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Potential ICT-enabled Offshoring of Service Jobs in Belgium

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Abstract - This paper provides a rough estimate for Belgium of the proportion of service jobs at risk of being offshored in the wake of ICT-developments, and compares the results for Belgium with results for the EU15 and the US. Occupational employment data from the Labour Force Survey are used to produce this estimate by identifying service jobs that could possibly be offshored due to ICT-enabled tradability. The results show that the share of such jobs is lower for Belgium than for the EU15 or the US, but that there is an upward trend in this share over the period 1993 to 2005. Industry-level data and a shift-and-share analysis are used to explain the results.

Jel Classification - F23, J44

Keywords - Service offshoring – Occupations – ICT

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1. Introduction and Overview of the Literature

The loss of jobs due to relocation abroad – mostly referred to as offshoring or international outsourcing[1] – has since long been a matter of concern in developed countries. More recently, interest in the subject has been growing fast. The issue has indeed received a lot of media attention in the last few years[2] and an increasing number of consultants and academic researchers have started to investigate the subject.[3] The intensity of the debate on relocation abroad has generally been linked to the business cycle, fears of offshoring or international outsourcing surfacing more often during a cyclical downturn. Moreover, the debate has traditionally focused on low skill job losses in the manufacturing industry. However, it seems that in the current debate something has changed. Growing attention has been devoted to the relocation of higher skill service sector jobs, which has for certain categories become feasible through developments in information and communication technologies, and this has also contributed to increasing the intensity of the debate.

Despite the intense media coverage and the vast amount of anecdotal evidence of job losses in services due to relocation abroad[4], there is very little hard empirical evidence on what is actually happening, i.e. on the magnitude of both relocation and subsequent job losses in services. The subject is, of course, relatively new and research on relocation abroad has so far been centred on the manufacturing industry. Furthermore, a common terminology and definitions have been lacking. This is bound to change through recent efforts by international organisations like UNCTAD and the OECD to streamline both terminology and definitions.[5] Accordingly and without going deeper into these issues, 'service offshoring' is the most appropriate term for the subject of this note and will be used henceforth to mean the decision of firms to source services from a foreign country instead of their home country. This may include outsourcing, but must not necessarily do so.

Nonetheless, there are a few papers that investigate the issue of service offshoring. However, when trying to measure the extent of the phenomenon, all studies have run into data problems. So far, no direct measures exist and therefore all authors have resorted to using indirect measures of service offshoring and its job impact. The most popular approach has been to use balance of payments data for international trade in services to get a rough idea about the magnitude of service offshoring. Examples of this approach are provided by van Welsum and Vickery

1 The terms 'vertical specialisation' and 'fragmentation of the value chain' have also been used in the literature for the same or similar phenomena.

2 See Amiti and Wei (2005) for a measure of the growth in media attention for relocation in the US and the UK.

3 Hijzen (2005) presents an overview of the recent academic literature.

4 UNCTAD (2004) provides some examples of anecdotal evidence.

5 See UNCTAD (2004) and OECD (2005).

(2005) and Amiti and Wei (2005).[6] The latter also suggest another more accurate measure based on imported service inputs taken from input-output tables, which replicates the standard measurement approach for outsourcing in industrial products. With this improved indirect measure they identify an increase in service offshoring for the UK, although the levels remain low. They then go on to estimate the impact on UK employment. According to their findings service offshoring has no significant impact on labour demand.

Another approach that is commonly used relies on occupational employment data and consists in identifying service occupations that could possibly be offshored in the wake of developments in information and communication technologies (ICT). Two types of occupations are distinguished on the basis of several characteristics: those at risk of being offshored and those that are not. Thus, this approach implies a very rough direct guess of the impact of offshoring in terms of jobs that may be lost without first estimating the magnitude of service offshoring. Consultancies fancy using this as a basis for the estimation of future job losses in a country due to service offshoring. Kirkegaard (2004) and van Welsum and Vickery (2005) have taken a closer, critical look at this approach and the way it is used in consultancy studies.

