

Services sectors' concentration and countries' specialization patterns in the European Union: A comparative analysis with a special focus on France, Germany, Greece, and the UK

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Abstract

We investigate services sectors' concentration and specialization patterns across the European member countries. Concentration and specialization are measured by Balassa indices, which in turn are constructed with employment data. In general, the tendency for the health and social sector is to concentrate employment in the Northern European countries, the financial sector is to concentrate in the UK, Ireland and Germany and the tourism sector is to concentrate in Spain, Portugal and Greece. Specialization tendencies are set in relation to a sector's exporting activity and value added, and the quality of specialization for the economies is assessed.

Keywords: Concentration , Specialization, Services, European Union, Competitiveness

JEL-Code: F14, F15

1. Introduction

The field of New Economic Geography, originally elaborated by Paul Krugman with his seminal work in 1991, has seen a great development in the past. Various empirical studies emerged that focused on disentangling the determinants and dynamic structures of particularly industrial agglomeration in various countries.

Given the process of worldwide globalization and in particular European liberalization, special interest also refers

to the developments for services sectors. Recent literature found that in the EU services show a slightly increasing trend in concentration between countries and a strong degree of deconcentration across regions (Oros and Turcu 2008). The same features apply for the analysis of countries' and regions' degree of specialization (Turcu 2009). The authors argue that services' deconcentration tendencies are quite understandable due to the need for territorial coverage. Another, still rare, strand of literature focused on finding the determinants of particularly services sectors' concentration (Krenz 2013 for the EU, Kolko 2010 for the US). Evidence is found especially for the importance of knowledge spillovers in explaining services sectors' concentration.

In this study we investigate concentration patterns of services sectors across the European Union's member states. We approach this issue from two angles. One of them is the matter of concentration, focusing on a sector's geographical localization. The other one is specialization, drawing attention to a country and figuring out the country's industrial structure. We draw special attention in our analysis to three European core countries, i.e. France, Germany and the UK and to a Southern European country, which is Greece. Moreover, we investigate export and value added structures and interpret the specialization patterns in terms of their quality for competitiveness. We will employ a cross-country analysis since more detailed sectoral as well as regional time series are still not available in the common NUTS-level data sets. Our analysis focuses on the sectoral distribution of services' employment activity across EU countries. This type of analysis allows us to gain interesting insights into European member countries' economic activities and their success in terms of generating export revenues.

2. Empirical Analysis

2.1 Measuring Services' Concentration and Countries' Specialization

Concentration and Specialization patterns are assessed by Balassa indices. These indices allow for both a sectoral and regional investigation of concentration and specialization in contrast to the analysis of Gini coefficients which are often used in the New Economic Geography literature (Amiti 1998, 1999; Krugman 1991). Analysis by Gini coefficients can only consider either the sectoral or the regional dimension which is due to the cumulation over either regions or sectors, respectively. The Balassa indices are constructed as follows:

$$B_{sc,t} = \frac{\frac{e_{sc,t}}{E_t}}{\frac{e_{s,t}}{E_{c,t}}} \quad (1)$$

$e_{sc,t}$ denotes services sector s ' employment in country c , $e_{c,t}$ denotes total services sectors' employment in country c , $e_{s,t}$ denotes total services sector s ' employment in the European Union, and E_t denotes total services sectors' employment in the European Union. By using this formula, Balassa indices were calculated for each year. If the Balassa index has a value bigger than one, concentration will be high, the sector's employment share would exceed the country's employment share.

In chapter 2.4, a closer look is taken at the level of specialization for the economies of France, Germany, Greece and the UK, again evaluated by using Balassa indices. For this part of the analysis, however, a slightly different measurement for the Balassa index is taken which is given by the following formula:

$$B_{sc,t} = \frac{\frac{e_{sc,t}}{E_t}}{\frac{e_{st}}{E_t}} \quad . \quad (2)$$

Here, the employment in a given sector s in country c is considered as a share of country c 's total employment and set in relation to the services sector s ' employment share in the whole EU.

