

EMPLOYMENT BY SECTOR IN THE EUROPEAN UNION, THE UNITED STATES, MEXICO AND CANADA, 1985-2005

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Abstract

We present a comparison of the rates of employment by sector in 15 European countries, and 3 Northern American countries. We find that EU15 average rate of employment in Services and total is below the United States and Canada, and relate this fact with the level of industrial development and other factors. The main conclusion is that although industrial development is the main cause of relatively low levels of real value-added and employment rates in countries such as Spain, Mexico, Greece and Portugal, there are other EU countries with higher level of industrial development, which show a rate of employment in services below their capacity, such as in the cases of France and Germany, which may be due to rigidities in taxes and rules. The most outstanding EU countries reaching both a high rate of employment and average wage above EU mean are the United Kingdom and 7 smaller countries: Austria, Denmark, Finland, Ireland, Luxembourg, Netherlands, and Sweden

JEL classification: J00, L6, L7, L8, L9, O5, O51, O52

Keywords: Employment by sector, EU15, Europe, NAFTA, Labour markets, OECD countries

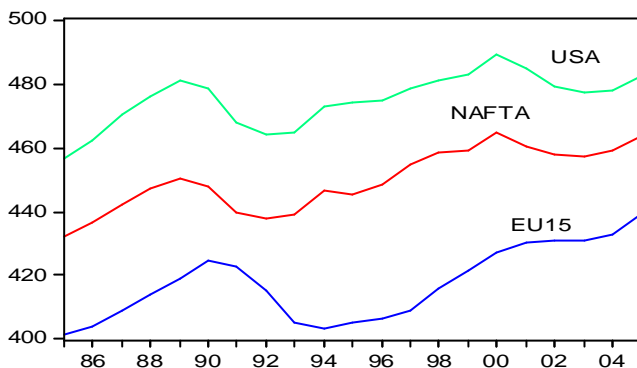
1. Employment by sector: Agriculture, Industry and Services

Graph 1 shows the evolution the rate of total employment (employments per one thousand people) in EU15 (including the 15 countries which belonged to the European Union before 2004), the USA and the 3 countries of NAFTA (Canada, Mexico and the USA). Graph 2 shows the evolution of total employment and graph 3 corresponds to the evolution of unemployment. Data have been elaborated from OECD Labour Force Statistics and some

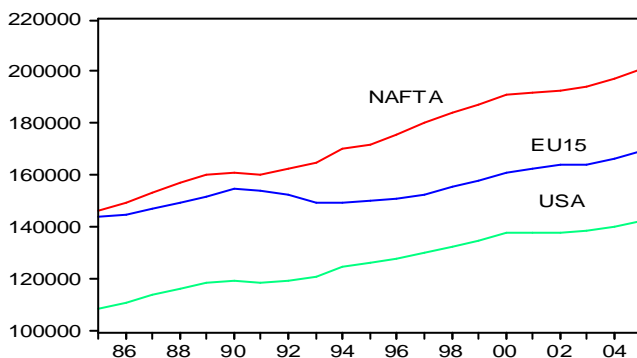
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complementary sources, for non available data, as explained in the Annex. Data for years 2004 and 2005 are provisional estimations.

Graph 1. Rate of total employment, 1985-2005
(number of employments per one thousand inhabitants)

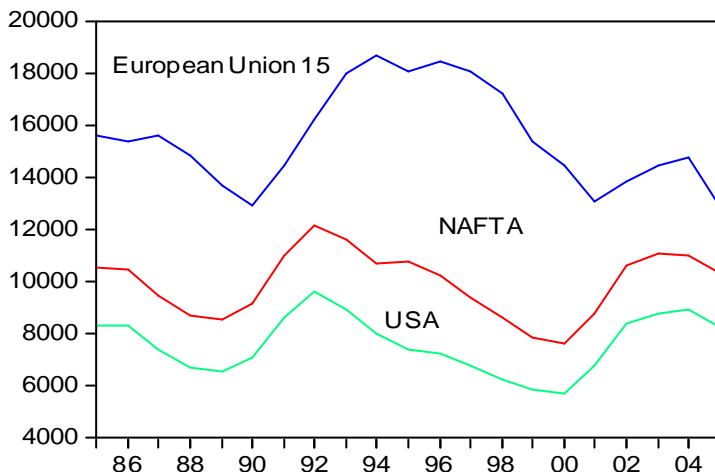


Graph 2. Total Employment, 1985-2005 (thousands)



We can notice that the USA has the top rates of employment and that NAFTA has reached higher rates than the European Union during all the period 1985-2005. Employment in NAFTA has increased more than in the European Union during the period 1985-2005. In percentage total employment has increased for this period by 12.64% in EU15, 13.22% in the United States and 16.74% in NAFTA.

