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Services in the EU Productive Systems: a Comparative Study of the New and Old Member States

Jose A. Camacho Ballesta[1], Yulia Melikhova[2], Manuel Hernandez Peinado[3]

[1,3]*Department of International and Spanish Economics*
Campus de Cartuja, University of Granada
18071 Granada (Spain)
e-mail: jcamacho@ugr.es, mhpeinad@ugr.es

[1,2,3]*Institute of Regional Development*
University of Granada
C/ Rector López Argüeta s/n, 18071 Granada (Spain)
e-mail: yumeli@correo.ugr.es

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The continuous tertiarisation process of developed economies can be appreciated not only by means of growth of the share of services within the value added and employment, but also through the more intensive use of services inputs by all the activities forming part of productive system. The essential importance of services, and especially of some of their activities, consists of positive impact they produce on user activities.
In this work the tertiarisation of productive systems of several European Union (EU) new and old member states, employing the input-output tables, is analyzed. To be precise, the tertiarisation effects obtained using technical coefficients and Leontief inverse matrix coefficients are thoroughly examined. Our attention is focused only on the direct and total effects. Direct effects comprise the immediate intermediate demand of each productive sector necessary to produce an additional unit of its product. On the other hand, total effects measure all the direct and indirect inputs needed to produce an additional unit of output.
The main characteristics of the selected countries refers to their reduced size that can be compared to the NUTS 2 regions. The EU, establishing its regional policy, which main goal consists in the achievement of a higher level of the economic, social and territorial cohesion, takes into account regions precisely of this level. So, this analysis enables not only to compare the state of tertiarisation in the new and old European member countries, but also to approach this analysis to the territory level similar to NUTS 2 regions.
The study carried out in this work, enables us, on the one hand, to appreciate the differences existing between countries from the point of view of the share of the tertiary sector in total gross value added (GVA) and from the point of view of the use of services by whole of the productive systems. On the other hand, the activities that introduce tertiary inputs into their productive processes with greater intensity are indentified. Furthermore an attempt to check if there is any relation between the activities' tertiarisation degree and their importance for national productive systems is made.
The results of this work may be of great interest from the point of view of the new member states as they highlight the current situation concerning the services sector which development is essential for the achievement of Europe 2020 strategy objectives. Namely, enhancing the services performance, these countries could improve their situation concerning employment, their relation with innovation and general economic background.

Keywords: *European Union, input-output analysis, productive system, services, tertiarisation.*

Introduction

One of the most important goals of the European Union (EU) is the achievement of economic, social and territorial cohesion on the whole territory of the Community. At the moment, the indicator mostly used to measure the degree of the achievement of this purpose is the gross domestic product (GDP) per capita. As economic literature, from the second half of the 20th century to nowadays, demonstrates the most important factor that determines the level of the GDP is productivity[1]. In spite of the problems related to the so called "Baumol's disease" (Baumol, 1967, et al., 1985) which would lead to the reduction of the total productivity of economy as the employment in the sectors with low productivity growth, such as services, increased, some studies (see for example, Oulton, 2001) evidence that this supposition will not necessarily be fulfilled if the industries with low productivity growth (stagnant) produce intermediate inputs (for instance, business services) and not final products or services as Baumol supposed[2]. So, it is possible to increase

[1] For a revision of the productivity and service sector see Maroto (2011).

[2] On the other hand, there are studies that point out that the productivity growth rates of several service activities (transport, communications, some advanced producer services) are similar to and even higher than the growth rates of industrial branches (Maroto and Rubalcaba, 2008, Maroto and Cuadrado, 2006, Van Ark et al., 1999).

the aggregate productivity if the resources are transferred to stagnant sectors that produce intermediate inputs. Therefore the tertiarisation of advanced economies can be favorable, and not harmful, for the productivity growth[3] (Illeris, 1996, Rubalcaba, 2008).

The tertiarisation process comprises not only the increase of the share of services in employment and value added, but also each time more intensive use of tertiary inputs by activities of any type. As Camacho and Rodríguez (2009) point out, services are essential inputs for most of activities and key element that enables to strengthen the productive system integration. Do all activities use the same amount of tertiary inputs in their productive processes? Is the level of services inputs similar in all countries of the EU or it varies from one state to another? Is it possible that a relation between the specialization of countries in certain activities and the amount of services inputs used by these activities exists? In order to try to answer these questions the analysis will be based on input-output tables that enable us to appreciate the range of intersectoral relations present in an economy. To be precise, using technical coefficients, tertiarisation effects that reflect tertiary inputs requirements of each activity will be calculated. In the second section of the work the methodology applied is briefly presented.

Productive systems analyzed in this work are those of several small countries that form part of the EU. Namely, these are 7 countries for which input-output tables in the Eurostat database are available and which size, in terms of surface and population, approaches NUTS 2 European regions (Melikhova, 2010). Regions precisely of this level are taken into account to establish the EU regional policy which main goal is to achieve the economic, social and territorial cohesion. Another reason in favour of this selection of countries is that it enables the comparison of new EU member states, represented by Estonia (ee[4]), Lithuania (lt), Latvia (lv), Slovenia (si) and Slovak Republic (sk), with old ones, such as Denmark (dk) and Ireland (ie). Such comparison is of great interest as important differences in relation to the achievement of Lisbon strategy (nowadays replaced with Europe 2020 strategy) objectives persist between these two groups of countries (Baležentis et al., 2010). The case is that the development of services sector could help to enhance countries' performance in relation to some of these objectives because of the importance of services for employment (Moyart, 2005, OECD, 2005), their relation with innovation and knowledge (Camacho and Rodriguez, 2005, Kleinknecht, 2000, Preissl, 2000) and general economic background expressed in terms of the per capita GDP (Eschenbach & Hoekman, 2006).

