AN INTERREGIONAL ECONOMETRIC MODEL FOR MARKET SERVICES EMPLOYMENT IN 120 EUROPEAN REGIONS

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Abstract

We present a complete set of data of employment and value-added at 6 sectors classification, calculated having into account OECD National Accounts, regional data from Eurostat and our own estimations when necessary for former EEC12 countries, for the years. We fit and analyze an interregional econometric model for market services employment in 120 EEC regions in the year 1985 and compare its results with another models estimated for the period 1985-98. Our main conclusion is that value-added in industry and non-market sectors are the most important explanatory variables with positive impact on the increase of value-added and employment of the market services sector, and thus we think that European Union should try to help the increase of these factors in the regions under average. This recommendation is specially interesting before the forthcoming expansions of European Union after 2002.
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1.- INTRODUCTION

Market services is undoubtedly one of the most important economic sectors for generating employment. In a modern economy like that of present advanced industrial countries redundant labour from agriculture and industry seeks work in market and non-market services and, to a lesser extent, in construction.

This paper tries to explain the more influential factors at work in explaining market services employment in EEC countries at regional level, by means of a cross-sectional econometric model that has taken into account some existing interdependence between labour and production.

Data sources are Eurostat and the National Statistical Institutes of each country. Data are from year 1985 (one of the few years with statistical information to carry out this research), and include 120 regions of 12 EEC countries. The number of regions considered in each country is a compromise between area size and population, and it is unavoidably limited, in some cases, by the availability of statistical data. This is specially true in the case of the UK as Eurostat only reports data at very aggregate area level for almost all the variables.

The main purpose of this paper is to underline the fact that the process of European union needs a more realistic policy of employment to be successful. This new policy would imply more attention to the regional level in order to increase the rates of non-agrarian employment (RENA) in the cases where it is low. This rate (number of non-agrarian jobs per thousand inhabitants) varies widely between regions (also between countries) and is the main factor in explaining economic differences and migration movements.

The European Union needs to have a better employment policy in the future in order to achieve several objectives:

1) To increase the general level of RENA, which is at present lower than that of other OECD countries such as the US and Japan. This general increase is necessary to reduce the present high unemployment rate (Eurostat reports a rate of 11% of active population in April 1994), which is higher than that of the rates in US (5%) and Japan (2%).

2) More important perhaps than to increase the general level of RENA is to fight against regional disparities, in order to raise the low levels of several regions. It seems desirable to avoid strong migrational movements from the poorest regions to the richest ones, as an excess of these movements usually provokes social problems in both sides. Gradual and moderate migration movements are, on the other hand, very healthy for the European social union as they tend to improve human and cultural relations.

3) A new employment policy is necessary if the European Union wants to face successfully the challenges of the new GATT conditions of international trade and it is also essential to implement a policy of economic and social help for the non-union European countries. The new policy must tend to raise the level of non-agrarian employment of the regions with low RENA. This policy will diminish differences in regional per capita income and will reduce strong migration movements.

The conclusions of this research are, in our view, important in designing an effective employment policy at a regional level in order to increase the low RENA of many European regions, and also in order to increase the general level of RENA in European countries.

In section 2 we present a general view of the problem of employment and unemployment in EEC countries during the period 1975-90 and the characteristics of employment distribution at the regional level. From this analysis rises the answer that the main way to improve the level of RENA is to increase the employment in services.

In section 3 we present an inter-regional econometric model for market services employment in 120 European regions in 1985, showing some important and significant inter-sector relations.

In section 4 we present the main conclusions, and before bibliography we include an Appendix of data and estimations results.

2.- A GENERAL VIEW OF EMPLOYEMENT IN EEC REGIONS

Within the EEC the non-agrarian employment rate, determined by the number of non-agrarian jobs per thousand inhabitants, has moderately increased over the last 30 years, although compared with the United States and Japan the level is still low.

These twelve European countries evolved from a rate of 334 non-agrarian jobs per thousand inhabitants in 1961 to 376 in 1990, with an annual growth rate for this variable of 0.3% in the period 1961-73, 0.09% in the period 1973-85 and 1.3% in the period 1985-90. This rate of growth is too moderate, as it does not compensate for the increase in the size of active population and the general loss of agrarian jobs and has therefore been unable to prevent a significant increase in unemployment.

On the other hand, the non-agrarian employment rate of the United States increased at a faster rate in the three aforementioned periods, rising from a value of 329 in 1961 (slightly lower than that which the 12 countries which constitute the EEC nowadays had at that time) to 457 in 1990.

In Japan the non-agrarian employment rate increased very little in the period 1985-90, but as it had increased significantly during the 25 previous years it positioned itself at a value similar to that of the Unites States in 1990 (457 jobs per thousand inhabitants), having parted from a level of only 340 in 1961.

Obviously, important regional and national differences exist in the non-agrarian employment rate. The EEC countries need to increase this employment rate in order to increase per capita family income and to reduce the problem of unemployment.

This should be a priority objective but it still falls short of the necessary dimension, above all in Spain, a country which, due to its demographic weight and its low non-agrarian employment rate, contributes to the reduction of the average for the EEC, from a rate of 389 jobs per thousand inhabitants, excluding Spanish data, to a rate of 376 when included. In both cases the figure is low in relation to the two aforementioned countries.

Table 1 shows the rates of non-agrarian employment, by one thousand inhabitants, and of unemployment, as percentage of active population, in 120 European regions in 1991, as well as the ranking positions of each region in 1985 and 1991. Employment and unemployment rankings are listed in descending and ascending order, respectively. Thus, the lower the levels of both rankings, the better the economic situation. The variables included in table 1 are the following:

RENA91= Rate of Employment of Non-Agrarian sectors in 1991, number of employees by one thousand inhabitants.