2.2 Data

The data are taken from EU KLEMS (2008). EU KLEMS is a data collection project funded by the European Commission and supported by several national research institutions and the OECD. We extract employment data, namely the *number of persons engaged* (in thousands). We cover 14 countries, 13 services sectors and the period from 1970 to 2005. The sectoral data apply to the OECD ISIS Rev. 3 classification. The countries included in the analysis are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, UK. A further disaggregation of countries or services sectors was prevented by lack of data.

2.3 Regional patterns of services sectors' concentration

In table 1 we list the qualitative results of the calculation of Balassa indices for the different services sectors across the European member states. Concentration tendencies — measured with Gini coefficients— of services sectors are given in greater detail in Krenz (2013). Only the three countries that bear either the highest or lowest Balassa index for a given services sector are displayed in the table.

Table 1: Services sectors' concentration evaluated by the Balassa index

	<i>Highest Balassa index</i>		<i>Lowest Balassa index</i>	
	<i>1970</i>	<i>2005</i>	<i>1970</i>	<i>2005</i>
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel	Denmark Portugal Italy	Portugal Greece Italy	Sweden Spain France	Belgium Netherlands Sweden
Wholesale trade and commission trade, except of motor vehicles and motorcycles	Portugal Netherlands Belgium	Portugal Denmark Austria	Greece Spain UK	Greece UK Ireland
Retail trade, except of motor vehicles and motorcycles; repair of household goods	Ireland Spain UK	Greece Portugal Spain	Sweden Netherlands France	Sweden Belgium Finland
Hotels and restaurants	Portugal Austria Greece	Greece Spain Portugal	Netherlands Sweden Denmark	Sweden Denmark Belgium
Transport and storage	Greece Finland Spain	Greece Finland Austria	Netherlands France Italy	UK Portugal Netherlands
Post and telecommunications	Ireland Austria Belgium	Ireland Finland Belgium	Spain Portugal Netherlands	Portugal Italy Netherlands
Financial intermediation	Germany Belgium Netherlands	Ireland UK Germany	Sweden Italy Ireland	Finland Portugal Sweden
Real estate activities	Finland Portugal Austria	Finland Sweden Austria	Greece Italy Ireland	Greece Italy Portugal
Renting of machinery and equipment, research and development and other business activities	Netherlands France UK	Netherlands Belgium UK	Portugal Finland Spain	Portugal Greece Spain
Public admin and defense; compulsory social security	Germany Belgium France	Belgium Portugal France	Denmark Spain Finland	UK Netherlands Sweden
Education	Sweden Belgium Ireland	Sweden Greece France	Spain Netherlands Germany	Netherlands Spain Austria
Health and social work	Sweden Finland Denmark	Denmark Sweden Finland	Spain Belgium Greece	Greece Spain Portugal
Other community,	Italy	Ireland	Portugal	Belgium

social and personal services	Sweden Ireland	Sweden UK	Belgium France	Portugal France
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Source: Own calculations based on EU KLEMS data (2008).

Note: The three countries with either highest or lowest Balassa index for a services sector for the years 1970 and 2005 are displayed in this table.

Taking a closer look at Greece, for example, one can see that in the year 2005 transport and storage activities, hotels and restaurants, retail trade, and sale of motor vehicles were highly concentrated. In other words, a large share of Greek employees in services sectors was working in services related to tourism, for example, compared to the employment share of Greece within total EU employment. These tendencies can be explained by the Greek history and the Greek landscape. Tourism has been important for Greece since ages, since people want to go and see the Greek cultural heritage from the ancient times and enjoy the great landscape, respectively. Furthermore, Greece owns the highest share of the world merchant fleet. It amounts to 15.96 percent of the world fleet's tonnage (UNCTAD 2010). In addition, the high Balassa Index for education has to be interpreted as Greece having a higher services' employment share in that branch than its employment share in total EU employment. Overall, the public sector is a large employer of services. Mitsopoulos and Pelagidis (2011) highlight that government spending was related to changing governments over time. Whereas from 1991 to 2004 primary expenses of the central government were held around 13.7 - 15.6 percent of GDP, from 2004 until 2009 the new government increased expenditures to 20.5 percent of GDP. The absolute value thus increased enormously since GDP grew rapidly over time. The authors explain that the significant increase in government spending was due to wages that had to be paid given that the staff increased in the

