Chapter 5

Globalisation of Services and Jobs

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This paper explores the potential for increased trade in services to improve economic growth prospects globally drawing on information from labour force surveys in Chile, France, India, the United Kingdom and the United States, as well as the OECD input-output database. It documents that many activities in the business services sector are tradable across international borders. Tradable business services account for a larger share of employment than manufacturing in some high-income countries. In all countries in our sample tradable business services employ mainly high to medium skilled workers who earn significantly higher wages than in manufacturing or non-tradable services. High-income countries are relatively abundant in skilled workers and therefore have comparative advantage for this sector. In the event of trade liberalisation, rich countries such as the United Kingdom and the United States would likely experience significant export growth in this sector. State-of-the-art business services are, however, essential for the competitiveness of high-to-medium technology manufacturing. Access to such services through imports would help middle income countries strengthen their comparative advantage in these manufacturing industries and move up the value chain.

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5.1. Introduction

The developing world needs state-of-the-art services to continue on a path of rapid development. In middle income countries, services are needed both as an engine of job creation in its own right and as a facilitator of job creation in other sectors. State-of-the-art services are needed for manufacturing firms to connect to global value chains and to develop competitiveness in more skill-intensive activities along the value chain. The developed world tends to have a comparative advantage in business services and needs to export more to grow. More open business services markets would generate a win-win scenario where countries with comparative advantage in business services would generate well-paying jobs in this sector, while countries with comparative advantage in manufacturing would benefit from access to state-of-the-art business services that would help them move up the value chain in manufacturing.

Decreases in air travel costs, rapidly declining telecommunication costs, increasing internet adoption around the world, and rapid proliferation of broadband internet services have made internationalisation of a host of information-intensive services possible. Unfortunately, comparable information on international trade in services across countries is not readily available and a straight forward analysis of the relationship between trade and employment is not possible. This study offers a way of getting around this problem, providing a descriptive analysis of the relationship between services tradability, employment and earnings patterns.

While the service sector accounts for between half and four fifths of employment, we focus on "business services" (including ICT services, finance, insurance, and professional, scientific and technical industries). Business services make up a significant share of the economic activities in the developed economies. For example, in the United States, business services account for 25% of employment and, in the United Kingdom and France, they account for 20% and 15% of employment, respectively. In the fast-growing BRICs, business services account for a small, though growing, share of employment. We will attempt to demonstrate that many of these activities are deliverable over distance and thus – in the absence of policy impediments – tradable internationally and that there are significant opportunities for both developing and developed economies from increased trade in business services. Where we have data, most notably the United States, services imports and exports have been growing rapidly over the past 10-15 years. The types of business services that we will emphasise in this report have contributed the most to US export and import growth.

Cross-border trade in services has remained stable at about 20% of total world trade since the 1970s. This flat trend masks large variations across sectors and income groups, however. The highest share, well above 25%, but with a flat trend, is found in low-income countries. Middle-income countries in contrast have seen their services share of total trade dropping from 25% in 1977 to 15% in 2010. Nevertheless, services trade has risen both in absolute terms and as a share of GDP also in middle-income countries. The services share of total trade for OECD countries is on a rising trend, increasing from 19% in 1971 to 23% in 2010.[1] Finally, services account for about 30% of US exports. If trade were measured in value added terms (instead of gross output terms), it seems highly likely that this share would be significantly higher – possibly even exceeding 50%.

Transport and travel account for almost half of global, and as much as 65% of middle income countries' services trade. Transport and travel has supported the rapid export-led growth in these countries, ensuring connectivity to regional and global value chains. However, as

1. Data in this section are taken from the World Bank's World Development Indicators.

middle-income countries become richer, comparative advantage in labour-intensive manufactured products becomes exhausted. The development of comparative advantage in more skills-intensive products will require the support of a different set of services, notably business services.

The rise of trade in ICT services has captured the headlines as a potentially disruptive force in international labour markets. The sector accounted for less than 4% of global services trade in 1997, but has more than doubled its share to about 9% in 2010. The world's largest exporter of ICT services is India, followed by Ireland and the United States. ICT services feature most prominently in middle income countries exports where they accounted for more than 13% in 2009, as compared to about 9% in OECD countries.

This paper will provide evidence on the skill intensity of business services and provide information on skill abundance in a variety of countries to argue that the developed world has comparative advantage in tradable business services. Allowing for specialisation according to comparative advantage would likely induce developed economies to produce and export more business services and the fast-growing BRICs would import more business services – thus helping balance growth.

The rest of this paper is organised as follows. Section 5.2 discusses ways of assessing the tradability of services and describes employment patterns in tradable and non-tradable services as compared to employment in manufacturing in the five countries for which detailed comprehensive labour force surveys are available. These are Chile, France, India, the United Kingdom and the United States. Section 5.3 portrays jobs and workers in services focusing on earnings and skills, followed by a discussion of comparative advantage in section 5.4. Tradability has both a technical and political dimension and the policy dimension is introduced in section 5.5 where barriers to trade in services are presented and discussed. Section 5.6 examines how policy-determined barriers to trade in services may be reduced and the labour market impact of such reforms, while section seven draws tentative policy implications.

5.2. How tradable are services?

How tradable are services in general and which services in particular can be delivered at a distance? Unfortunately, official statistical data do not provide much detailed information on trade in services. In stark contrast to the manufacturing sector, where very detailed and timely data are available from a broad range of countries (typically bilateral import and export flows for 8 000 or more merchandise trade categories for most countries in the world), services trade flows are only available for a small number of sectors (for example, in the United States only about 30 categories) for trade with large countries or regions. Examining at a detailed level which services are being traded is not feasible with existing official data. Instead, we turn to other means of identifying the scope and potential impact of trade in services.