RU91= Rate of Unemployment in 1991, in % of the active population

NR1= Number in the Ranking of RENA85 (descending order)

NR2 = Number in the Ranking of RENA91 (descending order)

NR3 = Number in the Ranking of RU85 (ascending order)

NR4 = Number in the Ranking of RU91 (ascending order)

In general, Spanish regions were in the worst positions in 1991 although there has been a positive change after that year, while the top ten regions according to RENA91 were: region18, Hoved of Denmark, region 85 South-East of UK, including London, and the following German regions: 63 Oberbayern, 71 Berlin West, 67 Mittelfranken, 59 Stuttgart, 53 Darmstadt, 66 Oberfranken, 60 Karlsruhe and 42 Hamburg.

Besides this information we can compare the evolution of non agrarian employment, at a more aggregate level of 98 regions, during the period 1985-95, from figures elaborated by Guisan and Aguayo(2001) from regional statistics.

During the period 1985-95 Spanish regions experienced important increases in the variable RENA, with percentages of growth between 15.40%, for Cantabria, and 41.84% for Extremadura. Even so the levels reached in 1995 are generally under EU average with the lowest value among Spanish regions corresponding to Extremadura with 225 and the highest to Cataluña with 358. Italian regions have experienced little change in the level of RENA during the period 1985-95, with the highest increase corresponding to Veneto region that has experienced a growth of 10%.

Data for Western German regions, at a more aggregate level of 12 regions, during the period 1985-95 indicate that all the regions but Berlin have experienced important increases in the value of RENA during the period 1985-95, with percentages varying from 23% in Rheinland-Pfalz to a little more than 39% in Schleswig-Holstein.

In the British islands, the highest percentages of increase in RENA during the period 1985-95, correspond to Ireland with 17%, and the following UK regions: South West with almost 10%, Wales with 12% and Scotland with almost 9%.

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In France there was little change in the rates of non-agrarian employment during the period 1985-95, with the highest increases corresponding to Corse with a little more than 10%, and 7% in the cases of Basse Normandie, Midi-Pyrénées and Limousin with 7%.

Portuguese regions have experienced important increases in the value of RENA during that period, with increase higher than 40% in Centro and Alentejo-Algarve, and higher than 34% in Norte and Lisboa-Val to Tejo.

In Greece there has been an increase higher than 10% in all the cases, with a percentage of 19% in Voreia Ellada, 12% in Kentriki Ellada+Attiki, and 23% in Nisia Aigaiou-Kriti.

Denmark and Belgian regions have experienced very little change, with only 3% of increase in RENA during the period 1985-95 in the region of Bruxelles, while Netherlands and Luxembourg have had important increases, with percentages higher than 40% in the case of the regions of Netherlands and more than 22% in the case of Luxembourg.

The highest values of total employment in European Union, by country in the period 1995-2000, were as follows:

Germany increased from 37.382 millions of employments in 1995 to 38.701 in 2000, what amounts a rate of total employment of 471 in this last year. The second place corresponds to UK with 26.145 millions of employments in 1995 and 27.910 in the year 2000, and a rate of total employment of 467. The third position corresponds to France with 22.689 millions of employments in 1995 and 23.352 in 2000, and a rate of total employment of 386. The fourth position corresponds to Italy, with 21.992 millions of employments in 1995 and 23.059 in 2000 and a rate of total employment equal to 400 in the year 2000.

Spain occupies the fifth position among EU15 countries, with 13.571 millions of employments in 1995 and 15.632 in the year 2000 and a rate of total employment of 396 in that year, followed by Netherlands with 7.143 millions of employments in 1995 and 8.122 in 2000.

The following positions correspond to Portugal, with 4.484 millions of employments in 1995 and 4.913 in 2000 and a rate of total employment of 492, Sweden with 4.089 millions of employments in 1995 and 4.257 in 2000 and a rate of total employment of 480, and Austria, with 3.928 millions of employments in 1995 and 4.046 in 2000 and a rate of total employment of 499 in that year.

Tenth position correspond to Greece with 3.820 millions of employments in 1995 and 3.920 in 2000 and a rate of total employment by one thousand inhabitants of 371 in that year, while the Belgium, with 3.714 millions of employments in 1995 and 3.918 in 2000 and a rate of total employment of 383 occupies the eleventh position, followed by Denmark with 2.611 employments in 1995 and 2.742 in 2000 and a high rate of total employment of 514.

The last three positions in total employment correspond to the smallest countries: Finland with 2.042 millions of employments in 1995, 2.283 in 2000, and a rate of total employment of 441, followed by Ireland with 1.292 millions of employments in 1995, 1.696 in 2000, and a rate of total employment of 448, and Luxembourg with 0.215 millions in 1995, 0.262 in 2000, and a high rate of total employment of 591. This high rate is partially explained by the fact that some people that works in this little country do not live there but in neighbouring regions of another countries.

Table 1
Rate of employment in non-agrarian sectors and Rate of Unemployment

Number	Region	RENA91	RU91	NR1	NR2	NR3	NR4
1	Galicia	251	12.4	116	114	93	100
2	Asturias	260	16.2	105	111	106	109
3	Cantabria	274	15.5	109	107	94	106
4	Pais Vasco	318	19.2	88	92	115	113
5	Navarra	330	10.5	86	88	112	91
6	Rioja	308	9.2	95	97	103	79
7	Aragón	298	9.4	106	100	111	82
8	Madrid	332	11.8	97	87	116	99
9	Castilla-León	263	14.6	114	109	108	103
10	Castilla-La Mancha	252	13.7	118	112	107	102
11	Extremadura	210	24.4	120	120	118	118
12	Cataluña	357	11.8	99	75	117	98
13	Comunidad Valenciana	306	16.1	108	98	113	108
14	Baleares	364	8.6	98	70	97	67
15	Andalucía	226	24.9	119	118	119	120
16	Murcia	260	16.7	115	110	114	111
17	Canarias	274	24.6	117	108	120	119
18	Hoved (Danmark)	553	8.7	2	1	23	69
19	Ost	400	8.7	41	56	73	71
20	Vest	457	8.7	11	17	52	70
21	Piemonte	379	6.1	39	63	29	40
22	Valle d'Aosta	415	3.5	9	43	3	18
23	Liguria	348	7.9	40	80	15	59
24	Lombardía	418	3.5	19	39	14	17
25	Trentino-Alto Adige	387	3.4	10	61	6	16
26	Veneto	390	4.1	42	59	26	23
27	Friuli-Venezia Giulia	421	5.1	22	38	13	32
28	Emilia Romagna	411	4.3	20	46	21	25
29	Toscana	406	7.6	30	51	27	57
30	Umbría	371	9.5	52	68	69	84