Moreover, van Welsum and Vickery (2005) also apply this approach using occupational employment data for the European Union (15 Member States – EU15), the US, Japan, South Korea, and Australia, but they are very careful with the interpretation of the results, simply referring to the "potential offshoring of ICT-using occupations". Their results will be referred to below. The purpose of this paper is to replicate their method of guessing the proportion of jobs at risk of being offshored due to ICT developments for Belgium, and to compare the results for Belgium with their results for the EU15 and the US.

[6] Hertveldt and al. (2005) apply this approach to Belgium and show that both imports and exports of 'Computer and Information services' and 'Other business services' have risen since 1995, but that this simultaneous increase has left the trade balance for these services relatively stable.

2. Methodology and Data Description

The approach or method used in van Welsum and Vickery (2005) is relatively straightforward. They define service jobs at risk of being offshored through the following four conditions: people in those jobs "are likely to make intensive use of ICTs in order to produce their output", "their output can be traded/transmitted with the help of ICTs (ICT-enabled trade in services)", "the work has a high information or 'knowledge' content" and "the work does not necessarily require face-to-face contact".[7] These conditions allow them to identify for the EU a list of service occupations in the 'International Standard Classification of Occupations, 1988-version' (ISCO-88) at the 3-digit level, which can be considered as ICT-using and at risk of being offshored. This list can be found in Table 1.[8]

Table 1 – Occupations potentially affected by ICT-enabled offshoring at the 3-digit ISCO level (and corresponding NIS-codes)

ISCO-code	Description	NIS-codes
123	Other specialist managers	098, 115-8, 333
211	Physicists, chemists, and related professionals	011, 013, 014, 019
212	Mathematicians, statisticians, and related professionals	091-2
213	Computing professionals	004, 085-6
214	Architects, engineers, and related professionals	001-2, 007
241	Business professionals	006, 081, 089, 099
242	Legal professionals	061-3, 069
243	Archivists, librarians, and related information professionals	083, 093
312	Computer associate professionals	570
341	Finance and sales associate professionals	311-4, 318, 321-2, 334
342	Business services agents and trade brokers	319
343	Administrative associate professionals	119, 201, 210, 218
411	Secretaries and keyboard operating clerks	202-7, 209, 666
412	Numerical clerks	211, 216
422	Client information clerks	215, 663

Source: van Welsum and Vickery (2005) and 'Statistics Belgium'.

Their occupational employment data for the EU at the 3-digit ISCO-level come from the EU Labour Force Survey (LFS), cover the period 1995-2003 and contain an industry breakdown at the NACE 2-digit level. Similar (unpublished) occupational employment data for Belgium can be

[7] These characteristics are strongly linked to what has been dubbed the "tradability revolution" in UNCTAD (2004). Incidentally, the reasons put forward in UNCTAD (2004) for why certain information services used to be considered non-tradable are the following: "some types of information could not be stored, and had to be produced and consumed instantaneously" and "some information could be stored, but not transmitted rapidly and economically across countries for processing".

[8] The concept of ICT-enabled service offshoring can to some extent be seen as being at odds with the idea of labour market policies based on upgrading the ICT-capacities of the work force and of growth fostered by ICT-developments. In terms of economic policy recommendations, it may indeed be asked whether it is really worthwhile to encourage the adoption of ICT-developments by companies if this leads to job losses due to enhanced service offshoring. However, this issue goes beyond the scope of this study.

obtained from 'Statistics Belgium'. These are also based on the LFS[9] and cover the period 1993-2005.[10] The data are provided at the 3-digit level of the specific NIS classification of occupations.[11] A conversion to ISCO-88 is possible and has been done (column 3 of Table 1).[12] The industry breakdown is the same as for the EU data, i.e. NACE 2-digit.

[9] For Belgium, about 1% of the labour force is surveyed in the LFS. The results are extrapolated to total employment including the self-employed.

[10] Two breaks in the series are worth noting: in 1999, the LFS becomes a continuous survey, and in 2001, there is a change in the treatment of career breaks.