In spite of the fact that the input-output tables come from the same database, they are not available for the same year. For most of the countries the reference year is 2005, except Denmark (2007) and Latvia (1998). It is considered possible to use the tables for this period of time, between 1998 and 2007, as changes taking place in the productive systems are slow.

So, in the third section of the work the analysis of tertiarisation of these 7 European countries will be carried out. First, the sectoral tertiarisation, using the share of each productive sector within national gross value added will be examined. Do more tertiarised countries use greater amount of services inputs? In the second part of the third section it will be attempted to answer this and other questions by means of the analysis of the productive systems tertiarisation based on the tertiarisation effects obtained from the input-output tables. Finally, if we take into account that services help user activities to enjoy productivity increases, it is possible that these activities become objects of specialization of national economies. In the last part of the work this hypothesis will be verified.

Methodology

The analysis of tertiarisation of the countries under research will be carried out using the input-output tables. Namely, by means of the technical coefficients and Leontief inverse matrix coefficients the tertiarisation effects will be obtained[5]. This methodology represents one of the techniques that enable to exploit the valuable economic information contained within the input-output tables (see for example, Camacho and Rodriguez, 2010, Strambach, 2001). Because of the space available, we will not be able to examine thoroughly unisectoral, bisectoral and multisectoral effects, but will focus on the direct and indirect tertiarisation, namely, direct (direct effects) and indirect (total effects) relations that exist in productive system.

Direct effects comprise first-order intersectoral relations between a productive sector and each branch of economic activity, namely, the immediate intermediate demand of each industry necessary to produce additional unit of its product. On the other hand, total effect measures all the direct and indirect inputs, up to the n-relationship, necessary for the production of additional unit of output. So, total effects jointly measure interactions among and within sectors, regardless of these interactions are direct or indirect.

Additionally, as the basic element of the analysis, it will be differentiated between internal effects obtained from domestic input-output tables that include intermediate consumption of products produced internally, and total effects coming from total input-output tables that refer to the intermediate consumption of products fabricated internally by the country and those imported. Therefore, there are direct internal and total effects, on the one hand, and total internal and total effects, on the other hand. Figure 1 represents the relationship existing between the four effects.

[3] Besides, talking about service productivity, we have to bear in mind that in the very definition of a service Hill (1977) pointed out that one economic unit performed some activity for the benefit of another in such a way as to change the condition of the latter. So, the amount of services produced, as O'Farrell and Moffat (1995, p. 112) state, "must be measured by recording the extent of changes in consumers of services and not by observing the activity of the producers".

[4] These country codes in brackets will be used further in the analysis to identify the countries.

[5] See Camacho (1999) for the detailed methodology.

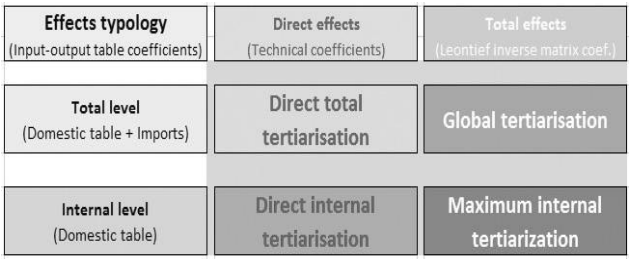


Figure 1. Direct and total tertiarisation

Actually, we propose to use the term "tertiarisation" instead of "effect" and replace the four effects with new denominations detailed in the Figure 1 (four squares in the grey background). The direct internal tertiarisation is considered as the basis of the other tree tertiarisations and represents immediate intermediate demand for services produced by national economies. The maximum internal tertiarisation comprises all the direct and indirect exchanges of inputs produced at national level (internally) and taking place between the productive sectors. Meanwhile, the direct total tertiarisation refers to each activity's direct requirements of inputs produced by the very country (internally) as well as those imported. And finally, a country's global tertiarisation includes all the other ones and reflects all the direct and indirect exchanges of inputs produced by the domestic economy and by other countries (imported).

Tertiarisation of productive systems of small countries
First approach: sectoral tertiarisation

The analysis of tertiarisation of productive systems of the countries under research started examining the contribution of each one of three productive sectors to the gross value added. As Figure 2 demonstrates, the country with the highest share of services in the GVA is Denmark (73.19 %) and at the same time this it is the last one from the point of view of the shares of manufacturing (25.64 %) and agriculture (1.18 %). Estonia with 69.38 % follows Denmark in relation to the share of tertiary sector within the GVA. The rest of the countries, except Slovak Republic, present values between 64 and 66 %. The Slovak productive system can be considered, on the one hand, as the less tertiarised and, on the other hand, as the most industrialized with percentages of 58.39 % and 37.85 % respectively.

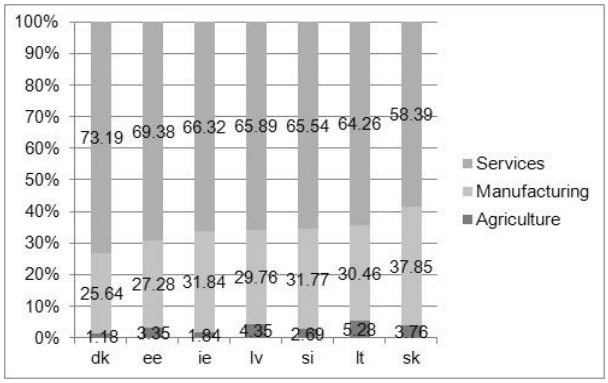


Figure 2. GVA distribution among productive sectors, %

In other countries the share of manufacturing within the GVA ranges between 27 and almost 32 %. Besides the new member states present the highest values of agriculture, considerably higher than those of old member states (Denmark and Ireland) which levels are situated below 2 %.

Tertiarisation at national level

After this general image of the situation with the distribution of the share of productive sectors within the GVA, it could be interesting to verify if countries with the highest percentages of services also use the highest amount of services inputs in their productive processes. In order to check it, the tertiarisation effects or tertiarisations presented in the Figure 1 will be examined.