Number	Region	RENA91	RU91	NR1	NR2	NR3	NR4
31	Marche	404	6.4	32	53	11	45
32	Lazio	386	10.3	38	62	38	89
33	Campania	296	20.8	93	101	76	115
34	Abruzzi	326	9.5	75	89	31	83
35	Molise	294	15.0	89	102	32	104
36	Puglia	275	15.4	96	106	55	105
37	Basilicata	243	20	103	116	37	114
38	Calabria	222	21.7	111	119	86	116
39	Sicilia	248	21.9	104	115	87	117
40	Sardegna	288	18.4	100	104	109	112
41	Schleswig-Holstein	438	4.8	63	28	64	29
42	Hamburg	466	6.1	3	11	41	41
43	Braunschweig	426	6.4	49	35	67	46
44	Hannover	443	5.3	50	24	63	34
45	Lüneburg	423	4.6	69	38	56	27
46	Weser-Ems	396	5.4	67	58	77	36
47	Bremen	416	8.1	4	42	59	63
48	Düsseldorf	410	6.2	29	48	50	42
49	Köln	431	5.3	37	33	39	35
50	Münster	404	5.5	54	53	60	37
51	Detmold	432	4.2	28	32	40	24
52	Arnsberg	416	6	44	43	61	38
53	Darmstadt	477	2.8	12	7	10	10
54	Giessen	433	3.9	47	31	20	22
55	Kassel	417	4.8	46	41	35	31
56	Koblenz	451	3.2	55	20	34	15
57	Trier	403	3.8	77	55	49	21
58	Rheinhessen-Pfalz	441	3.6	43	26	24	19
59	Stuttgart	479	2.1	7	6	2	2
60	Karlsruhe	475	3	13	9	7	12

Number	Region	RENA91	RU91	NR1	NR2	NR3	NR4
61	Freiburg	465	2.5	33	12	9	7

62	Tübingen	458	2.2	21	16	4	3
63	Oberbayern	502	2.2	14	3	8	5
64	Niederbayern	465	2.7	59	13	25	8
65	Oberpfalz	434	3.6	56	29	42	20
66	Oberfranken	476	3.1	35	8	28	14
67	Mittelfranken	482	2.9	25	5	18	11
68	Unterfranken	444	3	36	23	16	13
69	Schwaben	459	2.2	31	15	12	4
70	Saarland	403	6.1	34	56	65	39
71	Berlin, West	488	6.5	6	4	36	47
72	Vlaams Gewest	343	5.1	62	83	71	33
73	Region Wallonne	309	10	84	96	98	86
74	Bruxelles	658	9	1	1	22	75
75	Noord-Nederland	376	9	102	65	95	77
76	Oost-Nederland	393	7.1	87	59	85	51
77	West-Nederland	428	6.7	80	34	66	49
78	Zuid-Nederland	406	6.7	85	51	90	48
79	Luxembourg	410	1.5	16	49	1	1
80	Ireland	278	15.8	101	105	110	107
81	North	414	11.1	45	46	105	94
82	Yorkshire and H.	440	9.4	23	27	91	81
83	East Midlands	462	7.6	15	14	68	55
84	East Anglia	458	6.3	17	17	47	43
85	South-East	472	7.6	5	10	43	54
86	South-West	442	7.4	26	25	62	53
87	West Midlands	447	9	18	22	96	76
88	North-West	433	10.1	27	30	102	87
89	Wales	407	9.3	57	50	101	80
90	Scotland	425	10.1	24	36	99	88

Number	Region	RENA91	RU91	NR1	NR2	NR3	NR4
91	Northern Ireland	364	16.3	60	71	104	110
92	Norte	414	2.7	92	45	30	9
93	Centro	344	2.4	107	81	19	6
94	Lisboa e V. Tejo	450	4.5	64	21	89	26
95	Alentejo + Algarve	337	6.8	110	85	81	50
96	Voreia Ellada	252	6.3	113	113	17	44
97	Kentriki Ellada	301	8.9	91	99	53	73
98	Anatolika +N.Nisia	237	4.8	112	117	5	30
99	Ile-de-France	456	7.6	8	19	33	56
100	Champagne-Ardenne	355	8.9	66	77	70	72
101	Picardie	358	9.2	79	74	84	78
102	Haute-Normandie	360	11.2	53	73	88	95
103	Centre	353	8.3	58	78	51	64
104	Basse-Normandie	388	8.1	72	61	80	62
105	Bourgogne	327	8.6	65	88	58	68
106	Nord-Pas-de-Calais	318	11.6	81	93	92	96
107	Lorraine	338	8.4	68	84	72	65
108	Alsace	424	4.8	51	37	44	28
109	Franche-Comté	363	7.3	61	72	48	52
110	Pays de la Loire	373	9	71	67	78	74
111	Bretagne	353	8.6	82	79	75	66
112	Poitou-Charentes	290	10.9	83	103	79	92
113	Aquitaine	313	10.4	74	95	74	90
114	Midi-Pyrénées	366	8	76	69	54	60
115	Limousin	322	7.9	78	90	46	58
116	Rhöne-Alpes	375	8	48	66	45	61
117	Auvergne	314	10	73	94	57	85
118	Languedoc-Roussillon	318	12.7	90	92	100	101
119	Provence-Alpes-C.A.	344	11.6	70	82	83	97
120	Corse	357	10.9	94	76	82	93

The highest rates of non agrarian employment correspond generally to the regions with the highest levels of industrial development, educative level of population, public sector expenditure and tourism, as those are factors that have a very positive impact on the increase of market sector employment.

