic growth. Services FDI of this sort is better explained by locational rather than ownership advantages (Roberts, 2002). The export-orientation of these establishments reflects the rise of complex, international production strategies in the services sector that is accompanied by an increase of multilateral, intrafirm services flows (Zimny and Mallampally, 2002). These services affiliates either perform the role of an export base to a larger foreign market region, or they carry out administrative and coordinative functions for a larger market region. They can also serve as integrated production units within global production networks of TNCs. Similar to the market-seeking FDI type in services, these international services production units are mainly an urban phenomenon due to their dependence on an advanced technical infrastructure and technically skilled personnel (UNCTAD, 2004).

US Software affiliates in Ireland that are concentrated in the greater Dublin region generate the bulk of their sales through exports to the European market and thus provide evidence for the first case (White, 2004). Regional headquarters of technology TNCs that are a typical phenomenon of the foreign investment pattern in Singapore represent an example for the second category (Yeung et al., 2001). Moreover, numerous TNCs from a broad range of economic sectors have started to establish captive offshore services centres that reflect the third category of export-oriented services FDI. While Indian technology agglomerations like Bangalore and Hyderabad represent a typical target of these resource seeking investments, urban regions in countries such as Ireland, Mexico, China or the Caribbean also managed to attract increasing amounts of these internationally traded services operations (Atkins, 2004).

The sophistication of activities that are performed by offshore services centres varies significantly. Their operational spectrum ranges from intermediate, lower value steps in international IT production chains (e.g. coding and testing of computer services), IT-enabled, back-office operations (e.g. accounting or customer relationship management) to supply chain management. As research and development (R&D) is essentially a services function, R&D centres established by European or Asian TNCs in foreign, high technology agglomerations such as the Silicon Valley can be viewed as the top end of this spectrum.

6 Conclusion: regional development in the global service economy

The emerging global geography of ICT-intensive business service activities features both centralization and decentralization trends that are the outcome of the geographical polarization of tasks (Miozzo and Soete, 2001). High value service activities seem to cluster in advanced, global city regions, predominantly in the industrialized countries in proximity to their major clients, while lower value added service activities are “offshored” to a set of less advanced, urban regions in the world economy.

The tradability revolution in services that has been heavily influenced by the use of the Internet does not bring about a uniform dispersion of technology-intensive business activities. Rather, global city region constitute the core of service globalisation in the internet age, while at the same time, the trend towards outsourcing of more standardized service activities enabled by far-flung services delivery networks favours a distinctive set of regions that have been traditionally more peripheral to the world economy (Leamer and Storper, 2001).

Thus, services globalisation offers development prospects for less advanced regions as demonstrated by contemporary regional success stories such as Bangalore in IT services, Singapore’s agglomeration of financial services and regional headquarters or the software cluster in Ireland. From a regional development perspective, however the footloose nature of these rather standardized services poses challenges to sustainability as these services activities often represent stand-alone operations and are relatively vulnerable to relocation (Gillespie *et al.*, 2001)

In contrast, regions with limited access to the essential ICT infrastructure and to the information networks of global companies may be left out completely from the transformation of the services sector and remain in a relatively weak bargaining position when it comes to distributing profits and transferring technologies. Moreover, given the organic link between goods and services, a good performance in the manufacturing of goods may represents a region’s essential precondition for the development of an internationally competitive business services sector.

Finally, a further dimension of services globalisation seems to gain in importance that has not been discussed yet. As Schmitz (2004) and Ó Riain (2004) highlight, global production networks appear to be highly dynamic phenomena in the world economy and offer the prospects for places incorporated into these networks to upgrade their position by moving towards higher value activities. This evolution often involves the adding of internationally traded services functions such as marketing, logistics and other technical service activities to an existing manufacturing

base. Ireland that has long been a host of multinational high technology manufacturing and certain regions in Southeast Asia seem to follow this trajectory (Felker, 2003; Grimes and White, 2005). Further research is needed on the ways and the extent by which less developed regions can upgrade their existing economic base by expanding the services element and thus, position themselves better in the global geography of the services sector.