As Figure 3 demonstrates, the most tertiarised country at total level is Ireland. Namely, the activities that form part of its productive system use the largest amount of services inputs in their productive processes. In both cases, from the point of view of direct and total effects (direct, maximum and global tertiarisations), other two countries that together with Ireland have the highest levels of the services share within the GVA, Denmark and Estonia, follow the leader in relation to the tertiarisations at total level, although the order of the countries changes.

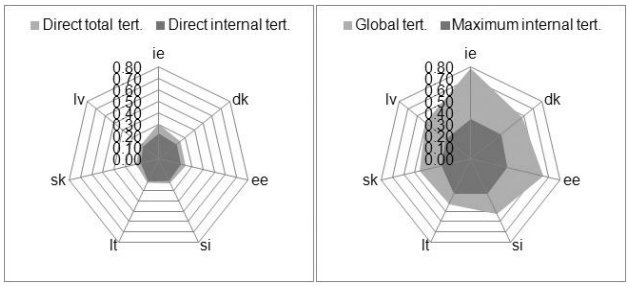


Figure 3. Direct, maximum and global tertiarisation

At internal level, Ireland presents very high values of the direct tertiarisation whereas Denmark leads the classification in relation to the total one (maximum internal tertiarisation). This evidence highlights the fact that in Denmark national service activities maintain closer relations with the whole productive system. On the other hand, Ireland can be considered as absolute leader as regards to the incorporation of services into the productive processes of its economy.

One more interesting piece of evidence we obtain from the Figure 3, refers to the degree of internationalization of the countries under research, namely, the value of imported services inputs incorporated into productive processes. So, the dynamising impact of inputs coming from abroad is much higher in the case of the total tertiarisation than in the case of the direct one. For example, as for Ireland, 58.5 % of the global tertiarisation is due to the imported inputs, whereas in relation to the direct total tertiarisation this value is close to 27 %. Regarding the country with the lowest degree of internationalization, Lithuania, the differences between direct and global tertiarisation in this sense are even more important, 3.5 and 22.4 % respectively.

In both cases, as regards the direct and total tertiarisations, Ireland is the country that uses the highest amount of imported services inputs. The position of Estonia should be also pointed out as this country follows Ireland in the case of the global tertiarisation and as refers to the total internal one, Estonia takes the third place, just after Denmark.

Top 10 of the most tertiarised activities

The case is that not all activities use the services inputs with the same intensity. In order to be able to appreciate the differences between them in this sense, we order the set of activities of the seven countries according to the values of the direct total tertiarisation as it reflects the total direct services inputs demanded by each economic activity regardless of these inputs are produced within the national economy or come from abroad (Melikhova, 2010).

The result of this grouping of about 390 activities belonging to seven countries under research evidences that the very services are the most intensive users of tertiary inputs. There are only 15 agricultural and manufacturing activities within 100 first activities situated in the top of the list.

The leading activities in relation to the values of the direct total tertiarisation are presented in Table 1. We will consider these 21 activities belonging to 10 categories as the tertiarisation top 10. Eight of ten categories are services whereas only two of them are manufacturing branches: printed matters and chemicals (both of them are Irish in origin). Top 10 service activities include water and air transport and its supporting and auxiliary services, insurance and three branches of business services and, finally, sewage and refuse disposal services. It is interesting that all seven countries are represented within these 21 activities and eight of them are Irish which stresses the outstanding position of this country in relation to the tertiarisation.

Table 1

Direct total tertiarisation: 10 first categories

Category order	Country code	Activity	Direct total tertiarization
1	dk	**Water transport services**	**0.7074**
2	lv	**Insurance and pension funding services, except compulsory social security services**	**0.7022**
3	ie	**Computer and related services**	**0.6993**
2	ie	Insurance and pension funding services, except compulsory social security services	**0.6826**
4	ie	**Supporting and auxiliary transport services; travel agency services**	**0.6784**
4	ee	Supporting and auxiliary transport services; travel agency services	**0.6754**
5	sk	**Air transport services**	**0,67290**
6	ie	**Printed matter and recorded media**	**0.6601**
1	ee	Water transport services	**0.6571**
4	sk	Supporting and auxiliary transport services; travel agency services	**0.6371**
5	ee	Air transport services	**0.6309**
7	dk	**Renting services of machinery and equipment without operator and of personal and household goods**	**0.6263**
8	ie	**Sewage and refuse disposal services, sanitation and similar services**	**0.6120**
4	si	Supporting and auxiliary transport services; travel agency services	**0.6111**
5	lt	Air transport services	**0.5397**
9	ie	**Research and development services**	**0.5357**
(10)*	ie	Other mining and quarrying products	**0.5059**
2	si	Insurance and pension funding services, except compulsory social security services	0.4978
4	lv	Supporting and auxiliary transport services; travel agency services	0.4900
1	ie	Water transport services	0.4855
10	ie	**Chemicals, chemical products and man-made fibres**	0.4852

** The tenth category according to the values of the direct total tertiarisation should be other mining and quarrying products, but there are no data available for the whole set of countries. That's why it was decided to exclude this category from the top 10, including instead chemicals, chemical products and man-made fibres as the 10th one.*

Now we will focus on the activities forming part of the tertiarisation top 10. First of all the heterogeneous behavior of the activities and countries stands out.

A category that takes the first place is **water transport services** (Table 1), with three activities within the top 10: Danish, Estonian and Irish. Figure 4 shows the tertiarisation of this category. In the left part of the figure, the direct internal and total tertiarisations are presented and, in the right part, maximum internal and global tertiarisations can be observed. The tertiarisation of the rest of categories will be presented in the same way, ordering the countries according to the values of tertiarisations at total level (direct total and global tertiarisations).

First of all, an important dinamising impact of imported services inputs on Danish water transport stands out. Thanks to this fact, Denmark is at the head of the direct total tertiarisation classification as the value of the direct internal tertiarisation is extremely low.