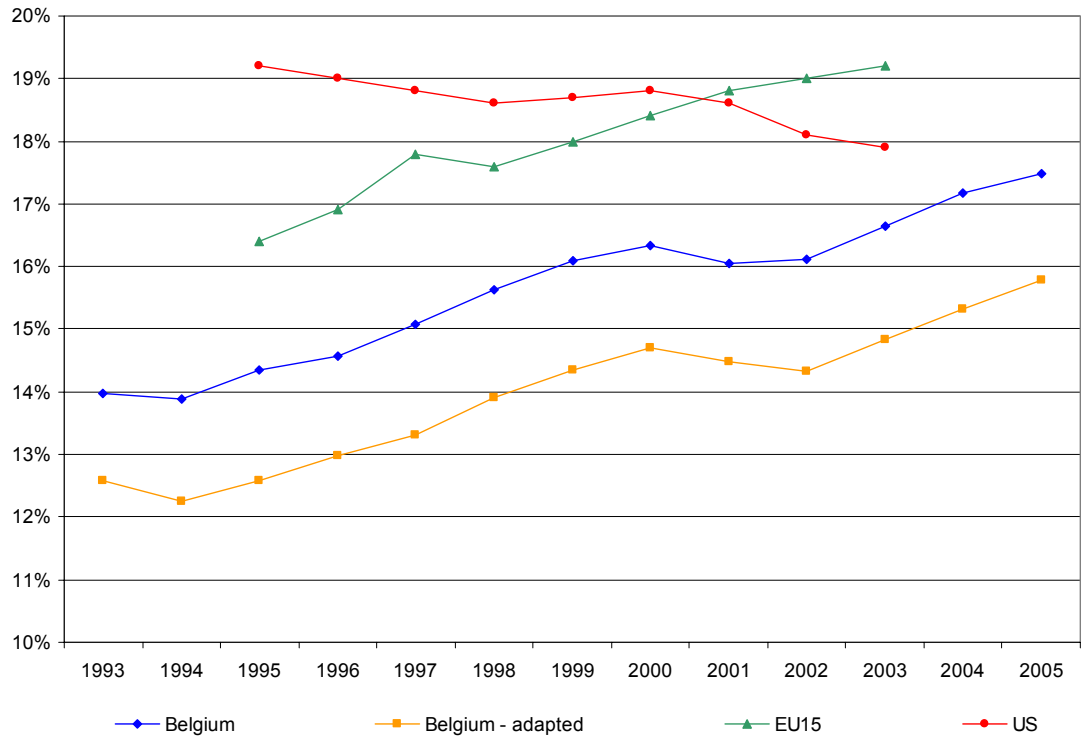
[11] NIS stands for 'National Institute for Statistics', i.e. the former name of 'Statistics Belgium'.

[12] Occupational employment data for Belgium based on the LFS do also exist for the period 1983-1992, but their occupational classification cannot be converted into ISCO-88 at the 3-digit level.

3. Results and Interpretation

It is thus possible to determine the share of service occupations at risk of being offshored in total employment for Belgium through the application of the method described above. This has also been called potential ICT-enabled service offshoring. The results are shown on Graph 1. Data for the EU15 and the US taken from van Welsum and Vickery (2005) are also reported.[13]

Graph 1 – Potential ICT-enabled service offshoring (share of jobs at risk in total employment)



Source: own calculations based on 'Statistics Belgium' and van Welsum and Vickery (2005).

The occupation categories identified in Table 1 made up 17.5% of total employment[14] for Belgium in 2005. This has been defined as ICT-enabled service offshoring potential. In 1993, this potential or share amounted to only 14.0%. The increase proved relatively smooth except for a slight temporary downturn between 2000 and 2001. The trend is comparable to the one in the data for the EU15 taken from van Welsum and Vickery (2005), although these data only cover the period 1995-2003. It is also noteworthy that the temporary downturn occurs earlier for the EU, i.e. in 1997. However, the main difference between the ICT-enabled service offshoring poten-

[13] It should be noted that the levels of the share are not entirely comparable between the three countries or areas due to differences in the underlying surveys and employment data, and in the occupational classification used in the US. See van Welsum and Vickery (2005) for more detailed on the last point.