In the trade policy literature, services used to be considered as one non-tradable sector. Many services are indeed non-storable and require face-to-face interaction between producers and consumers in real time. Services such as office cleaning, physical therapy, taxi driving or hair dressing cannot be provided at a distance. But even services that in principle may be digitised and transmitted across borders over the internet may not be traded as much as one would expect. For instance, the most important ingredient in digitized services is information, and language barriers may consequently be more important for business services than for goods.

Trade in tasks has recently entered the debate on the labour market impact of services offshoring (Grossman and Rossi-Hansberg, 2008; Jensen and Kletzer, 2010). The idea is that individual tasks that can be codified and digitised may be sliced off, outsourced and offshored,

for instance to low-wage countries. This would lead to deepening of the division of labour and increased efficiency, but also fragmentation of jobs, it is argued. However, the debate has largely overlooked the possibility that there may be strong economies of scope in business services jobs. There may for instance be complementarities between tasks that cannot easily be codified and services that can. Multitasked workers would in such cases be more productive than single-tasked workers, and the cost of unbundling tasks a natural barrier to trade.

Lanz *et al*. (2011) find evidence that tradable and non-tradable tasks tend to be performed together across occupations and jobs. They argue that what is going on is deepening of the division of labour, or fragmentation of production, if you will, but not necessarily fragmentation of jobs. Thus, functions that are non-core in one firm are being outsourced and possibly offshored to another firm whose core business is the function in question. Both firms retain multitasked workers in many different occupations. Outsourcing can be seen as the process of generating new industries from functions that were previously carried out within manufacturing firms. Examples are office cleaning, business process outsourcing and many more. The ongoing process of deepening of the division of labour is an important source of economic growth and should be welcome even if growth pains need to be adequately dealt with.

Natural barriers to trade in services other than language and differences in legal frameworks should apply to trade in services within countries as well as across borders. A useful measure of natural barriers to trade in services is therefore the extent to which a service is more geographically concentrated within a country than demand for the service in question. When natural or technological barriers to trade are high, then we see service production ubiquitously distributed with demand – for example barber shops and beauty salons. In cases where the technological costs of services trade are low relative to economies of scale in production or other locational economies, we see concentrations of service production that far exceed local demand. Examples of these types of services are software production, motion picture production and distribution, and many financial services. When this is observed, by necessity some services must be consumed in a different location than where they are produced. Investment banking for instance tends to be located in financial centres servicing the entire country and beyond, while the movie industry is concentrated in Los Angeles, Mumbai and a few other cities and consumed everywhere. A measure of the geographical concentration of sectors is the Gini-coefficient of geographical concentration. It takes values between zero and unity where unity signifies the case when services are concentrated in one single location while zero represents the case where services suppliers are located evenly across the territory, for instance of a country such as the United States.

This measure was proposed by Jensen and Kletzer (2006) and applied to a comprehensive analysis of the US labour market in Jensen (2011). While this measure is intuitively appealing, Jensen and Kletzer report that their measure of tradability is highly correlated with actual trade flows where this information is available. The measure has the advantage that it can be constructed to take advantage of the most detailed data available on employment or production. In the US context, Jensen and Kletzer produce tradability indices at the 6-digit NAICS industry level and the 6-digit SOC occupation level. All sectors at a 6-digit NAICS level were classified as tradable or not, and 14% of the workforce in the United States was found to work in tradable business services sectors, as opposed to 10% in the entire manufacturing sector. Tradable business services jobs are better paid and workers are better educated than in manufacturing and non-tradable services.

This report extends the analysis to four additional countries: Chile, France, India and the United Kingdom.[2] These countries are compared and contrasted: employment patterns in this section and wages and skills in the next sections.[3] It presents data from 2000 and 2007, or the closest year available for these countries. These years are chosen since comparable data are available only since 2000, but after the financial crisis that started in 2008, developments may be driven more by the crisis than by fundamentals.

Table 5.1. Employment by sector, selected countries, 2007

Share of total employment (%)

	Chile*	France	India	UK	US**
Primary	14.9	1.4	59.1	1.8	1
Manufacturing	13.4	16.0	10.8	12.1	11
Tradable business services	8.1	10.0	1.5	12.7	16
Non-tradable business services	2.9	5.7	0.8	7.6	12
Personal services		25.4	5.4	27.2	33
Retail and wholesale trade		13.2	8.3	16.0	17
Other	63.6	28.2	14.1	22.7	10

Note: * Data for Chile are from 2006, "Other" includes personal services and retail and wholesale trade;
** US data do not include the public sector and exclude some of the agricultural sector.
Source: Labour force surveys.

The sectoral composition of employment is similar in France, the United Kingdom and the United States, with a very small share of total employment in the primary sectors and between 70 and 80% of employment in the services sectors. However, even among these three high-income countries there are notable differences as far as the relative importance of manufacturing and tradable business services are concerned. France has a relatively larger manufacturing sector and a comparably smaller business services sector than the other two. India in turn, still has a relatively large share of the labour force employed in the primary sector.[4] Chile falls between France, the United Kingdom and the United States on the one hand and India on the other. Employment in the primary sectors is still high as Chile is an important producer of both minerals and agricultural products, while the business services sector is relatively small, but much larger than in India in relative terms.

India's manufacturing sector absorbs a relatively small share of the labour force.[5] Given India's success story as a major exporter of business services, notably ICT-related services, it is perhaps surprising to note that tradable business services account for only 1.8% of the labour force. Nevertheless more than 7 million people worked in tradable business services in India in 2007.

2. Data availability severely restricts the number of countries that could be included.

3. Unfortunately information on employment by six-digit NAICS code is only available for the United States. The Gini-coefficients were therefore aggregated to a 4-digit level using concordances with NAICS and national industrial classification systems in the countries in question.