Graph 3. Unemployment (thousands)



Unemployment takes higher values in the European Union, although in year 2005 the differences between EU15 and NAFTA are relatively small in comparison with the previous situation. In any case, more than 10 million of unemployed in NAFTA and more than 12 million in EU15 is high enough to insist upon the convenience to develop employment policies to achieve a better situation in the labor market.

Tables 1 to 3 show the rates of employment per one thousand inhabitants by sector in the 18 countries of this study. We consider the following sectors: Agriculture (including farm activities as well as fisheries and forestry), Industry (including Manufacturing, Energy and Building), and Services.

In 2005 the rates of agrarian employment are very low the United States, Canada and EU15 as a whole. The highest rates correspond to Greece (55), Portugal (58) and Mexico(59), although a negative trend of this rates is clear also in these three countries. As seen in Guisan and Exposito(2000) the effects of the increase in real value-added of non agrarian activities has the effect of diminution of

employment in Agriculture in order to improve the levels of productivity and income per worker in this sector. It is expected that this will happen in those countries as well.

Table 1. Rates of Employment in Agriculture
(number of employed per one thousand inhabitants)

Country	1985	1990	1995	2000	2005
Austria	39	35	35	27	26
Belgium	11	10	9	8	10
Denmark	33	29	22	17	15
Finland	57	45	33	27	22
France	29	22	18	16	13
Germany	24	20	14	12	10
Greece	104	87	75	68	55
Ireland	50	50	41	34	28
Italy	41	33	23	19	16
Luxembourg	19	16	10	11	9
Netherlands	17	19	16	16	14
Portugal	97	84	51	62	58
Spain	51	38	28	25	22
Sweden	25	18	14	11	10
UK	10	10	9	7	6
EU15	33	27	20	18	16
Canada	22	20	19	16	14
Mexico	102	93	84	68	59
USA	14	14	13	13	11
NAFTA	34	32	30	26	23

Note: Agriculture includes farm activities, fisheries and forestry.

Source: Elaboration from OECD LFS and other sources.

The rate of employment in Industry is higher in EU15 than in the United States, although real value-added per inhabitant in Industry is higher in the USA. This difference may be due to higher levels of productivity in the USA and/or to the effects of outsourcing several auxiliary activities which seems to happen more in the USA than in the European Union.

Both EU15 and NAFTA show a decreasing rate of employment in industry have during the period 1985-2005, from 137 to 116 in the European Union and from 116 to 98 in the case of NAFTA, but this should lead to the conclusion that industry has not an important impact on employment, because it has been proved in several studies, like in Guisan and Cancelo(2005) that Industry has an important indirect effect on the creation of employment in Services.

Table 2. Rates of Employment in Industry
(number of employed per one thousand inhabitants)

Country	1985	1990	1995	2000	2005
Austria	163	163	151	143	128
Belgium	108	106	97	93	88
Denmark	139	141	135	133	121
Finland	159	152	112	124	118
France	122	115	100	97	93
Germany	187	188	159	148	132
Greece	99	102	85	81	89
Ireland	88	94	100	125	127
Italy	122	121	118	117	121
Luxembourg	147	152	144	139	144
Netherlands	99	110	100	104	97
Portugal	138	162	141	170	149
Spain	88	112	96	118	127
Sweden	154	153	117	115	104
UK	149	151	122	120	112
EU15	137	140	122	122	116
Canada	115	115	100	110	112
Mexico	84	79	79	104	100
USA	126	125	113	112	95
NAFTA	116	113	104	110	98

Note: Here Industry includes Building, Manufacturing and Energy.
Source: Elaboration from OECD LFS and other sources.
Provisional estimations for some countries in year 2005.