Notes

1. Trade of computer software is thus not any longer classified under the manufacturing section DE, code 2233 *Reproduction of computer media* of the Statistical Classification of Economic Activities NACE used in the EU. Instead, it appears in the category of services trade in section K, code 72.2 *Software consultancy and supply*.
2. At present, the value of services provided through [©] may be recorded in a number of ways. It can be recorded as workers' *remittances* or as *compensation of employees*. Furthermore, international statistics lack information on the distribution of foreign employment according to occupation. Annex 1 of the Manual on International Services Statistics provides a detailed account of the measurement problems regarding the category of movement of natural persons (UN, 2002).
3. ⁱⁱⁱThe evolution of the export-oriented IT services cluster in Bangalore, India serves as an example for the former case (Saxenian, 2001), while the upgrading of the Irish software sector illustrates the later (Ó Riain, 2004).

References

- Aharoni, Y. (2000) The role of reputation in global professional business services. In Aharoni, Y. and L. Nachum (eds) *Globalisation of services. Some implications for theory and practice*. London, Routledge: 125-141.
- Amiti, M. and S.-J. Wei (2004) Fear of Services Outsourcing: Is It Justified? NBER Working Paper Series, WP No. 10808. Cambridge, MA, National Bureau of Economic Research.
- Arora, A., Arunachalam, V. , Asundi, J. and R. Fernandes (2001) The Indian software services industry. Research Policy **30**: 1267-1287.
- Atkins, R. (2004). Understanding the Offshoring Challenge. Progressive Policy Report, Progressive Policy Institute, May 2004.
- Borga, M. and C. L. Mann (2004) US International Services - Cross-Border Trade in 2003 and Sales Through Affiliates in 2002. Survey of Current Business, Bureau of Economic Analysis (BEA), October 2004.
- Breathnach, P. (2000) Globalisation, information technology and the emergence of niche transnational cities: the growth of the call center sector in Dublin. Geoforum **31**: 477-485.
- Bryson, J., Daniels, P. and B. Warf (2004) *Service Worlds. People, Organisations, Technologies*. London, Routledge.
- Daniels, P. (2002) EU services trade, with particular reference to business and professional services. In Cuadrado-Roura, J., Rubalcaba-Bermejo , L. and J. Bryson (eds) *Trading Services in the Global Economy*. Cheltenham, Elgar: 111-133.
- Eurostat (2004) *Economy and Finance: Main Economic Indicators*. Brussels.
- Felker, G. B. (2003) Southeast Asian industrialisation and the changing global production system. Third World Quarterly **24**(2): 255-282.
- Forfàs (2004) *International Trade and Investment Report, 2003*. Dublin.
- Giarini, O. (2002) The globalisation of services in economic theory and economic practise: some conceptual issues. In Cuadrado-Roura, J., Rubalcaba-Bermejo , L. and J. Bryson (eds) *Trading services in the global economy*. Cheltenham, Edward Elgar: 58-77.
- Gillespie, A., Richardson, R. and J. Cornford (2001) Regional development and the new economy. European Investment Bank Papers **6**(1): 109-131.
- Grimes, S. and M. White (2005) The transition to internationally-traded services and Ireland's emergence as a 'successful' European region'. Environment and Planning A, forthcoming.

- Heeks, R. (1998) The Uneven Profile of Indian Software Exports. Development Informatics - Working Paper Series, WP No. 3.
- Juleff, L. (1993) The implications of export base theory for the study of advanced producer services (1): Location quotient analysis. Social Science Working Paper Series. WP No. 9, Edinburgh, Department of Economics, Napier University.
- Krugman, P. and M. Obstfeld (1991) *International Economics: Theory and Policy*. New York, Harper-Collins.
- Leamer, E. and M. Storper (2001) The Economic Geography of the Internet Age. Journal of International Business Studies **32**(4): 641-655.
- Mallampally, P. and Z. Zimny (2000) Foreign direct investment in services. In Aharoni, Y. and L. Nachum (eds) *Globalisation of services. Some implications for theory and practice*. London, Routledge: 25-51.
- Mann, C. L. (2003) Globalisation of IT Services and White Collar Jobs: The Next Wave of Productivity Growth." Institute for International Economics, Policy Briefs, No. PB03-11.
- Miozzo, M. and I. Miles (2003) The relation between the internationalisation of services and the process of innovation: a research agenda. In Miozzo, M. and I. Miles (eds) *Internationalisation, Technology and Services*. Cheltenham, Edward Elgar Publishing: 15-32.
- Miozzo, M. and L. Soete (2001) Internationalisation of Services: A Technological Perspective. Technological Forecasting & Social Change **67**: 159-185.
- Ó Riain, S. (2004) The Politics of Mobility in Technology-Driven Commodity Chains: Developmental Coalitions in the Irish Software Industry. International Journal of Urban and Regional Research **28**(3): 642-663.
- Pfouts, R. (1960) *The Techniques of Urban Economic Analysis*. West Trenton, NJ, Chandler-Davis Publishing.
- Price, D. and A. Blair (1989) *The Changing Geography of the Services Sector*. London and New York, Belhaven Press.
- Richardson, R., Belt, V. and N. Marshall (2000) Taking Calls to Newcastle: The Regional Implications of the Growth in Call Centres. Regional Studies **34**(4): 357-369.
- Roberts, J. (1999) The Internationalisation of Business Services Firms: A Stages Approach. The Service Industries Journal **19**(4): 68-88.