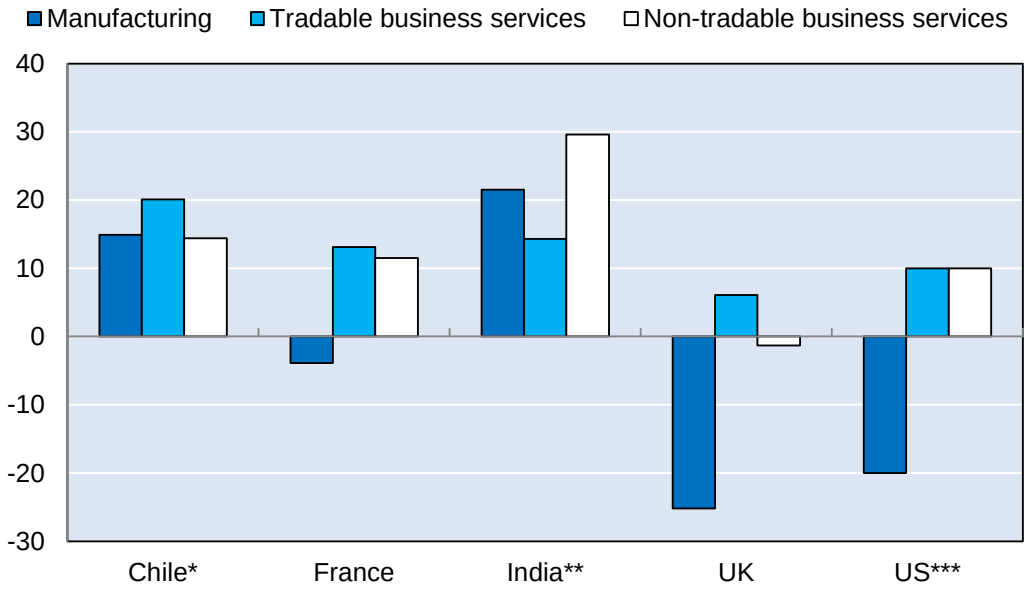
4. The labour force survey for India contains information on 1 137 208 797 workers of which 655 000 000 are not allocated to any particular sector. The latter are not included in the sector shares reported in Table 5.1.

5. According to the World Development Indicators, the share of total employment in industry, which includes mining, manufacturing, construction, electricity, gas and water, was 19% in 2005, the same as the average for lower middle income countries.

Turning to structural changes during the recent past, Figure 5.1 reports changes in employment by sector during the period 2000-07, or the closest year for which data are available. This is a period during which trade in business services was booming. Yet, employment in the sector increased in all our sample countries, and in Chile and France it was the fastest growing sector in terms of employment.

Figure 5.1. Employment growth 2000-07

Manufacturing and business services



Note: *For Chile the growth rate is from 2000 to 2006; ** For India the growth rate refers to the period 2004-07; US data do not include the public sector and exclude some of the agricultural sector.

Source: Labour force surveys.

In India and Chile employment growth is observed in all sector categories, which reflects a growing labour force. The Indian labour force grew by 17% from 2004 to 2007, while employment grew by 30% during the same period. The share of the labour force outside employment thus declined somewhat: from 62 to 58%. It appears, however, that the period has seen a shift in employment away from relatively well-paying manufacturing jobs towards the primary sector and "Other", which includes the public sector. It is also interesting to note that in spite of its export success, the employment share in tradable business services has declined from 2004 to 2007. This could reflect a movement up the value chain in business services and higher productivity (NASSCOM, 2012) or reflect rapidly rising wages in business services in India that reduce employment growth in the sector (or both). It is notable that employment has been rising in the primary sectors both in the United States and France, possibly reflecting the commodity boom observed over the past decade or so.

5.3. Skills and wages – do tradable services differ?

Wages

In the popular debate, jobs in manufacturing are believed to be better paid and contributing more to growth and income generation than services jobs. However, business services not only account for a larger share of employment than manufacturing in developed countries, but business services are also significantly better paid than manufacturing jobs as illustrated by

Table 5.2. In fact, business services have the highest wage rates in all of our sample countries, and the wage premium is highest in Chile followed by India, while the wage premium is the lowest in France and the United Kingdom. France stands out as the country with the lowest sectoral dispersion of wages.

Table 5.2. Average wages by sector, selected countries 2007

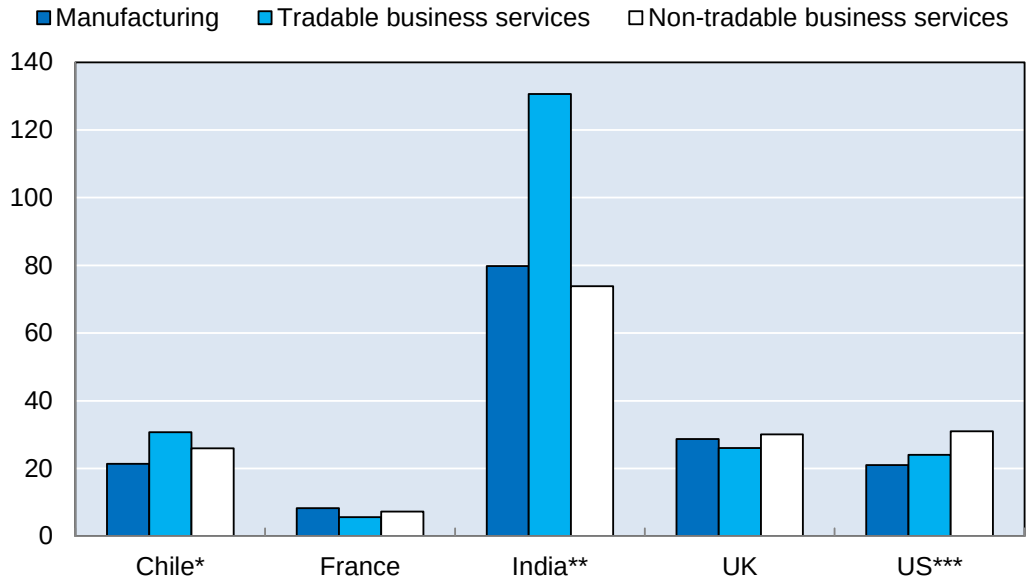
Manufacturing =100

	Chile	France	India	UK	US**
Primary	87.5	71.4	96.0	99.7	113
Tradable business services	184.9	112.9	167.1	119.7	154
Non-tradable business services	142.8	99.5	132.3	99.6	82
Personal services		84.3	107.7	67.7	62
Retail and wholesale trade		84.3	84.7	79.3	71
Other	111.0	91.6	134.2	109.3	98

* Data for Chile are from 2006; "Other" includes personal services and retail and wholesale trade;
** US data do not include the public sector and exclude some of the agricultural sector.