There are a few exceptions to this general rules, how it happens in the case of Portuguese regions with high rates of employment in spite of relatively low levels in some of these variables. The case of Portugal is mainly explained by the effect of low wages on labour demand, but this is

clearly a transitory situation, as the technological changes will probably show a trend to the increase in the capital/labour ratio and so Portugal will have problems of unemployment if the country does not increase its industrial development and the other variables that influence the increase of labour demand in market services.

The next section show the results of some tentative models for explaining the inter-sector relations and the impact of industry and another variables on market services employment. The results are interesting and have been of support for the development of another interregional models of European regions as those presented by Exposito(1996), Guisan, Aguayo and Rodriguez(1997), and Guisan and Aguayo(2001) and (2002).

3.- A CROSS-SECTION MODEL FOR MARKET SERVICES EMPLOYMENT

A cross-section model of employment has been fitted in order to explain regional differences in the main sector of employment i.e. Market Services (Sector number 5 in the Eurostat RR6 classification).

This is the main sector of employment, both because it occupies the highest position of the 6 sectors, and also because it has experienced the greatest rate of increase over the last few decades, and will probably continue to do so in the future.

A cross-sectional model with a sample of 120 EEC regions in 1985 has been fitted in order to explain regional differences in employment in sector 5. The equations and variables are as follows:

Employment equation:

(1) L5 = 0.0091*VA5 + 0.5458*PA5 + 0.0472*EXL1 + (0.1047*DP -

- 0.0693*DN - 0.1460*D1 + 0.0295*D3 - 0.0282*D9)*PA5

R^2 = 0.9994   S.E = 12.07   MEAN = 402.15

DW = 2.21   %Error = 3.00%

Value-added per capita equation:

(2) VA5H = 1060.05 + 3853.16*DHAM + 3224.73*DBAL + 1495.97*DPAR +

$$+ 1387.34*DBRUS + 538.51*DLIG + 502.89*DDARM + 2086.26*DP1$$

$$+ 1294.28*DP2 + 676.12*DP3 + 303.87*DP4 - 1351.99*DN1 -$$

$$- 847.81*DN2 - 557.41*DN3 - 263.75*DNA + 0.2698*(VA1H+VA2H+$$

$$+VA3H+VA4H+VA6H) + 0.1606*(VA3H+VA6H) +3.99*X1+6.76*X2+$$

$$+ 7.91*X3 + 7.93*X4 + 6.52*X5 + 6.45*X6 + 6.01*X7 - 2.55*X8 +$$

$$+ 6.58*X9 - 1.26*X10 + 1.033*X11 + 7.14*X12$$

$R^2 = 0.9943$ S.E = 142.64 Mean of dep. variable = 4602.10

DW = 2.28 % Error = 3.09%

Identities:

(3) VA5 = VA5H * POP

(4) L5H = L5*1000 / POP

(5) a (16) Xi = Di * L5H i=2,3,.....,12

The variables explained by the model are the sixteen on the left hand side of the equations (1) to (16), and consequently they are the endogenous variables from the econometric point of view. The other variables included in the model are explanatory, and consequently, exogenous from the econometric point of view. The names of the variables are listed below.

Dependent variables of the model:

L5= Employment in sector number 5 of the economic activity (market services) in each region of the EEC in the year 1985, expressed in thousands of people employed.

VA5= Gross value-added in sector number 5 of the economic activity (market services) in each region of the EEC in the year 1985, expressed in millions of dollars using purchasing power parities to express the data corresponding to every region in a common currency.

VA5H= Gross value-added in sector number 5 per inhabitant in every region. This variable is the result of dividing VA5 (expressed in millions of US dollars) by the population (in millions of people), and shows the amount of dollars per capita produced in this sector.

L5H= Rate of employment in sector number 5 per thousand inhabitants. It is the result of dividing L5 (expressed in thousands of people) by the population (in millions of people).

X_i (i= 2,3,...,12)= are groupings of L5H representing the country at which the subscript is referred. They were calculated by multiplying L5H by a dummy variable, as expressed in equations (5) to (15).

Non-dummy explanatory variables:

PA5= Active population looking for a job in sector number 5 in every region in 1985. It is the result of subtracting from the total active population, those employed in the other sectors of economic activity.

EXL1= Excess of employment in the first sector (agriculture, forestry and fishing). It is calculated as the difference between the actual employment in this branch of the economic activity and the normalised employment in it (L1*). Normalised employment is the level of employment corresponding to that region in case that the level of output of 1985 (VA1) was obtained with a productivity per worker equal to the EEC average. It is calculated by dividing the VA1 corresponding to each region by the average productivity in this branch of activity in the EEC.

VAi (i=1,2,3,4,6)= Gross value added in the other branches of activity, according to the R6 classification of the EEC. The first sector is "Agriculture, Forestry and Fishing", the second "Energy and Water", the third "Industry" (including intermediate, equipment and consumer goods), the fourth "Building and Construction"(it including residential and non-residential construction and civil works), and the sixth "Non-Market Services". The figures corresponding to each region are expressed in 1985 US dollars according to the purchasing power parities.

Dummy variables:

Di (i=1,2,...,12)= Dummy variables whose value is one when the region is in the country corresponding to the subscript, and nought otherwise. The countries have been assigned the following numbers: 1. Spain, 2. Denmark, 3. Italy, 4. Germany, 5. Belgium, 6. The Netherlands, 7. Luxembourg, 8. Ireland, 9. United Kingdom, 10. Portugal, 11. Greece and 12. France.