[14] For Belgium, military employment has been taken out of total employment.

tial in Belgium and in the EU15 is not in the profile, but in the levels. For the EU15, the share of service jobs at risk of being offshored rises from about 16% to 19% between 1995 and 2003 and is approximately 2-3 percentage points above the share for Belgium over the entire period. The profile of the potential ICT enabled service offshoring for the US is radically different. Starting from a high level of more than 19% in 1995, the share of threatened jobs declines to slightly less than 18% in 2003.

The results above are all based on an occupational breakdown at the 3-digit level of the ISCO-88. However, for Belgium the occupational employment data are available at the 3-digit level of the NIS classification, which is a bit more detailed. This allows to re-examine the ISCO-88 categories, which have been identified by van Welsum and Vickery (2005) as at risk of being offshored, by splitting them into the more detailed NIS 3-digit categories (see column 3 of Table 1), and to re-evaluate the service offshoring potential for Belgium. Some of the 3-digit NIS categories, even though they fulfil the conditions set out above, clearly do not have much offshoring potential, mostly for institutional reasons.[15] They should therefore not be part of the list of occupations potentially affected by ICT-enabled offshoring. The following occupational categories (NIS 3-digit) have been excluded: architects and town planners (001), judges and magistrates (062), notaries (063), other legal professionals (069)[16], estate agents (312), commercial sales representatives (321) and technical sales representatives (322).[17]

The recalculated ICT-enabled offshoring potential for Belgium can be found on Graph 1 (Belgium – adapted, see legend). The levels are lower by construction. However, the profile is almost the same. Hence, the difference between the original offshoring potential and the recalculated one stays constant at about 1.5% over the whole period 1993-2005. In other words, the excluded occupational categories do not contribute to the growth in the ICT-enabled offshoring potential. For the interpretation of the results below, the original measure of the offshoring potential based on van Welsum and Vickery (2005) will be used for Belgium as the only difference is in the levels and as this makes the results for Belgium comparable to those for the EU15 and the US.

In order to highlight why the results shown on Graph 1 are difficult to interpret, it seems useful to start with the US-case. According to the line of reasoning developed above, the US had, in 1995, a sizeable potential for service offshoring due to ICT-developments, which subsequently declined. But without a reliable direct measure of the magnitude of service offshoring it turns out to be impossible to determine whether this fall has been caused by effective offshoring of the service jobs listed above or by some other factor. Two examples of the other possible causes

15 In other words, the ISCO-88 3-digit categories lump together occupational sub-categories that are at widely differing risk of being offshored.

16 Occupations related to courts like bailiffs or coroners.

17 An even more detailed breakdown of occupations, e.g. ISCO-88 4-digit, would, of course, allow to exclude further sub-categories that cannot really be considered as threatened. But it may also be that among the occupational categories identified as not threatened, there are some sub-categories that are actually at some risk of being offshored. Overall, the choice of the categories considered as threatened definitely remains to some extent arbitrary and dependent on the available breakdown of the occupational classification.

of the fall in the share of these service jobs in total employment are a faster rise of employment in other occupational categories and automation, which might be brought about by the same technological developments that favour offshoring of those service jobs.[18]

Things get even more intricate when it comes to interpreting the results for Belgium and the EU15. Here, the potential for ICT-enabled service offshoring is on the rise. Is this caused by an inverse movement, i.e. service jobs in these occupational categories being relocated in Belgium or the EU15? This could then be called 'service onshoring'. According to van Welsum and Vickery (2005), the trend for the EU15 can be explained through three major factors: firstly, "an overall increase in service employment", secondly, the fact that "European firms tend to offshore within Europe", which implies that despite a change in location jobs remain within the borders of the EU15, and, thirdly, "Ireland as a major destination country of offshoring activities from the US". They do thus believe that some 'service onshoring' does occur in the EU15.