Source: Labour force surveys.

Figure 5.2. Nominal wage growth 2000-07 by sector



Note: *For Chile the growth rate is from 2000 to 2006; ** For India the growth rate refers to the period 2004-07; US data do not include the public sector and exclude some of the agricultural sector.

Source: Labour force surveys.

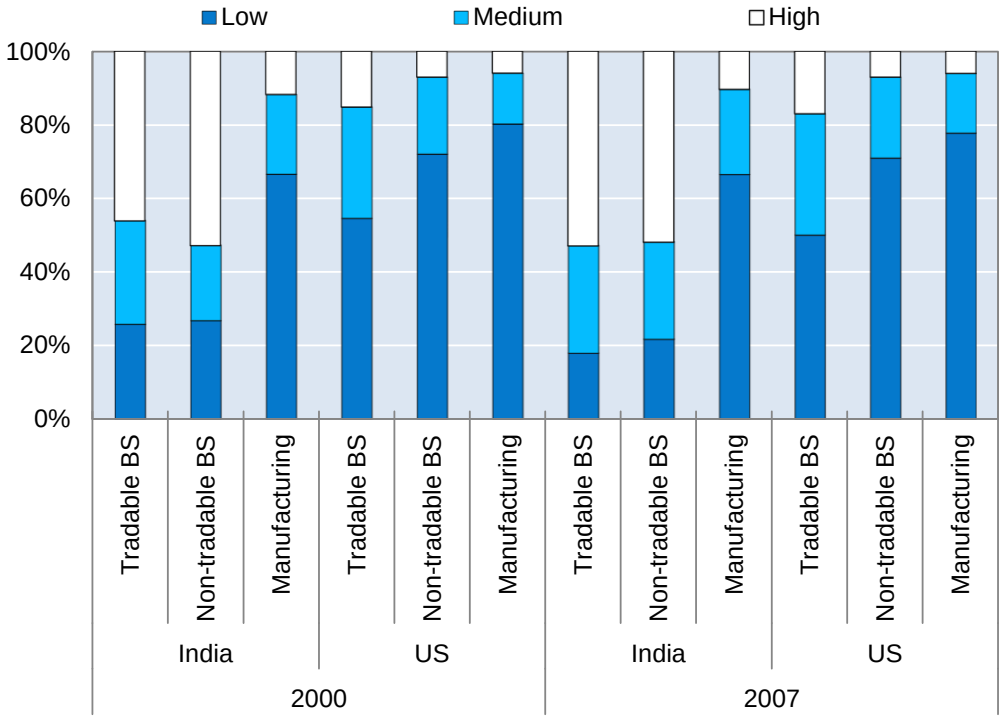
Chile and India have experienced both the highest employment growth and the highest wage growth in tradable business services in our sample. Also in the United States, wages grew faster in tradable business services than in manufacturing, while wages in non-tradable business services grew faster still, narrowing the gap towards tradable services somewhat. The United Kingdom and France in contrast, have seen wages grow faster in manufacturing. In the United Kingdom, this appears to reflect productivity gains as the sector has shed labour rather dramatically and retained the highest value added manufacturing sectors. In France a similar, albeit less dramatic process has taken place. One important factor explaining the wage premium

in tradable business services is the skills intensity of the sector, to which we turn in the next section.

Skills

Among tradable business services are professional services, finance and computer services. These sectors offer jobs mainly to high and medium skilled workers. We define high-skilled workers as workers with a college degree and above, medium-skilled as having a high-school degree and some college, and low skilled as high-school drop outs. Detailed information on skills at this level of detail for the four to six digit level industry sectors studied here is only available for the United States and India. It appears that the threshold for being categorised as high-skilled workers may be lower in India than in the United States. Bearing this caveat in mind, some interesting patterns can be observed from Figure 5.3.

Figure 5.3. Employment by skills category India and the United States



Note: Data for India are from 2004 and 2007.
Source: Labour force surveys.

First, the ranking of the three sectors according to skill intensity is the same in the two countries. The difference in skill intensity between manufacturing on the one hand and business services on the other is, however far larger in India. In both countries, tradable business services have become more intensive employers of high-skilled workers over time, while all sectors have become less low-skills intensive. The sharpest decline in relative demand for low-skilled labour is in tradable business services in both countries, but also manufacturing has become more skill-intensive in both countries.

The similarities between these two countries at the opposite ends of relative resource endowments suggest that tradable business services may show similar employment patterns in most countries.

5.4. Comparative advantage in services trade

As shown in the previous section, business services in general and tradable business services in particular use skilled labour intensively. From the theory of comparative advantage one would therefore expect that countries that are relatively well endowed with skilled workers have a comparative advantage for business services. Average educational attainment is a commonly used measure of skills endowment. This measure is depicted for the five countries in Table 5.3, together with two measures of trade performance in business services. The first shows net exports, while the second presents business services exports as share of GDP.

Table 5.3. Education and business services trade

	Chile		France		India		UK		US	
	2000	*2010*	*2000*	*2010*	*2000*	*2010*	*2000*	*2010*	*2000*	*2010*
Years of schooling	9.1	10.2	9.6	10.5	4.2	5.1	8.9	9.8	12.7	13.1
Net exports, USD mill.	-653	19.1	5 370	-2 190	-2 270	48 900	41 000	90 900	21 400	30 300
Exports, % of GDP	1.0	1.1	1.7	1.5	0.2	5.0	2.8	4.0	0.2	0.2

Note: business services in trade statistics include insurance (253), finance (260), computer and information services (262) and other business services (268).