DP= Dummy variable of the equation (1) which represents positive effects. Its value is one in the regions in which the total employment is higher than that expected according to the other explanatory variables included in the model, and nought otherwise. The eleven regions with positive effect are: 18. Hoved (Copenhague), 22. Liguria (Genova), 25. Trentino- Alto Adige, 74. Brussel (Brussels), 79. Luxembourg, 84. East Anglia, 85. South-East (London), 86. South-West, 96. Voreia Ellada, 97.Kentriki Ellada, 98. Anatolika Kai Notia Nisia.

DN= Dummy variable of the equation (1) which represents negative effects. Its value is one in the eleven regions in which the total employment is lower than the expected according to the other variables included in the model, and nought otherwise. The regions with negative effect are: 11. Extremadura, 15. Andalucía, 38. Calabria, 40. Sardegna, 55. Kassel, 64. Niederbayern, 65. Oberpfalz, 66. Oberfranken, 67. Mittelfranken, 93. Centro, 95. Alentejo y Algarve.

DP1= Dummy variable corresponding to the highest positive effect group in equation (2). Its value is one in those regions with an output of services higher than that expected according to the other variables, and nought otherwise.

The regions in which DP1 is one are those six in which the added effect is even higher than that for this group (14. Baleares, 23. Liguria, 42. Hamburg, 53. Darmstadt, 74. Brussel and 99. Île-de-France (Paris)) and ten other main regions where the effect is due to the fact of being state capitals, tourism and port activities, these are the following: 8. Madrid, 17. Canarias, 18. Hoved, 22. Valle d'Aosta, 32. Lazio, 47. Bremen, 63. Oberbayern, 77. West-Nederland, 79. Luxembourg and 85. South-East.

DP2= Dummy variable which represents the second level positive effects of the equation (2). The eight regions in which this variable has a value of one are as follows: 24. Lombardia, 25. Trentino-Alto Adige, 27. Friuli-Venezia Giulia, 49. Köln, 54.Giessen, 55. Kassel, 94. Lisboa e Vale do Tejo and 119. Provence-Alpes-Côte d'Azur.

DP3= Dummy variable which represents the third level positive effects of the equation (2). The nine regions in which the value of this variable is one are: 12. Cataluña, 13. Comunidad Valenciana, 26. Veneto, 28. Emilia-Romagna, 29. Toscana, 45. Lüneburg, 72. Vlaams Gewest, 76. Oost-Nederland and 120. Corse.

DP4= Dummy variable which represents the fourth level positive effects in equation (2). Its value is one in the fourteen following regions: 3. Cantabria, 5. Navarra, 16. Murcia, 21. Piemonte, 31. Marche, 50. Münster, 60. Karlsruhe, 65. Oberpfalz, 68. Unterfranken, 69. Schwaben, 78. Zuid-Nederland, 84. East Anglia, 111. Bretagne and 118. Languedoc-Roussillon.

DN1= Dummy variable of the first group of regions with negative effects in equation (2). The three regions in which this variable is one are as follows: 6. La Rioja, 43. Braunschweig and 91. Norte.

DN2= Dummy variable of the second group of regions with negative effects in equation (2). The two regions in which its value is one are: 93. Centro and 96. Voreia Ellada.

DN3= Dummy variable of the third group of regions with negative effects in equation (2). The seventeen region in which its value is one are: 35. Molise, 37. Basilicata, 46. Weser-Ems, 52. Arnsberg, 62. Tübingen, 64. Niederbayern, 66. Oberfranken, 71. Berlin, 80. Ireland, 81. North, 83. East Midlands, 89. Wales, 90. Scotland, 100. Champagne-Ardenne, 102. Haute Normandie and 109. Franche-Comté.

DN4= Dummy variable of the fourth group of regions with negative effects in equation (2). Its value is one in the nineteen following regions: 2. Asturias, 4. Pais Vasco, 10. Castilla-La Mancha, 11. Extremadura, 19. Ost, 33. Campania, 38. Calabria, 40. Sardegna, 44. Hannover, 59. Stuttgart, 61. Freiburg, 67. Mittelfranken, 75. Noord-Nederland, 87. West Midlands, 88. North West, 92. Norte, 105. Bourgogne, 107. Lorraine and 117. Auvergne.

DHAM= Dummy variable whose value is one in the region 42. Hamburg. It reflects

special positive effects, possibly related to port activities.

DBAL= Dummy variable whose value is one in the region 14. Baleares. It reflects special positive effects, possibly related with the tourism .

DPAR= Dummy variable whose value is one in the region 99. Île-de-France (Paris). It reflects special effects linked with tourism and the fact of being the capital of France.

DBRUS= Dummy variable whose value is one in the region 74. Brussel. It reflects special effects possibly caused by the presence of the European Institutions.

DLIG= Dummy variable whose value is one in the region 23. Liguria. It reflects special positive effects, possibly caused by the port and tourism.

DDARM= Dummy variable whose value is one in the region 53. Darmstadt. It reflects special positive effects caused by the Frankfurt conurbation.

The estimation of equations (1) and (2) was performed with the econometric package Micro-TSP, by the method of TSLS (Two Stages Least Squares) in order to consider a possible interdependence between the variables on the left hand side of both equations (L5 and VA5H). The complete results are shown in tables 12 and 13, where we can see that all the t-Statistics of equation (1), and all but four of among the 29 t-Statistics of equation (2) are higher than 1.96. Thus, we conclude that the corresponding parameters are different from zero and the variables have a significant effect on the value of the dependent variable of each equation.

The goodness of fit is very high and the graphs of actual and fitted values of the dependent variables are so close to each other that are almost identical, as we can see in graph 3 where actual and fitted values of employment in Market-Services at regional level (L5) are shown by the same line (on the top of the graph). In both equations the individual residuals for each region have always low values (less than 10% of the actual value of each variable).