Some countries have experiences an important increase in the rate of employment in industry as a consequence of a high increase in

industrial production, like in the case of Ireland. Other EU countries, like Germany, have at the same time a high rate of employment and a high level of productivity per worker in Industry, but other countries, like Portugal, have a high rate of employment in spite of a low level of production per inhabitant in this sector, and as a consequence both wages and productivity are low.

Table 3. Rates of Employment in Services
(number of employed per one thousand inhabitants)

Country	1985	1990	1995	2000	2005
Austria	226	244	283	297	310
Belgium	238	258	261	282	291
Denmark	321	344	335	354	363
Finland	279	303	264	298	316
France	231	252	262	290	283
Germany	227	255	265	281	289
Greece	158	177	206	216	252
Ireland	171	184	212	278	308
Italy	200	220	205	225	251
Luxembourg	270	327	368	456	535
Netherlands	235	290	326	367	373
Portugal	171	224	245	257	277
Spain	145	181	193	234	274
Sweden	336	353	320	342	357
UK	270	307	315	345	371
EU15	222	251	258	283	300
Canada	311	336	337	360	380
Mexico	146	172	206	216	247
USA	309	337	343	361	371
NAFTA	273	299	310	326	342

Source: Elaboration from OECD LFS and other sources.
Provisional estimations for some countries in year 2005.

Employment rate of Industry in Mexico is over the USA rate, in spite of a much lower level of production per inhabitant in Mexico. It is explained by the low levels of productivity of Mexico in comparison

with the United States. It is interesting for Mexico to increase productivity and real wages without diminution of the employment rate in this sector, in order to reach some degree of convergence towards the income levels per inhabitant of richest countries. Productivity is lower in Mexico because capital stock per worker is also lower. More investment in the case of Mexico could increase production and wages in industrial activities without diminution of the rate of employment.

Table 4. Total rates of employment
(per one thousand inhabitants)

Country	1985	1990	1995	2000	2005
Austria	428	441	473	472	469
Belgium	366	383	371	387	393
Denmark	499	520	497	510	504
Finland	503	506	416	455	463
France	388	399	387	409	412
Germany	457	468	443	444	441
Greece	361	366	366	365	395
Ireland	314	331	356	440	464
Italy	373	384	353	368	393
Luxembourg	439	497	522	604	688
Netherlands	357	425	445	490	487
Portugal	412	477	440	493	488
Spain	294	339	322	382	426
Sweden	515	521	452	469	471
UK	431	471	449	474	491
EU15	402	425	405	427	439
Canada	451	475	457	488	507
Mexico	347	347	358	388	396
USA	456	478	474	489	482
NAFTA	432	448	446	465	463

Note: In Luxembourg the high rate is due to the effect of workers from neighbouring countries. Source: Elaboration from OECD and other sources. Provisional estimations in some countries in year 2005.

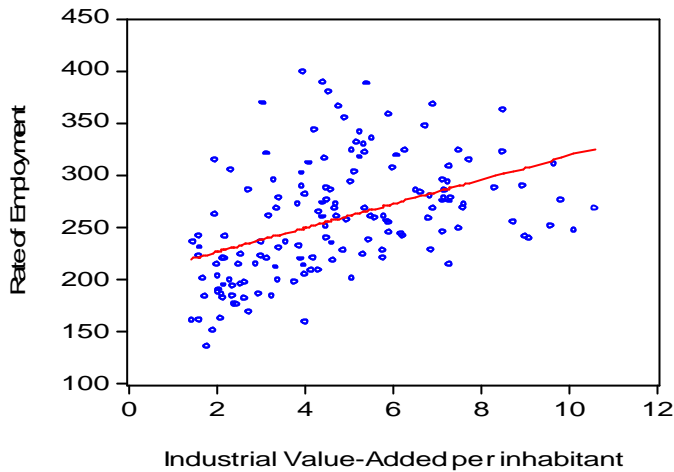
Countries with high values of industrial production per inhabitant have capability to reach very high rates of employment in the Services sector, above 300 employments per one thousand people. The high value of this rate in a small country like Luxembourg is likely due to the high number of workers from neighboring countries who are included in the statistics as laborers but not as inhabitants. Nevertheless, some countries with a good level of industrial production per inhabitant have relatively low rates of employment in services, like in the cases of Belgium, France and Germany, clearly below their capability. Policies to foster development of Services in those countries are relatively easy to implement, lowering rigidities related with high taxes and social security contributions and other measures. Other countries, like Greece, Spain, Portugal and Mexico, need a higher development in industry in order to increase their capability to increase employment and income per worker in Services. Italy is in a better situation in comparison with this group but below the more industrialized countries of this study.