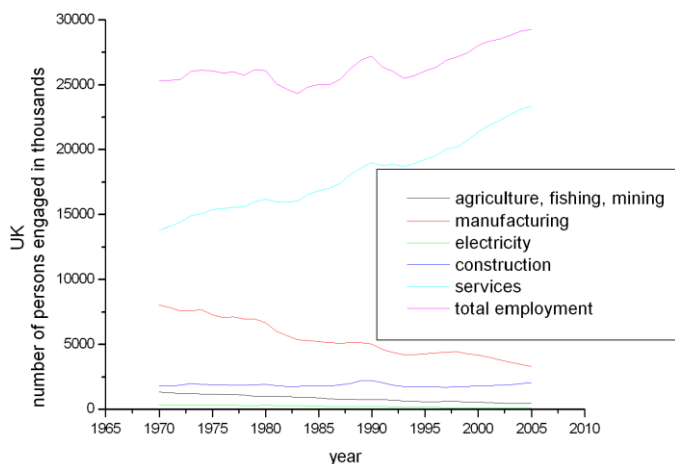
public sector over time and because of the needs of social security funds for the public sector employees' pensions.

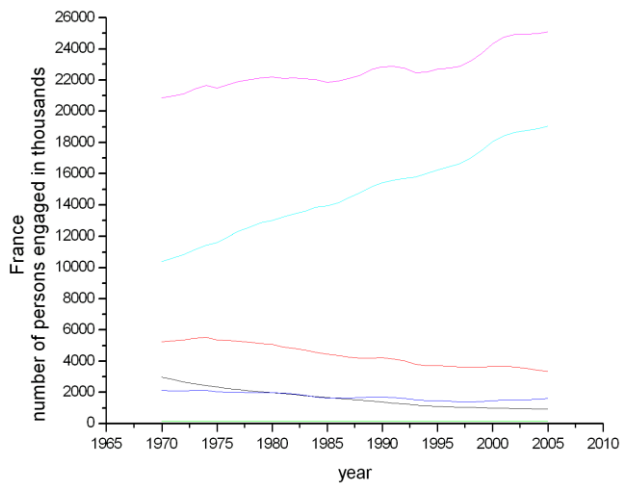
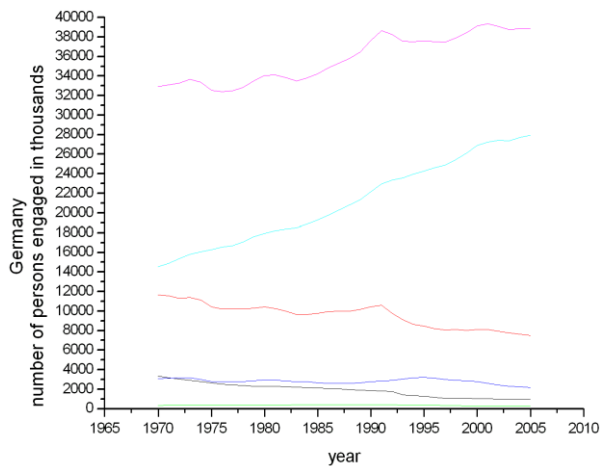
In the EU, the financial services are mostly concentrated in Ireland, UK and Germany. Before the beginning of the financial crisis, the financial sector of the UK was functioning very well. In its staff report, the IMF (2007) talks about a steady rise of net exports of financial services of UK from 1995 to 2005 from 10 billions US Dollars to about 35 billions with an especially sharp increase from 2003 to 2005. At that time, the financial services from the UK flourished, the system was said to be open and flexible to capital flows and "in a position of strength" (IMF 2007, p. 26).