This interpretation must be somewhat qualified in the Belgian case even though the profile of Belgium's service offshoring potential is similar to that of the EU15. First of all, the downturn between 2000 and 2001 may be linked to the business cycle. Furthermore, it seems reasonable to believe that Belgium is less attractive than Ireland as a destination country for service offshoring, especially from the US, and that 'service onshoring' is a less pervasive explanation for the rise in the employment share of the occupations listed above. The most plausible explanation for this rise is the growth of the overall share of service activities and employment at the expense of the manufacturing industry. This general shift towards services is confirmed by the employment data. Keeping in mind the results for the US, the interpretation can be taken one step further. It is indeed commonly acknowledged that the EU15 is lagging behind the US in terms of the shift of economic activity from manufacturing to services. This is also true for Belgium. Therefore, it seems reasonable to believe that the rise in the service offshoring potential of the EU15 and Belgium is to some extent an indication of the catch-up in terms of the shift towards service activities. The share of service jobs at risk of being offshored in the EU15 and Belgium must then be expected to peak in the near future, whereas the US appears to have passed that point already.

The industry breakdown of the occupational employment data for Belgium can be used to extend the analysis and answer the question which industries have the highest share of jobs at risk of being offshored. A comparison with the results for the EU15 in van Welsum and Vickery (2005) should also provide interesting insights. Table 2 shows the ranking of all industries at the NACE 2-digit level in terms of their average ICT-enabled service offshoring potential over the period 1993-2005. Moreover, the initial and final period offshoring potential is also reported for each industry.

[18] van Welsum and Vickery (2005) are indeed very careful when interpreting their results and also mention other factors than offshoring which might explain this fall.

Table 2 – ICT-enabled offshoring potential by industry (NACE 2-digit)[a] for Belgium (average and values for 1993 and 2005)

NACE-code	Industry	Avg share 93-05	Share 1993	Share 2005
	High potential			
66	Insurance and pension funding, except compulsory social security	81.6%	78.5%	87.5%
65	Financial intermediation, except insurance and pension funding	78.0%	76.5%	78.6%
72	Computer and related activities	76.3%	76.8%	78.8%
67	Activities auxiliary to financial intermediation	74.9%	62.3%	70.9%
30	Manufacture of office machinery and computers	51.8%	64.8%	38.0%
73	Research and development	46.8%	37.7%	48.8%
74	Other business activities	46.1%	48.0%	48.3%
70	Real estate activities	39.0%	41.6%	45.9%
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	30.7%	30.7%	31.0%
23	Manufacture of coke, refined petroleum products and nuclear fuel	30.1%	38.6%	31.7%
	Medium potential			
32	Manufacture of radio, television and communication equipment and apparatus	28.7%	24.9%	38.2%
24	Manufacture of chemicals and chemical products	26.9%	24.5%	26.2%
33	Manufacture of medical, precision and optical instruments, watches and clocks	26.0%	23.6%	31.3%
71	Renting of machinery and equipment and of personal and household goods	25.1%	29.3%	19.3%
91	Activities of membership organizations n.e.c.	22.3%	20.5%	25.1%
40	Electricity, gas, steam and hot water supply	20.5%	18.8%	24.9%
16	Manufacture of tobacco products	18.8%	22.1%	12.6%
63	Supporting and auxiliary transport activities; activities of travel agencies	18.3%	14.8%	20.6%
31	Manufacture of electrical machinery and apparatus n.e.c.	17.8%	11.4%	22.8%
29	Manufacture of machinery and equipment n.e.c.	16.8%	14.8%	16.7%
41	Collection, purification and distribution of water	16.3%	26.7%	18.9%
22	Publishing, printing and reproduction of recorded media	15.7%	16.7%	17.4%
64	Post and telecommunications	14.6%	5.4%	19.4%
25	Manufacture of rubber and plastic products	14.0%	13.4%	12.7%
92	Recreational, cultural and sporting activities	13.8%	13.2%	13.3%
62	Air transport	13.5%	11.3%	15.8%
35	Manufacture of other transport equipment	13.1%	14.8%	12.9%
21	Manufacture of pulp, paper and paper products	12.8%	13.8%	12.6%
15	Manufacture of food products and beverages	12.2%	11.6%	16.3%
27	Manufacture of basic metals	11.8%	9.8%	14.4%
90	Sewage and refuse disposal, sanitation and similar activities	11.4%	5.6%	13.1%
26	Manufacture of other non-metallic mineral products	10.8%	10.1%	13.7%
50	Sale, maintenance and repair of motor vehicles and motorcycles	10.6%	10.4%	12.9%
19	Tanning and dressing of leather; manufacture of luggage, handbags, and footwear	10.5%	10.4%	14.9%
	Low potential			
28	Manufacture of fabricated metal products, except machinery and equipment	9.8%	8.7%	10.9%
75	Public administration and defence; compulsory social security	9.0%	7.9%	9.7%
36	Manufacture of furniture; manufacturing n.e.c.	8.6%	7.3%	11.9%
18	Manufacture of wearing apparel; dressing and dyeing of fur	8.2%	8.1%	11.4%
34	Manufacture of motor vehicles, trailers and semi-trailers	7.9%	7.3%	11.3%
17	Manufacture of textiles	7.8%	5.4%	11.6%
61	Water transport	7.4%	6.4%	8.4%
52	Retail trade, except of motor vehicles and motorcycles	6.9%	4.9%	9.3%
85	Health and social work	6.9%	7.0%	7.5%
20	Manufacture of wood and of products of wood and cork, except furniture	5.9%	6.3%	5.8%
45	Construction	5.6%	4.1%	7.5%
60	Land transport; transport via pipelines	5.0%	3.2%	6.6%
80	Education	4.6%	3.5%	6.0%
2	Forestry, logging and related service activities	3.3%	1.9%	8.5%
55	Hotels and restaurants	2.5%	2.4%	3.9%
93	Other service activities	1.4%	0.5%	1.7%
1	Agriculture, hunting and related service activities	1.2%	1.1%	1.8%