Estonian water transport, that shares the leading position with the Danish one, also presents an outstanding level of the degree of internationalization along with the highest value of the global tertiarisation. On the other hand, Irish degree of internationalization is relatively low. The last positions of the list are taken by Lithuania and Slovak Republic that are characterized by low values of both tertiarisation and degree of internationalization.

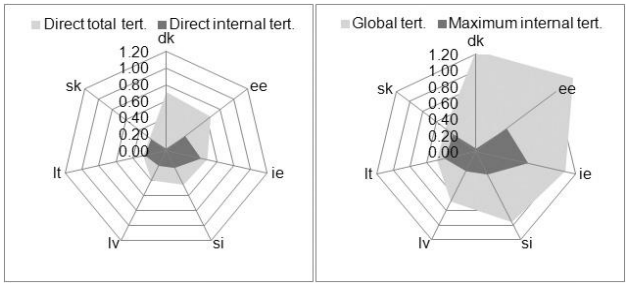


Figure 4. Water transport services: direct, maximum and global tertiarisation

The next category in the list is **insurance and pension funding services** (Table 1). Once again there are three activities that form part of the top 10: Latvian, Irish and Slovenian. The first two activities stand out especially because of their high levels of tertiarisation and of the degree of internationalization in relation to the direct as well as total effects (Figure 5). Once again Lithuania occupies the penultimate place, but this time it is followed by Denmark. Both countries show very low levels of tertiarisation as well as of degree of internationalization.

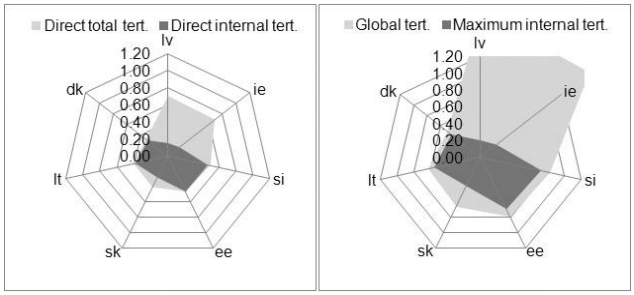


Figure 5. Insurance and pension funding services: direct, maximum and global tertiarisation

In the third place of the top 10 we find **computer and related services** (Table 1) and the only activity that forms part of the leading group is Irish in origin. In this case Ireland confirms its important "dependence" on the tertiary inputs coming from abroad, showing values that are considerably higher than those presented by other countries (Figure 6). Final positions of the list are taken by Lithuanian and Latvian computer and related services. It should be pointed out that Latvian activities, in spite of being very poorly tertiarised, are much more open internationally.

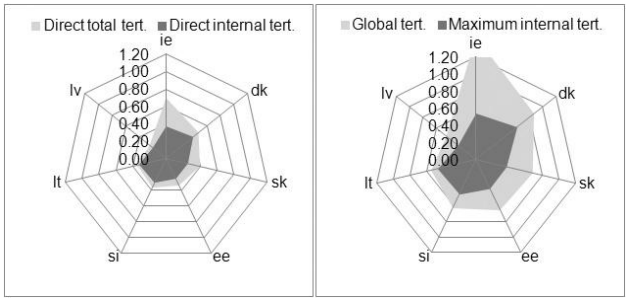


Figure 6. Computer and related services: direct, maximum and global tertiarisation

In the fourth place of the leading group **supporting and auxiliary transport services** are situated (Table 1), with five representatives within the top 10: Ireland, Estonia, Slovak Republic, Slovenia and Latvia. Once again Ireland stands out: the degree of internationalization of its auxiliary transport activities is the highest (Figure 7). In relative terms (as percentage of tertiarisation at total level) Danish results in this sense are also important, but this country presents relatively low level of tertiarisation in general. We have to point out that as regards the tertiarisation at internal level, Estonia displaces Ireland on the leading position. The last place of the classification is taken by Lithuania, with low levels of tertiarisation and degree of internationalization.

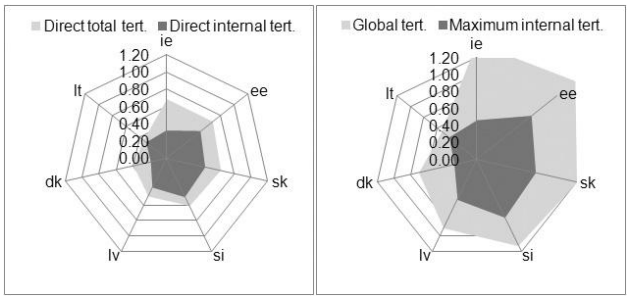


Figure 7. Supporting and auxiliary transport services: direct, maximum and global tertiarisation

The next place, the fifth one, is taken by **air transport services** (Table 1). Again we find activities of three countries: Slovak Republic, Estonia and Lithuania. Figure 8 highlights that the first two activities at total level, Slovak and Estonian, have also the highest degrees of internationalization. Whereas in the case of the direct tertiarisation the impact of the imported services inputs received by the third, Latvian, activity is very low. So, in the case of the global tertiarisation, Latvian air transport takes the last place in the classification and in the third position Irish activity is situated. We should also point out that as regards air transport, Irish degree of internationalization does not stand out.