EU15 total rate of employment in table 4 is below the rates of Canada and the USA. The top values of EU countries compatible with an average wage above EU mean, correspond to Austria (463), Denmark (504), Finland (463), Ireland (464), Luxembourg (between 460 and 500 if the effect of commuters living in other countries is excluded), Netherlands (487), Sweden (471) and the United Kingdom (491). On the other hand Portugal for 1995-2005 reached high rates of employment but low wages in comparison with EU. Both for increasing real wages and employment rates it is important the role of human capital, industry and other factors.

2. Impact of industrial production on employment in Services.

Graph 4 shows the positive relationship between real Value-Added per inhabitant in Industry and the rate of employment in Services, with data of 151 regions of EU25 in year 2000. Although other variables, such tourism, have a positive impact on the rate of employment in Services, the main impact is generally the positive effect of industrial production on non-industrial Value-Added.

Graph 4. Rate of employment in Services and industrial development in 151 regions of EU25 countries, year 2000



Note: Industrial Value-Added in thousand Euros per year at Purchasing Power Parities (PPPs), Rate of Employment in number of employed per one thousand inhabitants. Source: own elaboration from Eurostat Data.

As seen in Guisan, Aguayo and Carballas(2004), Guisan(2006), Guisan and Cancelo(2006) and other studies, there is an important positive impact of manufacturing development on non industrial employment particularly in Services. Other variables which show a positive impact on the development of services are tourism, public sectors activities and the capacity of a country to import intermediate inputs which are necessary for the development of the real value-added of Services.

3. Disaggregate Employment by sector in Industry and Services

Table 5 presents rates of employment in Industry and Building, at a more disaggregate level, for the 12 countries belonging to the former European Economic Community (EEC) and the United States in year 1990, with Industry and Building split into 5 sectors: Energy (E), Manufacturing of chemicals and intermediate goods (including Non-Energy Mining) (Q), Manufacturing of machinery and capital

goods (K), Manufacturing of consumption goods (C) (including food, textiles, wood, paper, plastics and other goods), and Building.

Table 5. Employment by sector in Industry and Building, year 1990

Country	Energy (E)	Manufacturing (M)				Industry and Building		
		Q	K	C	Total	E+M	Building	Total
Belgium	4	16	26	33	75	79	25	104
Denmark	4	10	43	48	101	104	33	137
France	4	12	35	34	81	85	29	114
Germany	7	18	73	46	138	145	31	176
Greece	4	11	12	50	72	77	25	102
Ireland	4	11	23	33	66	71	21	92
Italy	3	14	32	43	89	93	28	121
Luxembourg	3	45	21	34	100	103	50	153
Netherlands	4	11	25	29	64	68	26	94
Portugal	4	18	25	73	116	120	39	159
Spain	4	11	24	38	72	76	32	108
UK	8	13	43	40	96	105	37	142
EEC-12	5	14	40	41	95	100	31	131
USA	6	15	37	36	88	94	31	125

Note: Own elaboration from OECD LFS and National Accounts Statistics. M represents Manufacturing =Q+K+C. E+M is Industry without Building. Data for Germany is an estimation of the unified country.

We may notice important differences among European countries but similar rates of EEC-12 as a whole and the United States. Comparisons of Building activities are particularly sensitive to the year selected for the comparisons because the rates of activity in this sectors usually fluctuates more than in other sectors.

Graphs 5 and 6 show the evolution of the rates of employment in Industry (excluding Building) and Building separately in some countries of this study. We notice that the increases in productivity imply very often a diminution of industrial employment, in spite of an increase in real value-added of industrial activities. Industrial production has usually a more important role to increase employment in services as shown in graph 4 above.