Health and social work and other community, social and personal services are mostly localized in the Northern European countries like Denmark, Sweden, Finland, Ireland and the UK. This demonstrates the fact that the Northern European countries (Denmark, Finland and Sweden) possess big social welfare systems, employing a huge workforce. Andersen et al. (2007) talk about the "Nordic Model" as a special economic and social system being existent for the Northern European countries Denmark, Finland, Iceland, Norway and Sweden. These countries would be comprehensive welfare states with transfers to households and publicly provided social services, high public and private spending for child care, education, and research and development, and good labor market institutions, which comprise strong labor unions, good wage coordination, generous unemployment benefits and active labor market policies. As can be seen, the highest share of services' employment working in educational services is in fact given in Sweden.

2.4 Taking a closer look at specialization patterns for the French, German, Greek, and British Economy

The following graphs demonstrate the relevance of services for the economies of France, Germany, Greece and the UK. Services' employment increased the most among all sectors over the years between 1970 and 2005 in these countries.





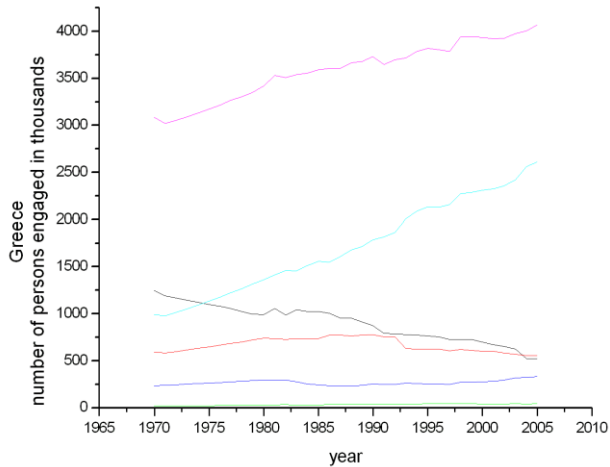


Figure 1: Employment structure of France, Germany, Greece and the UK

Source: Employment data from EU KLEMS 2008, own graphics.

As regards countries' specialization tendencies measured by employment data, the following table displays countries' specialization across services sectors for the four countries we will particularly address in our analysis.

With a Balassa index value of 1.55, most of the Greeks employed in services work in the branch of hotels and restaurants. The Balassa index is also high for (in descending order): transport and storage, retail trade, sale of motor vehicles, public administration and education. These facts correspond to results from table 1. One can learn that Greek employment is also explicitly high in the branch of public administration, indicating the high number of employees in the public sector.

Table 2: Balassa index for countries' specialization in the year 2005

	<i>Balassa index France</i>	<i>Balassa index Germany</i>	<i>Balassa index UK</i>	<i>Balassa index Greece</i>
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of fuel	0.86	1.09	0.94	1.34
Wholesale trade and commission trade, except of motor vehicles and motorcycles	0.91	0.94	0.88	0.68
Retail trade, except of motor vehicles and motorcycles, repair of household goods	0.83	1.03	1.12	1.39
Hotels and restaurants	0.72	0.92	1.13	1.55
Transport and storage	0.99	0.97	0.9	1.48
Post and telecommunications	1.19	0.91	1.12	0.97
Financial intermediation	0.99	1.1	1.14	0.94
Real estate activities	0.98	1.12	1.31	0.08
Renting of machinery and equipment, research and development and other business activities	1.09	1.02	1.12	0.68
Public admin and defense; compulsory social security	1.29	1.03	0.71	1.25
Education	1.13	0.88	1.1	1.18
Health and social work	1.13	1.07	0.99	0.58
Other community, social and personal services	0.84	1.12	1.14	0.86

Source: Own calculations based on EU KLEMS data (2008).

Note: In the table the Balassa indices for France, Germany, Greece, and the UK in 2005 are shown. The grey-colored boxes indicate the three highest levels of Balassa indices for a given country.

Germany and the UK have comparatively high shares of employment in financial intermediation, real estate activities and other community, social and personal services. France has comparatively high shares of employment in post and telecommunications, public administration and defense,

compulsory social security, education and health and social work.