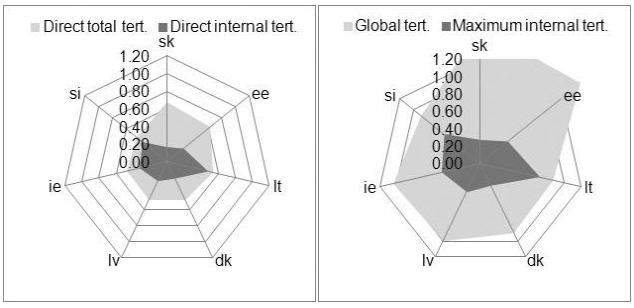


Figure 8. Air transport services: direct, maximum and global tertiarisation

The first manufacturing category that we meet in the top 10 is **printed matter and recorded media** (Table 1). The only representative included in the leading group occupying the sixth place is Irish again. By means of Figure 9 it can be appreciated an important advantage Ireland has of the rest of the countries at total level, whereas at internal level the tertiarisation values are the lowest. This situation is similar to that one observed in the case of water transport when the dinamising impact of the imported services inputs on the leading activity (Danish in

origin) was very strong. Another outstanding feature of printed matter activity refers to the fact that the values of the global tertiarisation are considerably lower in comparison with the categories examined before. So, Ireland, that leads the group, does not exceed 1.20. And finally, in the last places we find again Latvian and Lithuanian activities.

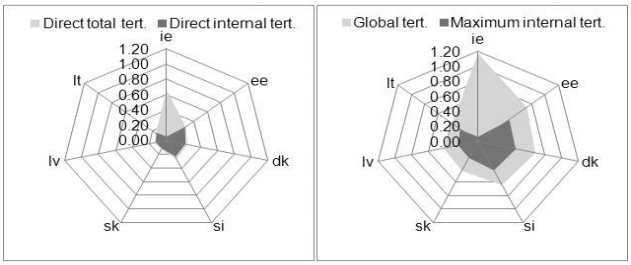


Figure 9. Printed matter and recorded media: direct, maximum and global tertiarisation

Danish **renting services of machinery and equipment** occupy the seventh position within the top 10 (Table 1). In spite of the fact that this Danish activity leads the group from the point of view of both direct and total tertiarisations, the highest degree of internationalization is presented by Irish renting services, followed by Estonian branch (Figure 10). Once again Lithuanian and Latvian activities are situated in the lowest part of the list.

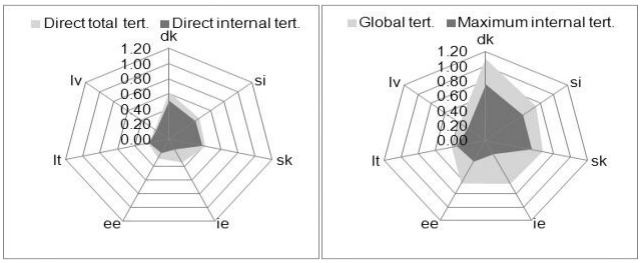


Figure 10. Renting services of machinery and equipment: direct, maximum and global tertiarisation

In the eighth place the category of **sewage and refuse disposal services** is situated (Table 1). One more time the only representative of the leading group is the activity from Ireland. From the point of view of direct tertiarisation, these activities are characterized by an extremely low degree of internationalization, including the case of Ireland that is followed by Denmark at the head of the group (Figure 11).

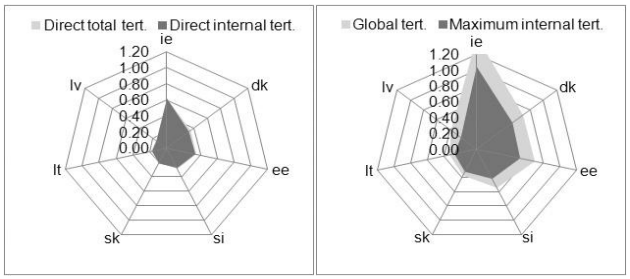


Figure 11. Sewage and refuse disposal services: direct, maximum and global tertiarisation

As to total tertiarisation of the sewage and refuse disposal services, the values grow, but continue to be below all other categories examined before. Therefore, the impulse sewage and refuse disposal services receive from the imported inputs is the lowest. As in the case of the previous category, the same Baltic States take the last positions in the group.

The penultimate, ninth, place in the top 10 belongs to **research and development services** (Table 1), with the only activity forming part of the leading group, Irish in origin. As for the direct tertiarisation, Ireland is followed by Lithuania, whereas in case of the global tertiarisation, the second place is taken by Demark (Figure 12).

The degree of internationalization of Denmark, along with the leader, is the highest, as regards the total tertiarisation. In the case of direct tertiarisation, the research and development services in all the countries mostly use services inputs produced at national level. From this point of view, the situation is similar to that one observed in the case of sewage and refuse disposal services.

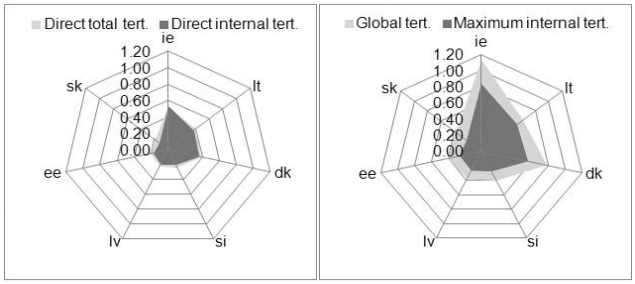


Figure 12. Research and development services: direct, maximum and global tertiarisation

In the last place within the group leading the classification according to the values of direct total tertiarisation we find the second manufacturing category, **chemicals, chemical products and man-made fibres**, represented by the only activity (Table 1). This time it is also Irish in origin and is followed by the Danish one (Figure 13). There is a long distance that separates the leader from the rest of the countries in relation to both direct and total tertiarisations. Irish activity besides is characterized by an extremely high degree of internationalization.