Before presenting the conclusions of our model we will remark on the differences existing between this model and the usual specifications of other regional models.

From the analysis of important and well-known regional models such as those of Philadelphia, Los Angeles, Mississipi, Mobile, Milwake, Chicago, Ohio, New Jersey and others, we conclude that the main explanatory variable in the employment equation of Market-Services is the output or value-added of this sector. In some models this is the only explanatory variable, and in some others it is accompanied by one or two more variables such as investment in this sector, wage rate or the lagged value of employment.

In this connection our equation (1) has the following features: It includes not only the output variable (VA5), but also two other non-dummy explanatory variables and some dummy variables. The two non-dummy variables are the labour force demanding a job in this sector (PA5) (measured by the active population without a job in the other sectors) , and the variable EXL1 that measures the excess of workers (from the point of view of average productivity) moving from agriculture to the non-agricultural sectors. Both variables have a significant effect, specially PA5 with a very high t-Statistic value (48.29).

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However, the effect of PA5 (which measures the supply of workers to this sector) is not equal in all countries and regions. Dummy variables were included to take in to account these differences, and from the results we can conclude that the country with the lowest effect is Spain, with a coefficient value 0.14 points lower than the average (0.54). Two other countries also differ from the average (Italy and the UK).

On the other hand, there are some individual regions in some countries which present a special positive or negative difference from the average. The worst position is that of two Spanish regions (11 Extremadura and 15 Andalucía) both of them present the negative effect of country (D1) and the negative effect of a special dummy (DN).

These differences are mainly due to the economic policy and the legislation in relation to subsidies, as well as the rigidity of the laws ruling the labour market and part-time jobs. It is not strange that in the Spanish case the level of employment in this sector is clearly under the EEC average, as Spain has had until now a very rigid legislation and stringent rules on temporary and part-time employment (some of them are slowly beginning to change) and a high increase in the number of subsidies for unemployment.

Wages have not been included because Eurostat statistics (Statistical Yearbook of Regions and Regional Accounts) lack much data. However, we feel that the absence of this variable is not very important in this case, as it is not the key to explaining the differences from average. Spain with one of the lowest levels of wages has a value of employment under average, while other countries and regions with higher levels of wages have a value of employment over average.

Equation (2), can be summarised saying that in the majority of regional models the main explanatory variable, the own sector output (here VA5H, in per capita terms), is usually explained in the context of regional models by family income or some variables related with it (Consumption, Total Value-Added of all sectors, etc.). Some models include the lagged value of the explained variable or others (such as manufacturing output in the New Jersey model, and the price level in the model of Chicago).

The main features of our model in comparison with the usual specification of equation (2) in other regional models are the following: We consider that market services has a great dependence on the other sectors, particularly industry (sector 3, which excludes energy production) and on the regional distribution of public sector value-added. The results of our model reveal that VA3H and VA6H have a higher effect on VA5H, on average, than the value-added of other sectors. An increase of one unit in VA1H, VA2H or VA4H provokes on average an increase of 0.26 on VA5H, while an increase in VA3H or VA6H provokes a higher increase (0.42=0.26+0.16).

Also, our model has into account a possible interdependence between labour and value-added in this sector. The Xi variables in equation (2) (being Xi=Di*L5H, i=1,2,...,12, and Di the country dummies) let us measure this effect.

From the results we can observe that employment has a significant effect on value-added of sector 5 in all countries except Spain, Ireland, Portugal and Greece. The other countries show a high and significant effect of L5H on VA5H, with coefficient values between 6 and 8, being the highest values those of Germany (7.91) and Italy (7.91).

Furthermore, our model includes several dummies which explain regional differences in VA5H due to other factors like ports, tourism, the fact of being a state capital, conurbations and so on. The highest positive differences are those of Hamburg, Baleares, Paris, Brussels, Liguria and Darmstadt. Each of these regions has a significant coefficient corresponding to its individual dummy variable, and also belongs to the group of the highest positive dummy variable DP1. A further analysis of the important factors that affect these high levels of VA5H would be advisable.

4. CONCLUSIONS.

Several conclusions can be drawn from this quantitative analysis of a wide set of data of European regions in order to explain the differences in employment and unemployment, with special reference to the main sector of employment: Market Services, and we would like to emphasize the following:

1.- There are great differences in the rate of employment (RE) and the rate of unemployment (RU) among European regions. The majority of these differences are due to the regional distribution of industry and public services. Some countries, like Spain for example, have a low level of value-added in public services which means not only less employment in sector 6, but also less value-added and employment in sector 5. Our econometric model shows that non market services development has generally an important positive impact on market services at regional level. This is somewhat of a novel discovery as many people among politicians and businessmen think that both sectors are not so positively related.

2.- The European Union should have a better organization in order to foster dialogue with many individuals and institutions with good regional knowledge and interested in improving regional employment and development, specially in poorest regions, as there are many suggestions of interest for improving the levels of employment in many social services (specially health, education and other social services) in the regions with low levels of RENA (rate of employment of non-agrarian sectors).

EU regional policies are not always as effective as they should be to improve harmonized development among European regions, due to excess of bureaucracy, lack of dialogue and lack of transparency and support to the poorest in many processes for granting, what leads very often to uneven distribution of many aids. Many of these EU policies favour some richest regions and are to detriment of many poorest ones. Some of this disparities are analysed in Guisan, Cancelo and Diaz(1997), in relation with industrial aids, and in Guisan, Cancelo and Aguayo(2001) in relation with the large regional disparities in EU Research and Development expenditure.

3. The EEC has a level of employment in industry per thousand inhabitants similar to the USA and below Japan. The level of employment in services in the EEC per thousand inhabitants is clearly lower than that of the USA and Japan. This means that in order to reduce the high unemployment rate of many European regions it is important to increase the number of jobs in services specially through the positive impact of the increase of industry and public sector value-added on market services.