Source: own calculations based on 'Statistics Belgium'

a: The industries 'Fishing and fish-farming' (5), 'Mining of coal and lignite' (10), 'Extraction of crude petroleum and natural gas' (11), 'Mining of uranium and thorium ores' (12), 'Mining of metal ores' (13), 'Other mining and quarrying' (14), 'Recycling' (37), 'Activities of households as employers of domestic staff' (95), 'Extra-territorial organisations and bodies' (99) have been excluded either because their production, their share in total employment or their offshoring potential was (almost) nil, or because of strong unexplained fluctuations in their offshoring potential.

Unsurprisingly, the average share of service jobs at risk of being offshored due to ICT-developments is highest for several business and financial services. It is, however, noteworthy that of the top four only 'Financial intermediation' (NACE-code 65) is among the bigger industries in terms of total employment. Moreover, the industry 'Manufacture of office machinery and computers' (30) is the only one from the manufacturing sector for which the ICT-enabled service offshoring potential exceeds 30%. Again, this does not come as a surprise given the definition of this potential.

These results for Belgium are quite comparable to those for the EU15 reported in van Welsum and Vickery (2005). The top five spots in the offshoring potential ranking are held by the same industries, although the order is different. It is also true for both Belgium and the EU15 that the service offshoring potential of quite a few manufacturing industries lies between 10% and 30%, which indicates "the growing importance of service activities in manufacturing" as observed by van Welsum and Vickery (2005).

However, no hasty conclusions should be drawn from these results at the industry level. Table 2 provides a ranking of industries in terms of their service job offshoring risk, but it seems pointless to try to explain the values for individual industries. Total employment in several industries is indeed so small that these results should be interpreted with great caution. Moreover, the fluctuations in the share of service jobs at risk of being offshored prove to be sizeable for quite a few industries. Nonetheless, the ranking globally confirms the widely held beliefs about the industry distribution of the threatened service jobs.

The analysis can still be pushed a bit further through a shift-and-share decomposition of the change in the ICT-enabled offshoring potential in Belgium based on the industry detail of the occupational employment data. The aim is to distinguish between two trends which influence the overall change in the share of service jobs at risk of being offshored. On the one hand, the observed rise could be driven by an increase in the share of such service occupations in each individual industry. This will be called the 'within effect'. On the other hand, it could also be caused by a shift in total employment from industries with a low share of such occupations to industries with a high share, which will be referred to as the 'between effect'.