All in all, the levels of specialization across services sectors are more equal among France, Germany and the UK, whereas in Greece there are huge differences, ranging from a Balassa index value of 0.08 for real estate activities up to an index of 1.55 for hotels and restaurants services, respectively. Consequently, we can state that Greece heavily specializes in particular services, only, whereas the three European core countries do not specialize that much.

2.4 The Exports and Value Added Structures

We take a look at data on exports for the mid 2000s and value added for 2005 for the selected countries France, Germany, Greece and the UK. With regard to exports, OECD Input-Output data from the Stan database were extracted. EU KLEMS does not provide export data. This also meant a slight reduction in services sectors since the wholesale, sale and retail trade sectors were grouped together in the OECD Stan data. Value added data were taken from the EU KLEMS database. The data can be found in table 3 in the appendix. Some of the export values were missing though, as is indicated in the table.

Data on value added and exports reveal that for Greece the sector of hotels and restaurants --the branch that Greece mostly specialized in-- does not attract a lot of export revenues. The share of total value added in this sector is higher for Greece (value of 0.117) than it is for France, Germany and the UK. In contrast, the share of total value added is higher for the branch of business services for the European core countries compared to Greece. The core countries also gain high export revenues from these services' activities.

3. Conclusions

The present contribution investigated concentration patterns of services sectors and specialization tendencies across the European Union's member states. We find that the Northern countries are especially specialized in health and social services, whereas the UK, Germany and Ireland are specialized in financial services and Spain, Portugal and Greece are specialized in tourism.

We show that Greece, which is highly specialized in the services of hotels and restaurants, generates a four times higher value added in that sector than the core European countries France, Germany, and UK do. However, Greece's revenues from exports are comparatively low in that sector. The analysis further showed that in contrast to Greece, the core European countries generate a higher share of value added from the business services, a branch they also attract high export revenues from.

Given the fact that Greece generates the third highest value of export revenues from the sector of other business services, exploiting the competitiveness would suggest a move of specialization and thus higher employment towards the sector of other business services.

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Appendix

Table 3: Competitiveness Structure—Exports and value added for 2005/ the mid 2000s

	<i>France</i>			<i>Germany</i>			<i>UK</i>			<i>Greece</i>		
	VA	VA share in total	Exports	VA	VA share in total	Exports	VA	VA share in total	Exports	VA	VA share in total	Exports
Wholesale and retail trade, repairs	161729	0,137	41577	209560	0,148	54711	129750	0,16	42045	22485	0,189	4559
Hotels and restaurants	35456	0,03	--	32780	0,023	5228	31986	0,039	11829	13901	0,117	342
Transport and storage	64576	0,055	41035	74830	0,053	43717	49771	0,061	30910	10015	0,084	17894
Post and telecommunications	34047	0,029	3493	40800	0,029	3835	30511	0,038	8162	5112	0,043	469
Financial intermediation	76009	0,065	7979	101300	0,072	8821	84517	0,104	52328	8861	0,074	376
Real estate activities	207638	0,176	--	242380	0,171	1105	81868	0,101	693	19268	0,162	--
Renting of machinery and equipment	11871	0,01	--	38020	0,027	--	11011	0,014	1045	678	0,006	44
Computer and related activities	38630	0,033	1968	31610	0,022	9983	31215	0,038	11330	489	0,004	179
Research and development	13869	0,012	4220	7200	0,005	6076	4528	0,006	6490	181	0,002	99
Other Business Activities	144910	0,123	23330	180900	0,128	25475	107139	0,132	54495	4026	0,034	819
Public admin and defense; compulsory social security	117662	0,1	630	121540	0,086	1184	53584	0,066	1933	12075	0,101	145
Education	84428	0,072	75	91550	0,065	42	62123	0,076	3380	7136	0,06	39
Health and social work	130282	0,111	1055	146290	0,103	84	81016	0,1	366	9603	0,081	62
Other community, social and personal services	56018	0,048	3170	96270	0,068	2332	53157	0,065	14744	5339	0,045	194

Source: Export data from OECD Stan In- and Output Table, table: “total, domestic and imports”, period mid 2000s, in US Dollar, millions; and EU KLEMS for value added data, 2005, euros in millions.