4.- A comparison of data of RENA85 and RENA91 per country and regions shows that

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The Netherlands has been the country with the higher increase. This country has improved its position in the 120 regions ranking, moving from a range number of 80-102 in 1985 to a range of 33-65 in 1991,which means that it has moved up many places in the ranking of regions with higher employment. Other regions have presented little movement either upwards or downwards, and Spain remained in the worst place in 1991, changing from a range of 86-120 in the ranking of the year 1985 to a range of 70-120 in the ranking of 1991.

5.- From the results of the model we conclude that there is strong empirical support for the hypothesis of interdependence between labour and value-added in Market -Services, in almost all the countries studied. VA5 is significant in explaining employment in all countries and L5H is significant in explaining VA5H in the majority of the countries (except Spain, Ireland, Portugal and Greece).

6.- Our model includes several explanatory dummies that have taken into account national and regional features that explain values of employment and production over and under average. Some of the positive features are clearly linked to the effect of port activities, tourism and metropolitan areas. Further analyses by Guisan and Aguayo(2001) and (2002) with interregional econometric models of several EU countries confirm this positive impact of tourism, and another activities, in regional development.

7.- European Union should imitate some good policies from the USA like the communication improvement among different regions, the existence of general grants for people and institutions in all the economic space, and so on, but EU should have into account the multilingual and multicultural features of European countries.

This means that European public opinion is not in favour of a high degree of population mobility as a general mean of real convergence in income by inhabitant. The majority of citizens prefer an harmonised regional policy for the improvement of income by inhabitant in all EU regions with a more moderate degree of labour mobility.

8.- Many suggestions from this paper and those cited in the bibliography are highly interesting for the development of regional policies in European Union, but the problem is that EU Parliament, Commission, General Directorates and another institutional organizations that decide European policies usually have very low level of dialogue with this type of economic literature and this one of the two main problems of EU in comparison with the United States.

In our opinion many regional problems that exist in EU, and which will be very probably increased with the new countries to enter after 2002, could be very well driven if EU citizens could have two main instruments that citizens in the USA have: 1) a direct method of choosing President and Parliamentary members and 2) a net of newspapers, books and another publications distributed in all its territory, dealing with general problems and contributing to improve public opinion and the communication among socio-economic researchers and the society.

It is really surprising the lack of grants form EU institutions to the publications of books and journals simultaneously in several main European languages. This lack of help implies a large disadvantage of European researchers and publishers in comparison with American ones and a loss of communication opportunities among EU countries.

DATA APPENDIX

We include as complementary information tables 13 and 14 giving the complete results of

estimation of equations (1) and (2), as well as tables 15 and 16 with the main data of the 120 EEC regions in 1985 used in the regression.

Data were elaborated from the Statistical Yearbook of Regions, edited by Eurostat and has been completed with our own estimates when there has not been enough information reported. In general missing data has been estimated from information on industrial employment and hypotheses on homogeneity of labour productivity in regions of similar countries in sectors such as non-market services.

Equation 1. Dependent Variable is L5
SMPL range: 1 - 120
Number of Observations: 120
Instrument list: C PA5 DP DN EXL1 DHAM DBAL DPAR DBRUS DLIG DDARM DP1 DP2 DP3 DP4 DN1 DN2 DN3 DN4 Z Z36 D1Y D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12.

VARIABLE	COEFFICIENT	STD.ERROR	T-STAT	2-TAIL SIG
VA5	0.009107	0.0003778	24.103526	0.00
PA5	0.5458541	0.011302	48.297051	0.00
D1Y	-1460348	0.0076185	-19.168424	0.00
DPY	0.1047947	0.0053394	19.626583	0.00
DNY	-0.693951	0.0132194	-5.2494938	0.00
D3Y	1.0295128	0.0053459	5.5205993	0.00
D9Y	-0.0282909	0.0057914	-4.8850179	0.00
EXL1	0.0472634	0.0212258	2.2266972	0.00

R-squared	0.999401	Mean of dependent var	402.15	
Adjusted R-squared	0.999363	S.D. of dependent var	478.6265	
S.E. of regression	12.07802	Sum of squared resid	16338.41	
F-statistic	26620.23	Durbin-Watson stat	1.866017	
Prob (F-statistic)	0.000000			

Equation 2. Dependent Variable is VA5H
SMPL range: 1 - 120
Number of observations: 120
Instrument list: C PA5 DP DN EXL1 DHAM DBAL DPAR DBRUS DLIG DDARM DP1 DP2
DP3 DP4 DN1 DN2 DN3 DN4 Z Z36 D1Y D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12.

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT	2-TAIL SIG
C	1060.0549	199.27698	5.395052	0.0000
DHAM	3853.1660	238.31444	16.168412	0.0000
DBAL	3224.7340	175.02627	18.424286	0.0000
DPAR	1495.9756	165.96204	9.0139624	0.0000
DBRUS	1387.3453	480.30132	2.8884895	0.0048
DLIG	538.50997	156.2777	3.4469542	0.0009
DDARM	502.89869	157.54192	3.1921579	0.0019
DP1	2086.2666	150.20858	13.889131	0.0000
DP2	1294.2822	87.128044	14.854943	0.0000
DP3	676.12844	66.6550058	10.143693	0.0000
DP4	303.87035	48.781352	6.2292318	0.0000
DN1	-1351.9995	116.92773	-11.562694	0.0000
DN2	-847.81574	142.25762	-5.9597212	0.0000
DN3	-557.41168	62.566744	-8.9090729	0.0000
DN4	-263.75651	49.286389	-5.3515081	0.0000
Z	0.2698238	0.0352801	7.6480438	0.0000
Z36	0.1606989	0.0353486	4.5461135	0.0000
X1	3.9991050	2.8944877	1.3816279	0.1705
X2	6.7643041	2.2067730	3.0652470	0.0029
X3	7.9108007	1.9960691	3.9631898	0.0001
X4	7.9370796	2.3615255	3.3609968	0.0011
X5	6.5255693	2.2582795	2.8896198	0.0048
X6	6.4587441	2.3052323	2.8017757	0.0062
X7	6.0160320	2.2090369	2.7233733	0.0077
X8	2.5523633	2.1949896	1.1628134	0.2479
X9	6.5815470	1.8990526	3.4657001	0.0008
X10	-1.2658833	2.6795455	-0.4724246	0.6378
X11	1.0333212	2.0709191	0.4989674	0.6190
x12	7.1453558	2.1537174	3.3176849	0.0013