Graphs 5 and 6. Rates of Employment Industry and Building

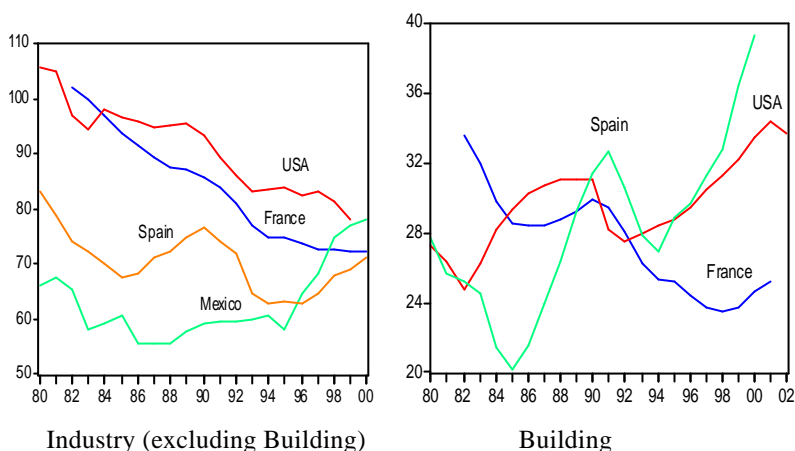


Table 6. Employment by sector in Services, year 1990

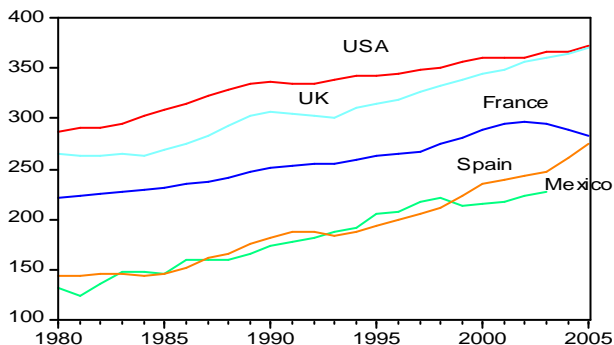
	Transport	Trade	Other Market	Total Market	Total Non-market	Total Services
Belgium	24	73	84	181	83	264
Denmark	35	71	71	177	157	335
France	23	70	67	160	99	259
Germany	24	81	66	171	88	259
Greece	20	57	57	135	56	191
Ireland	18	60	27	104	79	182
Italy	26	86	59	171	74	245
Luxembourg	34	105	121	261	68	329
Netherlands	27	69	89	186	51	237
Portugal	18	83	33	134	88	222
Spain	18	74	36	129	62	191
UK	27	102	103	232	92	315
EEC-12	24	81	68	173	83	255
USA	19	105	143	267	72	339

Note: Total Market is the sum of the 3 first columns. Last column is the sum of Market and Non-Market services.

Table 6 shows the rate of employment in Services split into several sectors: Transport (including communications, Trade (including restaurants, hotels and repairs besides commercial activities), Other

Market Services (education, health and social services not provided by government, and financial and business services), Non-Market Services (Government services of administration, education and health and other non-market services). Several differences may be found between European countries and the United States, regarding the rates of employment in Services: 1) The lower rate of the USA in Non-Market services is not due to a low endowment of social services (health, education and other social services) but to the fact that those social sectors are mainly provided by private enterprises or institutions and other included in the sector “Other Market”. In fact the USA has a much higher rate of social services employment, with 140 employments per one thousand inhabitants in that sector in year 1990, which is clearly above the values of 75 in Spain and 123 in Germany in the same year. Employment in services has increased a lot in the United States during the period 1990-2000: Transport for 4.8 million people to 7.6, Trade from 26.2 million people to 36.8, Financial and Business services from 16.8 to 25.1 million, Social and personal services (including education and health) from 18.2 to 34.9. Graph 7 shows the evolution of the rate of employment in Services in several countries of this study. Se notice that the general trend is upwards, although in the case of France it is noticed and stagnation and downwards movement at the end of the period. The United States and the United Kingdom are at the top.

Graph 7. Rates of Employment in Services



5. Conclusions

This study has shown the evolution and comparison among countries of the rates of employment by sector of production in EU15 and NAFTA. We have analyzed the important role of industrial development on real value-added and employment in services. We find that some countries such as Greece, Portugal, Spain and Mexico need to improve their levels of industrial production in order to foster the increase of real value-added in Services. Other countries, such as France and Germany, with a relatively high level of industrial production per inhabitant show potential capacity to increase employment and real value-added in Services if they remove some rigidities related with taxes and rules which are an obstacle to the expansion of employment. EU labour policies should be more clearly debated, not only by politicians but also by economics researchers and socio-economic experts.

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