Roberts, J. (2002) From market to resource-oriented overseas expansion: re-examining a study of the internationalisation of UK business services firms. In Miozzo, M. and I. Miles (eds) *Internationalisation, Technology and Services*. Cheltenham, Edward Elgar Publishing: 161-183.

Rubalcaba-Bermejo, L. and J. Cuadrado-Roura (2002). Services in the age of globalisation: explanatory interrelations and dimensions. Trading services in the global economy. In Cuadrado-Roura, J., Rubalcaba-Bermejo, L. and J. Bryson (eds) *Trading Services in the Global Economy*. Cheltenham, Edward Elgar: 27-57.

Saxenian, A. L. (2001) Bangalore - Silicon Valley of Asia?, Center for Research on Economic Development and Policy Reform, WP 91, Stanford University.

Scott, A., Agnew, J., Soja, W. and M. Storper (2001) Global City Regions. In Scott, A. (ed) *Global City Regions*. Oxford University Press.

UN (2002) *Manual on Statistics on International Trade in Services*. New York, United Nations.

UNCTAD (2004) *World Investment Report 2004 The Shift towards Services*. New York, United Nations.

Whichard, O. and M. Borga (2002) Selected Issues in the Measurement of U.S. International Services. Survey of Current Business, Bureau of Economic Analysis (BEA), June 2002.

White, M. (2004) Inward Investment, Firm Embeddedness and Place. An Assessment of Ireland's Multinational Software Sector. European Urban and Regional Studies **11**(3): 243-260.

WTO (2004) *World Trade Report 2004. Exploring the linkage between the domestic policy environment and international trade*. Geneva, WTO.

Yeung, H., Poon, J. and M. Perry (2001). Towards a Regional Strategy: The Role of Regional Headquarters of Foreign Firms in Singapore. Urban Studies **38**(1): 157-183.

Zimny, Z. and P. Mallampally (2002) Internationalisation of services: are the modes changing? In Miozzo, M. and I. Miles (eds) *Internationalisation, Technology and Services*. Cheltenham, Edward Elgar Publishing: 87-116.

Zysman, J. (2002) Production in the Digital Era: Commodity or Strategic Weapon? Berkeley Roundtable on the International Economy, WP No. 147.

Table 1: The ten modes of services internationalisation

Borga and Mann (2004)	UN (2002) ITS Manual	Roberts (1999)	Extensions	Case study of computer services
Cross-border services trade	Cross-border supply	① Embodied exports		Sales of CD-Rom with computer software; software installed on computer hardware
		② Wired exports <i>Offshore outsourcing*</i>		Data processing services by third party service provider
		Intrafirm exports	③ Intrafirm trade of core service	Software licensing agreements with foreign affiliates
			④ Intrafirm trade of non-core services	Delivery of shared services to affiliated foreigners
	Consumption abroad	⑤ Domestically located exports		Provision of IT consultancy by local service provider to foreign firm
Presence of natural persons	⑥ Transhuman exports <i>Offshore outsourcing*</i>		Onsite IT services by software engineers of foreign firm	
Affiliate sales through FDI	Commercial presence	⑦ Export delivery system		Sales subsidiary of foreign software firms
		⑧ Services production facility		Foreign affiliate developing customized IT solutions for clients in the host country
		International production unit <i>Captive offshoring*</i>	⑨ Production of core service activities	Affiliate developing software for export
			⑩ Production of non-core service activities	Shared services centre Customer call centre

* Types of services offshoring as defined in the World Investment Report (UNCTAD, 2004)