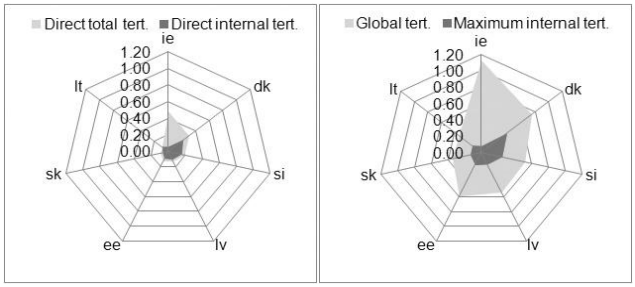


Figure 13. Chemicals, chemical products and man-made fibres: direct, maximum and global tertiarisation

On the other hand, the activity that takes the last position in both lists (Lithuanian chemicals), receives the lowest impulse from the imported services inputs, especially in the case of the direct tertiarisation. In general terms, it can be stated that chemicals, along with air transport and to a lesser extent water transport services, are activities that present the highest degree of internationalization.

Specialization – tertiarisation relation

As commonly known the importance of services is not represented by their direct impact as their level of productivity is relatively low, but by their indirect impact on the user activities (Illeris, 1996). The following hypothesis we try to verify refers to the existence of relation between the tertiarisation level of activities and their share within productive systems. This share is measured in terms of GVA and can be considered as an object of specialization of economies.

Having analyzed the values of the direct total tertiarisation and GVA, we conclude that this relation does not exist in the whole of the activities under research. However, in relative terms, there are more service branches that present simultaneously higher levels of the GVA and of the services inputs used in their productive processes, namely, higher levels of tertiarisation. At total level, this relation is observed in the case of 9 service activities of the whole of 24 and at internal level the number of activities is 8. As for agricultural and manufacturing branches, the relation is 10 to 33 at total level and 5 to 33 when only the inputs produce internally by the countries are considered.

If we study in depth the case of the categories forming part of the tertiarisation top 10, the relation between activities' tertiarisation level and the economy's specialization in these activities exists for three first categories which represent services (water transport, insurance and computer and related activities) and for two manufacturing categories (printed matter and chemicals). Appendix 1 shows figures that demonstrate the relation between the direct total tertiarisation and the value added of these five categories.

Conclusions

The main goal of this work involved in widening the knowledge of the tertiarisation of European economies in the context of achieving a higher degree of the economic, social and territorial cohesion. Because of the difficulty of approximation of the territorial perspective of countries with vast surfaces like Germany or France, we opted to analyze small EU economies, some of which even were considered as NUTS 2 regions within previous European territorial nomenclature. The tertiarisation analysis of productive systems of seven small EU countries evidences an important heterogeneity that exists among economies as well as among economic activities.

First approach to the tertiarisation made by means of the GVA sectoral structure analysis highlights that the old EU member states, represented by Ireland and Denmark, present higher degrees of tertiarisation (especially in case of the second country) in comparison with the new member states. The only new member state that can compete with them is Estonia. Such a less significant share of services in the new member states' productive systems can be due to the existing transformation problems in Central and Eastern Europe which consist of the knowledge based society and knowledge economy creation (Melnikas, 2007) closely related to the development of the tertiary sector.

Following at the level of national economies, we go a little bit further and examine, by means of tertiarisation effects, the intensity of use of the intermediate services inputs. Two old member states continue at the head of the classification, but this time Ireland replaces Denmark in the leading position and besides presents a very high degree of internationalization. As for Denmark, it confirms its high level of sectoral tertiarisation because its higher value of maximum internal tertiarisation means that Danish services have very close relations with the whole of its productive system. Estonia continues accompanying these two leading countries. The rest of the new EU member states present lower values.

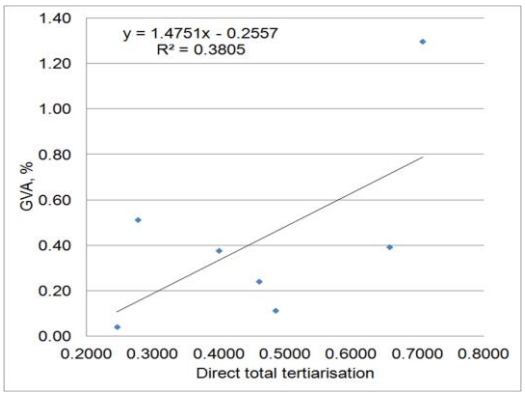
It is evident that not all activities use services inputs with the same degree of intensity. Having ordered activities of all countries according to the values of the direct total tertiarisation, we prove that the very service activities are the most important users of services inputs. This result is similar to those obtained by Rubalcaba (2008), Tomlinson (2000), Pilat and Wölfl (2005) and stress the importance of service inputs for the very service activities. Only two of ten categories that form part of the tertiarisation top 10 are manufacturing branches. A more detailed examination of these leading activities confirms a high degree of tertiarisation and internationalization of Irish economy and a backward state of Latvia and especially Lithuania.

The analysis of each one of the top 10 activities reveals that in many cases branches with the highest tertiarisation levels also have the highest degrees of internationalization. Does it mean that higher economic openness is directly related to higher levels of tertiarisation of productive systems? In order to answer this question, as one of the lines of the future research a deeper analysis of the relation between the tertiarisation and the degree of internationalization of activities together with the degree of openness of economies should be carried out.

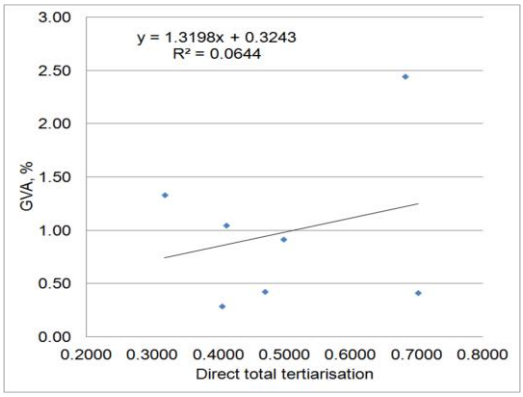
Finally, the results of the analysis highlight that there is no relation between countries' specialization in certain activities and the degree of tertiarisation of these activities for the whole of the productive systems. Only in the case of the most tertiarised activities, there is a direct relation between the higher level of tertiarisation and specialization of countries in these activities expressed in the GVA terms. In order to achieve major competitiveness increases by the economies, it is probably necessary that services, used like intermediate inputs and especially in the case of the new EU member states, reach a certain level.