Take OP and OP_i to be the ICT-enabled service offshoring potential respectively for the whole economy and at the industry-level, while ES_i stands for the share of industry *i* in total employment. Then:

$$OP = \sum_i OP_i * ES_i$$

The decomposition of dOP, the change in OP between two points in time, can easily be derived from this expression and written as follows:

$$dOP = \sum_i \overline{OP_i} * dES_i + \sum_i \overline{ES_i} * dOP_i$$

where $\overline{OP_i}$ and $\overline{ES_i}$ are averages between the initial and the end year, and dOP_i and dES_i are differences between the initial and the end year. This identity contains the two effects of the shift-and-share analysis described above: the first term in the sum on the right-hand-side is the 'within effect', and the second term the 'between effect'.

Table 3 – Shift-and-share analysis of the change in the ICT-enabled offshoring potential for Belgium

	OP (initial)	OP (end)	dOP	Within	Between
1993-2005	0.1398	0.1749	0.0350	0.0268	0.0082
1993-2000	0.1398	0.1634	0.0235	0.0138	0.0097
2000-2005	0.1634	0.1749	0.0115	0.0127	-0.0012

Source: own calculations based on 'Statistics Belgium'.

The results of the application of this decomposition are reported in Table 3.[19] First, the entire period 1993-2005 has been considered. The 'within effect' dominates and accounts for about three-fourths of the rise in the share of occupations at risk of being offshored. The main change thus occurs within industries where the share of such occupations increases. Only one-fourth of the increase comes from shifts in the employment share towards industries that have a higher offshoring potential.

Splitting the period 1993-2005 into two subperiods provides further interesting insights. During the first subperiod 1993-2000[20], the 'within effect' dominates, but to a lesser extent than for the entire period, i.e. the 'between effect' is relatively more important. For the years 2000-2005, however, the 'between effect' turns out to be very small and even slightly negative, while the 'within effect' accounts for all of the increase in the offshoring potential. These results may be interpreted as follows: between 1993 and 2000, there is a shift towards ICT-using service occupations within industries and one towards service industries that produce the services associated with those occupations. The latter shift can be taken as an indication of service outsourcing within the country. However, this internal service outsourcing seems to have come to an end by 2000 given that in the period 2000-2005 only the shift towards ICT-using service occupations within the industries remains.

[19] The shift-and-share analysis has been applied using data for all NACE 2-digit industries. Excluding the industries that are not reported in Table 2 does not alter the results of the shift-and-share analysis in any significant way.

[20] The year 2000 has been chosen to split the period because of the downturn observed in the ICT-enabled service offshoring potential for Belgium during that year.

4. Conclusions and Outlook

Summing up, several conclusions can be drawn from the analysis above. First of all, the share of jobs at risk of being offshored due to ICT-developments is lower for Belgium than for the EU15 or the US. Moreover, there is an upward trend in this share over the period 1993 to 2005. This trend is most likely explained by a general increase in the importance of service activities. It might also be that some service onshoring is occurring. The highest ICT-enabled service offshoring potential can be found in financial and business services. Finally, the shift-and-share analysis provides evidence of the growing share of threatened service occupations within industries and of a shift of employment towards industries with a high share of such threatened service jobs.

In this context, it seems useful to insist once again on the major limitation of the approach. As outlined above, the approach contains no estimation of the actual magnitude of service offshoring. Taking the short-cut of looking immediately at the possible job impact implies that the results are not true estimates. They may merely be considered as indicators of the offshoring potential in a country or industry, i.e. the jobs that could eventually be lost, but they provide no accurate information on the jobs that are actually being lost due to service offshoring. Furthermore, the causes of the changes in the offshoring potential have not yet been rigorously determined.

These drawbacks point to the fields of future research. Further empirical investigation into the subject must focus on finding data for more direct measures of the magnitude of service offshoring and on determining the underlying causes of the rise or fall in the ICT-enabled service offshoring potential. The latter point could be achieved through estimating a labour demand function for the ICT-using occupations threatened by offshoring.

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