Source: UN Comtrade; WDI and Barro and Lee.

The sample appears to defy the theory of comparative advantage. The United States is clearly the county best endowed with skilled labour. Although it is also a large net exporter of business services, the volume is quite insignificant relative to the US GDP. India, in contrast, clearly has the smallest endowment of skilled workers in the sample. Nevertheless the country has developed from a net importer of business services in the year 2000 to one of the world's largest net exporters of business services, and exports of these services accounted for as much as 5% of GDP in 2010. The value of US exports in business services were more than twice the value of India's export in 2010, but the US import bill of business services was more than four times that of India, leaving India the larger net exporter.

Business services also account for a significant share of GDP in the United Kingdom, largely driven by its role as a global financial centre. France has swung from a net exporter to a net importer of business services during the past decade, while Chile has moved in the opposite direction. As noted above, France has strengthened its manufacturing sector during this period, and it is possible that increased imports of business services have helped shoring up the competitiveness of French manufacturing (Nordås, 2010). Chile, France and the United Kingdom have similar endowments of skilled labour.

Table 5.3 shows that comparative advantage may not be the most decisive factor determining trade in business services. Indeed, looking at this table, one may question the idea that trade in business services is driven by comparative advantage. In order to test this, we ran a simple regression relating years of schooling to net exports of business services, controlling for unobserved country-specific factors. The regression was run for the years 2000, 2005 and 2010 for 128 countries. A robust positive correlation was observed between years of schooling and net exports of business services, as predicted by the theory of comparative advantage.

There are several possible reasons why individual countries at particular points in time specialise in ways that seem to be at odds with their comparative advantages. One possibility is simply that in a world of many sectors, many factors of production, and vertically linked sectors, the pattern of specialisation is more complex than what can be captured by a simple version of the theory of comparative advantage. Another reason may be barriers to trade and

investment that prevent countries from exploiting their comparative advantage. For example India has historically imposed a heavy regulatory burden on its manufacturing firms, creating impediments for Indian manufacturing firms to reach minimum efficient scale. As a result, India produces a far smaller share of global manufacturing output than its size and factor endowments would suggest. The policy mix that impedes the manufacturing sector could create an artificial comparative advantage in tradable business services in India.

The main insight from the theory of comparative advantage is that economic activities differ according to which factors of production they use intensively; and countries differ in their relative endowment of factors of production. Countries with relative abundance of a particular factor have a comparative advantage for sectors that employ this factor intensively. Traditionally the theory has been applied to primary factors of production, including skilled workers. However, the theory could also be modified to apply to intermediate inputs. Thus, countries with access to a well-developed business services supplier base have a comparative advantage in business services intensive industries. The next step in our analysis is therefore to identify the sectors that use business services the most intensively. For this purpose we use the OECD input-output database for three periods: the mid 1990s, around 2000 and the mid 2000s.[6]

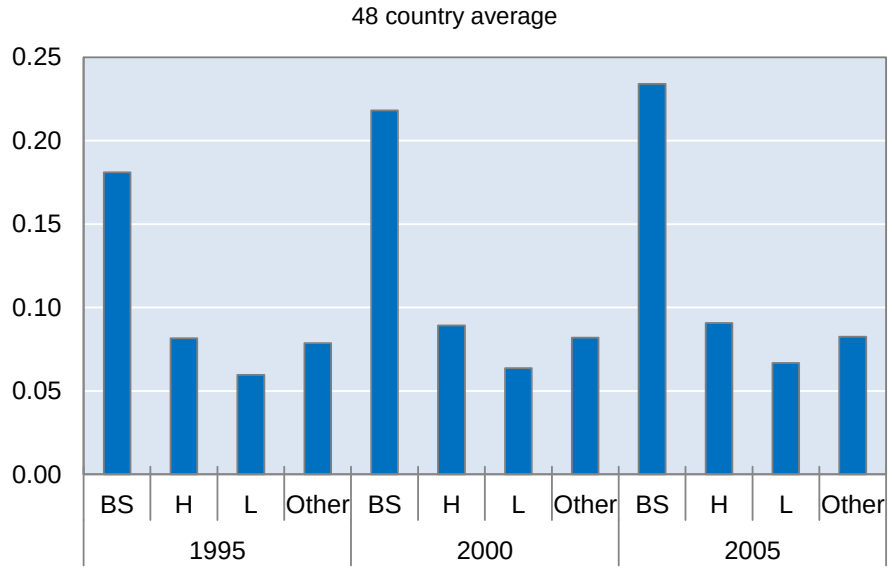
The following sectors are considered business services in the input-output database (ISIC rev 3 codes in parenthesis): Post and telecommunications (64), Finance and insurance (65-67), Real estate (70), Renting of machinery (71), Computer and related services (72), R&D services (73) and Other business services (74). The OECD also classifies industries according to their technological sophistication. This is a useful categorisation for the purpose of studying comparative advantage based on intermediate inputs. High-to-medium tech industries include chemicals and machinery and equipment producing sectors (ISIC rev 3 sectors 24, 29-33 and 35), while low-to-medium technology sectors include labour-intensive consumer goods producing industries such as food processing, textiles and clothing, and others (ISIC rev. 3 15-23, 36 and 37). As shown in Figure 5.4, high-technology manufacturing is the most services-intensive manufacturing category.[7] Among the high-technology industries, ICT manufacturing (ISIC rev. 3 categories 30, 32 and 33) is the most business services-intensive with a services share of gross output averaging 8.5% in 1995, rising to 10% in 2005. Finally it is worth noticing that business services use business services inputs the most intensively of all sectors. Countries with a well developed business services sector would on the basis of these figures have a comparative advantage in high-technology manufacturing and business services.