As for implications for the European regional policy, bearing in mind that the cohesion is being achieved mostly at regional level, it would be interesting to carry out a similar analysis for the whole of EU regions. On the other hand, taking into consideration that there are already input-output tables available for the most of countries under research for 8-10 years period, the analysis of the evolution of the tertiarisation processes could be useful for a wider knowledge of services sector in general.

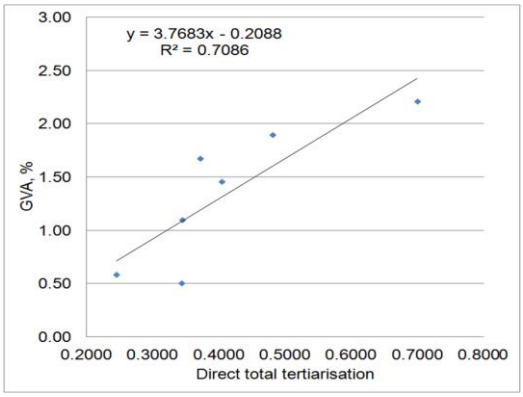
Appendix 1. Specialization-tertiarisation relation: direct total tertiarisation versus GVA



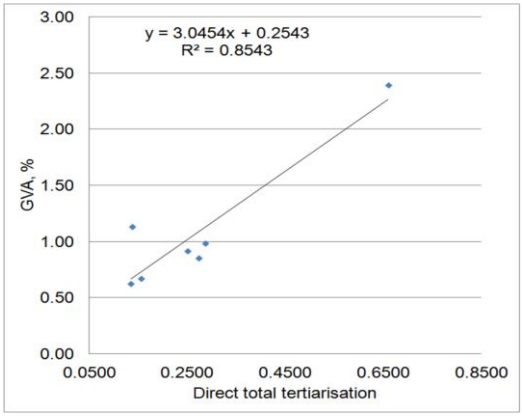
Water transport services



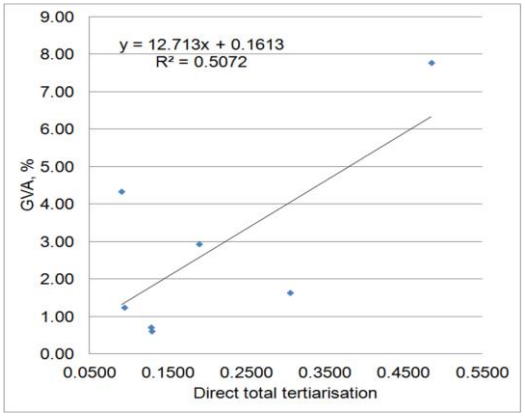
Insurance and pension funding services



Computer and related services



Printed matter and recorded media



Chemicals, chemical products and man-made fibres

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José A. Camacho Ballesta, Yulia Melikhova, Manuel Hernández Peinado

Paslaugos ES gamybinėse sistemose: naujųjų ir senųjų šalių narių palyginamasis tyrimas

Santrauka

Siekiant aukštesnio ekonominio, socialinio ir teritorinio tarpusavio ryšio, kaip vieno iš pagrindinių ES tikslų, labai svarbi tema yra šalių našumas. Tertiarizacijos procesas, kurį sudaro ne tik paslaugų gausėjimas vartojant, pridėtinė vertė, bet ir vis intensyvesnis tretinių sąnaudų panaudojimas bet kurios srities veiklose, gali pagerinti bendrą šalių našumą. Paslaugų gausa yra labai svarbi daugeliui veiklos rūšių. Tai pagrindinis dalykas, lemiantis gamybinės sistemos integracijos stiprumą.

Ar visos veiklos naudoja tokį patį tretinių sąnaudų kiekį savo gamybos procese? Ar paslaugų sąnaudų lygis yra panašus visose ES šalyse, ar jis skiriasi kiekvienoje šalyje? Ar egzistuoja santykis tarp šalių specializavimosi tam tikroje veikloje ir paslaugų sąnaudų kiekio, kurį sunaudoja šios veiklos? Norint atsakyti į šiuos klausimus, analizė bus pagrįsta duomenimis, pateiktais sąnaudų ir produkcijos lentelėse, kurios leidžia mums įvertinti

ekonomikoje egzistuojančių tarpsektorinių ryšių diapazoną. Būtent naudojant techninius koeficientus ir Leontjevo atvirkštinės matricos koeficientus, bus gauti tertiarizacijos rezultatai, toliau vadinami tertiarizacija, kurie parodo kiekvienos veiklos tretinių sąnaudų poreikį.

Šiame darbe analizuojamos gamybos sistemos, kurios būdingos keletui mažų šalių, priklausančių ES. Tiksliau tariant, tai 7 šalys, kurių sąnaudų ir produkcijos lenteles Eurostato duomenų bazėje galima patikrinti ir kurių dydis pagal plotą ir gyventojų skaičių priartėja prie NUTS 2 Europos regionų. Į šio lygio regionus atsižvelgiama norint sukurti ES regioninę politiką, kurios svarbiausias tikslas yra pasiekti ekonominį, socialinį ir teritorinį glaudumą. Kita priežastis tokiam šalių pasirinkimui yra ta, kad jis leidžia palyginti naujas ES šalis nares, kurias atstovauja Estija, Lietuva, Latvija, Slovėnija ir Slovakijos respublika su senosiomis šalimis Danija ir Airija. Todėl ši analizė leidžia ne tik palyginti tertiarizacijos situaciją naujosiose ir senosiose Europos šalyse narėse, bet ir priartinti šią analizę prie teritorinio lygio, panašaus į NUTS 2 regionų. Toks palyginimas yra labai įdomus, nes tarp šių dviejų šalių grupių išlieka svarbūs skirtumai lyginanat su Lisabonos strategijos (kurią dabar pakeitė Europa 2020 strategija) tikslais. Tai būtent tas atvejis, kai paslaugų sektoriaus plėtra gali padėti sustiprinti šalies poziciją išsiaiškinant tikslus, paslaugų panaudojimo svarbą, jų santykį su naujovėmis ir žiniomis bei bendraisiais ekonomikos pasiekimais.