It is also interesting to note that high-tech sectors tend to be more integrated in international value chains than low-technology industries, as shown in Figure 5.5. Imports of intermediate inputs as a share of gross output are larger for high-technology manufacturing, and among high-technology sectors ICT manufacturing sectors are the most integrated. We also notice that business services tend not to rely much on imports, and that business services account for a small share of imported intermediate inputs in other sectors as well. Furthermore, the share of imported business services has remained fairly stable during the decade covered by the data.

6. The 44 countries included in the database produce input-output tables around every five years, but the times of release differ somewhat between the countries.

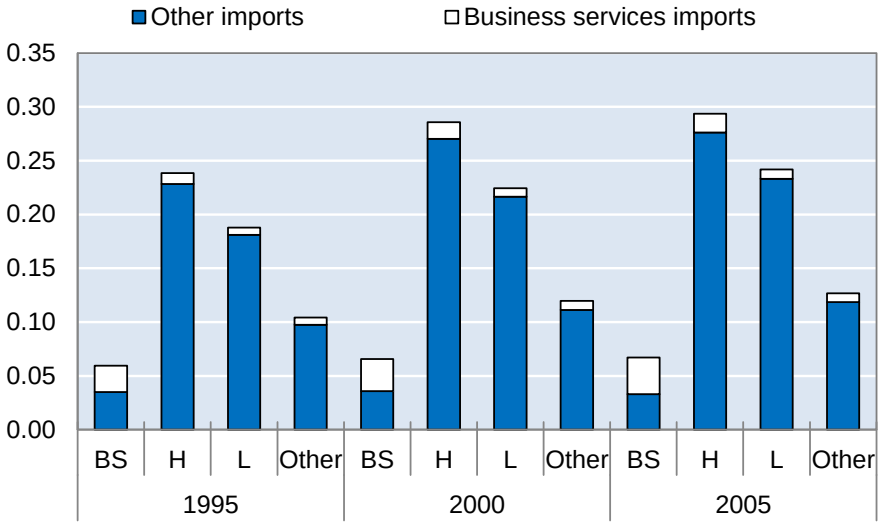
7. The average is calculated for all 44 countries included in the OECD input-output database.

Figure 5.4. Services share of gross output by technology category



Note: BS= business services; H=high/medium-technology; L=Low/medium technology; Other = sectors not classified.

Figure 5.5. Import share of intermediate inputs, business services and other imports



Source: OECD input-output database.

To summarise, business services account for a rising share of intermediate inputs in manufacturing over time. Furthermore, the more high-tech the industry, the more business service intensive it is. Finally, high-tech industries tend to be integrated in international production networks as indicated by a higher share of imported intermediate inputs. Imported business services, however account for only a small share of total intermediate inputs. The 44 country average has not changed much over time, but there is significant variation across countries and sectors. In the sample of 44 countries, the share of imported business services varies from about 2% of gross output to about 50%, with the highest share in computer services, finance, insurance and chemicals in Luxembourg and Ireland. The Netherlands also tend to have a relatively high import share of intermediate business services. In our five country case studies

however, imported business services accounted for only between 0.1% of gross output in the United States and India in 2005 and 1.4% in the United Kingdom.

Having observed that some countries source a significant share of their business services inputs from abroad, one could envisage that the services supplier base could be strengthened through imports in countries in which access to sophisticated business services may be a constraint on moving up the value chain in manufacturing. Furthermore, even when the local business services sector is strong, imported business services may still be needed in order to strengthen competitiveness in other sectors. Particularly in sectors where product differentiation through branding and marketing is important, knowledge of the local market is essential for success, and business services providers in the local market may help filling this gap.

An indicator of competitiveness in export markets is the share of total output that is exported. Our hypothesis is that competitiveness is strengthened through the use of imported intermediate business services which help tailoring the product to the needs of the export market. In order to test this hypothesis we related the export share of total output in each sector to the share of imported business services in gross output for the 44 countries included in the OECD input-output database. The export share of gross output was found to be positively associated with the import share of business services inputs. Our estimate suggests that a one percentage point higher services import share is associated with a 0.3 percentage point higher export share.[8] We also explored to what extent business services imports relate differently to export orientation of downstream industries depending on technology category. We found that there is a statistically significant difference. Perhaps surprisingly, low-technology manufacturing shows the largest effect, where a percentage point higher business services imports in gross output is associated with 1.4 percentage points higher export share of gross output at the mean. The corresponding figures for high-tech industries and business services are 0.8 and 1.2 respectively.[9]

We have now documented that business services are skills intensive, pay relatively high wages, and employ a larger share of the labour force than manufacturing in high-income countries; high-to-medium technology industries use business services intensively and imported business services strengthen competitiveness in downstream industries. These findings suggest that high-income countries have comparative advantage for business services and would experience an expansion of the sector in the event of lower barriers to trade in services, while middle-income countries could strengthen their competitiveness in services-intensive industries through opening their markets for imported business services. Expansion of services-intensive industries in middle-income countries would in turn generate relatively well-paying jobs for the rising middle class in these countries. What may prevent this win-win situation from unfolding is discussed in the next section.

5.5. Policy-determined barriers to trade in services

Explicit barriers to cross-border trade in services are not common for several reasons. First, by the time services trade across broadband internet had reached a critical mass and entered the trade policy debate, there was a broad consensus that protectionism is harmful not only to trading partners but also to the country imposing restrictions. Second, policy measures such as

8. The result is significant at a 1% level and robust to including country fixed effects in order to capture unobserved country-specific factors that may influence export orientation.

9. The category that has a lower coefficient than the average is "other", which includes a number of services sectors and primary sectors.

tariffs and other border measures cannot easily be applied to cross-border services trade. As is well known, information transmitted over the internet is assembled only when it reaches its final destination in the computers of the importing company; and it does not cross a border post.

Policy-determined barriers to cross-border services are therefore mainly related to restrictions on complementary movement of natural persons, the establishment of a commercial presence or in the form of standards, qualification requirements and licenses. Computer services, for instance, can easily be traded over the internet, but from time to time a software engineer may need to visit the customer to sort out a technical problem or to solicit information on future needs that the customer may not be able to articulate due to lack of expertise.