Po įvado, antrojoje tyrimo dalyje pristatoma trumpa naudotos metodikos apžvalga. Trečia dalis yra empirinė. Ją sudaro trys skyriai. Pirmiausia atliktas tyrimas panaudojus sektoriaus struktūrinę analizę, pagrįstą bendrąja pridėtine verte. Jame pabrėžiama, kad senosios ES šalys, kurias atstovauja Airija ir Danija, rodo didesnį tertiarizacijos laipsnį (ypač antrosios šalies atveju), lyginant su naujosiomis šalimis narėmis. Vienintelė naujoji šalis narė, kuri gali varžytis su jomis yra Estija. Tokia nedidelė paslaugų dalis naujųjų šalių narių gamybinėse sistemose gali būti dėl Centrinėje ir Rytų Europoje egzistuojančių transformacijos problemų, kurias lemia žiniomis pagrįsta visuomenė ir žinių ekonomikos sukūrimas, kuris yra artimai susijęs su tretinio sektoriaus plėtra.

Nustačius nacionalinių ūkių lygius, antrame empirinės analizės skyriuje, panaudodami tertiarizacijos rezultatus, tiriame tarpinių paslaugų sąnaudų panaudojimo intensyvumą. Dvi senosios šalys narės ir toliau užima pirmaujančias pozicijas, bet šį kartą Airija pakeičia Daniją (kuri prieš tai buvo lyderio pozicijoje ir parodė labai aukštą internacionalizacijos laipsnį). Jei kalbėtume apie Daniją, tai didesnė jos maksimalios vidinės tertiarizacijos vertė reiškia, kad danų paslaugos yra labai artimai susijusios su visa jų gamybos sistema. Estija ir toliau eina po šių dviejų pirmaujančių šalių. Likusios naujosios ES šalys narės yra prasčiau įvertintos.

Trečiame empirinės analizės skyriuje bandoma nustatyti, ar visos veiklos tiek pat naudoja sąnaudų paslaugoms. Sutvarkius visų šalių veiklą pagal tiesioginės bendrosios tertiarizacijos vertes, patvirtinamas teiginys, kad tretinių sąnaudų panaudojimas skiriasi kiekvienos veiklos. Kiekviena paslaugų veikla yra svarbiausia paslaugų sąnaudų vartotoja. Šis paskutinis rezultatas yra panašus į tuos, kuriuos gavo Rubalcaba (2008), Tomlinson (2000), Pilat ir Wölfl (2005) ir kuriuose pabrėžiama paslaugų sąnaudų kiekvienai atskirai paslaugų veiklai svarba.

Po atliktos analizės paaiškėja tertiarizacijos dešimtukas, t. y. dešimt pačių intensyviausių paslaugų sąnaudų naudotojų. Tik dvi iš dešimties kategorijų, sudarančių dalį tertiarizacijos dešimtuko, yra gamybos šakos: spaudiniai ir chemikalai. Paslaugų veiklos dešimtuką sudaro vandens ir oro transporto ir jo aptarnavimo paslaugos, garantijos ir trys verslo paslaugų šakos bei nuotekų ir šiukšlių tvarkymo paslaugos. Išsamesnis šių paminėtų veiklų tyrimas patvirtina aukštą Airijos ekonomikos tertiarizacijos ir internacionalizacijos lygį, priešingą Latvijos ir ypač Lietuvos padėčiai.

Kiekvienos dešimtuke esančios veiklos analizė parodo, kad dažniausiai šakos, kuriose yra aukščiausias tertiarizacijos lygis, taip pat turi aukščiausius internacionalizacijos laipsnius. Tai gali reiškti, kad didesnis ekonominis atvirumas yra tiesiogiai susijęs su aukštesniais gamybinių sistemų tertiarizacijos lygiais. Tačiau norint atsakyti į šį klausimą, kaip vieną iš būsimų tyrimų, reikėtų atlikti išsamesnę ryšių tarp veiklos tertiarizacijos ir internacionalizacijos laipsnio ir ekonomikų atvirumo laipsnių analizę.

Ketvirtajame skyriuje, kuriame pateikta empirinė dalis, iš atliktos analizės gautų rezultatų aiškėja, kad nėra ryšio tarp šalių specializavimosi tam tikroje veikloje ir tertiarizacijos įvairiose gamybos sistemose. Tik labiausiai tertiarizuotais veiklos atvejais yra tiesioginis ryšys tarp aukštesnio tertiarizacijos lygio ir tos veiklos, kuri išreikšta bendrosios pridėtinės vertės terminais. Norint šalims pasiekti ddesnį konkurencingumo laipsnį, tikriausiai būtina, kad paslaugos, naudojamos kaip tarpinės sąnaudos (ypač naujų ES šalių narių atveju), pasiektų tam tikrą lygį.

Jeigu kalbėtume apie Europos regioninę politiką, teigiant, kad ryšys yra pasiektas daugiausia regioniniu mastu, būtų įdomu atlikti panašią analizę visiems ES regionams.Tačiau žinant, kad jau yra pateiktos sąnaudų ir produkcijos lentelės, kurias gali matyti daugelis tirtų šalių 8 – 10 metų laikotarpiu, tertiarizacijos proceso plėtros analizė būtų naudinga apskritai kalbant apie paslaugų sektorių.

Raktažodžiai: *Europos Sąjunga, sąnaudų ir produkcijos analizė, gamybinės sistemos, paslaugos, tertiarizacija.*

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