Intra-firm trade accounts for 28% of US cross-border services exports and 25% of imports in 2010.[10] Unfortunately, other countries do not report intra-firm trade, but it is not unreasonable to assume it plays an important role in other countries as well. When FDI and cross-border trade are complementary, barriers to FDI also restrict cross-border trade.[11] Barriers to foreign direct investment in services, as measured by the OECD investment restrictiveness index, are found to be negatively related to cross-border trade in services. In addition, trade is positively associated with FDI stocks, but not the other way around, suggesting that FDI generates trade in services but that trade does not necessarily precede FDI flows (Kox and Nordås, 2008). The FDI restrictiveness index by sector for the five countries included in this study is reported in Table 5.4.

The index takes values between zero and one, one being the most restrictive. Business services in this case refer to professional services (accounting, architecture, engineering and legal services). Transport and media stand out as the most restrictive services sectors in this selection of countries as well as in the full sample of countries covered by the FDI restrictiveness index. India is the most restrictive country in the sample. In general, non-OECD countries tend to have more restrictions on foreign investment than OECD countries.

Many functions performed by professionals are considered tradable across borders and fall squarely in the tradable business services category. However, professional services are typically regulated and a license is often required in order to operate. There are many reasons why licensing may be socially optimal, but the criteria for obtaining a license may not always be transparent and clear, adding entry and trade costs to potential foreign services providers.[12] Table 5.5 presents licensing requirements and related regulation for the five countries in the sample as captured by the OECD Product Market Regulation Index (PMR). The index takes values between zero and six with six being the most restrictive.

Although regulating professions in many cases is considered necessary for consumer protection purposes, not all countries find it necessary to regulate all professions. France and the United Kingdom have in common with a number of other OECD countries that they do not regulate engineering. Architecture is the second least regulated sector, and several OECD

10. The shares are calculated as the share of affiliated sales of total services exports and imports from BEA services trade statistics *www.bea.gov/international/international_services.htm*.

11. On the other hand, there may be cases where cross-border trade is a substitute for commercial presence. In such cases barriers to FDI flows could be positively associated with cross-border trade. However, empirical evidence suggests that FDI are increasingly the preferred choice of mode of supply, and that cross-border trade is either complementary to or independent from commercial presence.

12. Article VI in the GATS mandates future negotiations on disciplines on licensing procedures, qualification requirements and international standards with the objective of reducing such trade costs. However, no disciplines have been established yet.

countries do not regulate this profession either. Legal services are the most heavily regulated among these professional services and only Finland and Sweden among the OECD countries do not require a license to provide this service. Again we observe that India has stricter regulation than the other four sample countries.

Table 5.4. FDI restrictiveness index 2010

	Chile	France	India	UK	US
Manufacturing	0	0	0.02	0.02	0
Electricity	0	0	0.05	0.02	0.20
Construction	0	0	0.15	0.02	0
Distribution	0	0	0.43	0.02	0
Transport	0.41	0.15	0.26	0.11	0.55
Hotels & restaurants	0	0	0	0.02	0
Media	0.41	0.05	0.5	0.25	0.25
Communications	0	0	0.425	0.02	0.11
Financial services	0.017	0.05	0.31	0.02	0.04
Business services	0.013	0.00	0.56	0.02	0
Real estate investment	0	0	1	0	0
Total FDI Index	0.07	0.04	0.30	0.06	0.09

Source: OECD.

Table 5.5. The OECD PMR index for professional services, selected countries, 2008

	Accounting	Architect	Engineer	Legal	All professions
France	2.8	2.8	0.0	2.8	2.1
United Kingdom	2.6	0.0	0.0	0.3	0.7
United States	1.7	0.3	0.3	1.9	1.1
Chile	2.7	2.2	2.3	2.2	2.4
India	3.3	2.8	1.2	3.3	2.7

Source: OECD.

The fact that some countries do not find it necessary to regulate, where others find it unthinkable not to, raises interesting questions. How do countries that do not regulate make sure that the objectives that others seek to obtain through regulation are obtained? Is an unregulated profession more open to trade than a regulated profession? The two questions are related. Architects and engineers provide inputs into the construction of buildings and infrastructure and regulation may be imposed elsewhere in the supply chain, for instance related to the issuance of building permit. Whether or not this makes it easier to source services from abroad is an open question that so far has not been investigated.

Another highly regulated profession is medical services. The profession contains some tradable functions such as reading and interpreting x-rays, computed tomography or magnetic resonance imaging. Reading these images can be done anywhere with access to high-speed internet services. Import demand for radiology services has increased rapidly as local capacity has failed to keep up with a surge in the use of scanning in diagnostics and treatment. Specialised companies have emerged which employ radiologists licensed to provide services to US hospitals from a number of countries, and assigning them to tasks for which they are qualified (Clark *et al.*, 2011), though Frank Levy in recent work presents a more cautious view of the potential for international trade in radiology services. This example illustrates nicely both

the complementarity between local and offshored services and trade costs associated with offshoring. Offshoring radiology services opens a bottleneck allowing on-shore medical professionals to perform more scanning, satisfying a rapidly rising demand. The local licensing requirement adds costs of offshoring. Setting high standards for radiology services is of course necessary, but recognition of foreign qualifications could in many cases reduce costs while satisfying the qualification requirement.

Comparing the policy-determined barriers to trade in services with the natural barriers to trade in services as identified by Jensen and Kletzer (2006) using the Gini-coefficient of geographical concentration of production, it appears that for business services there is ample scope for trade liberalisation that would result in a genuine opening of markets. The next section discusses the likely labour market effects of such policy reforms.

5.6. Labour market effects of business services trade liberalisation

Services trade costs have come down over the recent decade both due to lower communication costs and due to unilateral trade liberalisation and regulatory reforms, resulting in growing offshoring of services. There is evidence that demand for high-skilled workers increases as a response to offshoring of services (Crinò, 2010a; Crinò, 2010b; Jensen, 2011). What raises demand for skilled workers is first, that offshored services are complementary to high-skilled tasks performed in the offshoring country. Second, jobs are created when skill-intensive services sectors start exporting.[13] Lanz *et al*. (2011) found that as opposed to what was feared, the relative share of information-intensive tasks performed in the EU and the US held steady and if anything increased slightly during the 2000s. Furthermore, the study found that the share of information-intensive tasks in local inputs is positively associated with import penetration in services, suggesting that offshored services are complementary to locally produced services, a result supported by Crinò (2010a) studying the US economy.

Our sample of five countries illustrates nicely the possible labour market effects of business services trade liberalisation on both sides of comparative advantage. The United States is the country most abundant in skilled workers in our sample and therefore likely to have the strongest comparative advantage for business services. India in contrast is the country least abundant in skilled labour, and therefore likely to have the least comparative advantage for business services. Yet, net exports of business services are higher in India than in the United States, while gross exports are higher in the US.

A possible explanation for this state of affairs is that domestic demand for business services in India is constrained by a host of regulations, barriers to trade and investment and poor infrastructure which have constrained the growth of manufacturing. More than 75% of output in computer services was exported from India according to the 2005 input-output table. Easing regulatory barriers on manufacturing as well as trade and investment barriers in services would probably unleash India's potential for exploiting its comparative advantage in labour-intensive manufacturing to a larger extent than today. Labour demand as well as business services demand from Indian manufacturing would in that case grow rapidly and Indian business services producers would to a larger extent support the expansion and exports of local manufacturing.

13. In 2010, the 10 largest exporters of commercial services (share of global exports in parentheses) are: United States (14.1), United Kingdom (6.2), Germany (6.2), China (4.4), France (3.8), Japan (3.7), India (3.2), Spain (3.2), Singapore (2.9), Hong Kong, China (2.8).

During the period 2003-07 nominal high-skilled wages more than doubled both in manufacturing and tradable business services in India, suggesting that skills are relatively scarce. Further, highly skilled and unskilled workers are likely to be complements rather than substitutes both in manufacturing and services.[14] For each high-skilled worker there are more than six low-skilled workers in manufacturing, while there are three high-skilled workers for every low-skilled worker in tradable business services in India. India appears to have a pool of unemployed or underemployed low-skilled workers. Assuming that scarcity of high-skilled workers (in addition to regulation) is a binding constraint on manufacturing, a back-of the envelope calculation suggests that if ten newly graduated civil engineers were employed in manufacturing, they could generate 64 new jobs for unskilled workers, while if employed in tradable business services they would generate three additional jobs for unskilled workers, taking into account only direct effects. This is of course a rough and highly tentative estimate, but nevertheless illustrates the possible gains from a more open trade and regulatory regime, bearing in mind that it is the *abundant* factor, in India's case unskilled labour, that gains from trade liberalisation.

In the United States in contrast, domestic demand for business services is relatively high and employment in tradable and non-tradable business services has grown at about the same pace during the past decade. Trade liberalisation both at home and abroad would see a shift in resources towards tradable business services which in turn would support both local high-technology manufacturing industries and generate export-led growth in tradable business services. France appears to have strengthened high-technology manufacturing while becoming a net importer of business services during the implementation of the European Union's services directive, although one should be cautious of drawing conclusions on causes and effects here.

5.7. Policy implications

The business service sector is large and growing in the developed economies, and there is more employment in tradable business services in the United States and United Kingdom than in the manufacturing sector. Tradable business services are skill intensive activities. As a result, in all our five sample countries tradable business services pay higher average wages than the manufacturing sector. These results suggest that skill abundant countries should have comparative advantage in producing tradable business services. Policy makers therefore need to pay attention to business services as a source of job creation in well-paid jobs as well as export earnings.

Developing economies are currently under-resourced in terms of business services – their business service sectors are small relative to the size of the overall economy. Business services provide important inputs to higher value-added manufacturing and to the development of physical infrastructure like roads, bridges, harbours, airports, telecommunications and energy infrastructure and water treatment, all essential for future growth. Opening up to trade and investment in business services could complement local resources and support industrial development. Small European countries such as Ireland, Luxembourg and the Netherlands featured high business services import penetration rates during a period of export-led growth during the period 1995-2005, suggesting that foreign business services may indeed contribute to a more competitive services supplier base to the benefit of downstream industries.

Barriers to trade in services are relatively high in the large, fast-growing emerging markets. Limitations on foreign direct investment, local sourcing requirements, and in many cases heavy

14. An unskilled assistant would probably not be usefully employed to do software programming no matter how low the wage rate compared to a trained software programmer.

administrative burdens are common. Eliminating or at least reducing such policy impediments to services trade would enable the fast-growing, large developing economies to access state-of-the-art business services at lower prices and thus more rapidly develop their infrastructures and facilitate the movement to higher value-added manufacturing. Trade and investment liberalisation in emerging economies would also enable the developed countries, which currently have a natural comparative advantage in tradable business services, to export these services and grow faster. Because of the size of these sectors and the amount of money expected to be spent on infrastructure over the next two decades (USD 40 trillion by some estimates), these potential gains to welfare globally are not insignificant.

There is also room for services trade liberalisation in developed countries. Barriers to foreign investment remain in some countries, particularly in transport, media and communications sectors. Lengthy and expensive business visa procedures are also a source of trade costs for service providers, particularly from developing countries. While trade barriers of this nature can be easily reduced when there is political will to do so, reducing behind-the-border regulatory barriers is more complex. Regulation is introduced for a purpose and often restricts trade in business services unintentionally. Regulatory reform takes time and involves many stakeholders. Making sure that such reforms take into account international best practice and when relevant and feasible adopt international standards and best practice would reduce entry barriers both for local and foreign services providers.

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