R-squared	0.994378	Mean of dependent var	4602.101
Adjusted R-squared	0.992648	S.D. of dependent var	1663.616
S.E. of regression	142.6457	Sum of squared resid	1851649.
F-statistic	572.9669	Durbin-Watson stat	2.286070
Prob (F-statistic)	0.000000		

TABLE 2
Rate of Employment by sector and region
(Number of employees per thousand inhabitants in 1985)

Num.	RE1	RE2	RE3	RE4	RE5	RE6	RENA
1	155	4	43	23	90	45	206
2	71	32	57	21	98	48	256
3	73	2	77	23	94	46	242
4	16	3	120	19	100	47	289
5	43	2	114	21	107	47	291
6	50	1	116	19	96	46	278
7	58	7	72	19	103	49	249
8	4	2	55	17	129	71	275
9	77	8	51	22	94	47	222
10	75	3	48	27	78	40	197
11	80	2	22	20	72	42	159
12	19	3	92	18	118	40	273
13	38	1	73	17	106	45	243
14	34	4	40	35	153	41	275
15	46	2	32	16	83	51	184
16	51	3	52	17	90	46	208
17	39	3	18	22	117	46	206
18	5	3	86	33	231	180	534
19	45	5	84	31	121	140	380
20	50	3	116	33	142	137	433
21	43	4	128	21	168	63	385
22	61	9	61	53	246	79	447
23	28	6	64	26	209	80	385
24	18	4	147	30	178	55	413
25	67	3	71	31	225	106	436
26	48	3	137	29	148	63	380
27	35	3	92	30	170	110	406
28	50	3	126	26	185	69	410
29	43	3	126	21	169	74	394
30	51	4	103	26	146	83	361
31	57	3	126	31	161	71	392
32	30	4	51	26	199	106	385
33	57	2	45	27	138	65	278
34	68	3	30	68	150	70	321
35	84	3	45	45	123	72	288
36	54	2	49	29	126	68	276
37	99	3	34	42	108	69	257
38	88	2	22	37	105	63	230
39	52	3	29	38	123	63	257
40	48	4	37	32	116	75	265

Num.	RE1	RE2	RE3	RE4	RE5	RE6	RENA
41	27	5	76	27	130	99	338
42	6	6	98	28	284	105	521
43	19	6	134	26	112	90	368
44	14	7	103	28	139	90	368
45	48	4	59	29	147	90	328
46	49	5	90	27	118	90	331
47	3	6	124	27	225	102	484
48	5	13	133	28	146	75	395
49	6	11	111	27	165	75	389
50	19	24	90	27	140	75	356
51	12	3	147	25	144	75	395
52	7	16	136	27	120	75	374
53	12	6	132	31	183	78	430
54	22	3	119	29	142	78	371
55	37	6	113	26	147	78	372
56	23	4	104	30	132	82	353
57	42	3	86	28	118	82	318
58	28	5	141	28	119	82	375
59	18	4	196	34	147	75	457
60	9	6	154	36	159	75	430
61	26	3	153	34	127	75	392
62	53	3	169	34	128	75	409
63	25	5	123	36	186	77	427
64	72	4	132	30	99	77	342
65	53	3	121	33	118	77	353
66	49	4	175	28	107	77	391
67	42	3	168	33	119	77	401
68	45	4	142	36	132	77	391
69	44	3	142	38	131	77	392
70	8	29	124	29	135	75	392
71	1	6	101	32	188	136	465
72	12	7	92	23	150	68	340
73	11	3	64	21	138	80	307
74	1	6	72	26	387	167	658
75	25	7	56	19	126	50	258
76	21	3	60	21	152	53	289
77	15	5	52	25	171	60	313
78	20	3	82	22	145	44	296
79	19	3	106	38	215	57	420
80	48	7	56	24	124	52	262

Num.	RE1	RE2	RE3	RE4	RE5	RE6	RENA
81	9	17	89	25	130	111	372
82	10	18	97	26	151	111	403
83	13	19	126	24	140	111	420
84	26	4	99	31	170	111	416
85	6	6	86	29	245	111	477
86	18	5	85	27	169	111	397
87	9	8	135	25	136	111	415
88	5	7	102	25	152	111	397
89	19	16	75	25	122	111	348
90	13	11	84	32	165	111	402
91	29	5	68	24	133	111	341
92	101	4	114	41	71	48	279
93	161	3	85	38	64	54	244
94	47	5	76	30	142	83	336
95	158	3	35	44	85	68	235
96	144	6	74	22	87	34	223
97	77	6	72	23	134	44	279
98	143	6	25	39	123	34	228
99	3	7	95	27	231	93	453
100	41	3	105	24	131	69	333
101	32	2	106	21	125	61	315
102	22	7	109	28	148	67	359
103	38	5	100	30	138	73	346
104	64	5	86	28	138	68	325
105	40	4	95	26	138	70	333
106	16	8	94	21	128	60	311
107	17	13	96	24	127	68	329
108	16	4	118	26	154	64	366
109	29	2	128	23	119	67	340
110	50	4	93	28	137	63	325
111	58	2	67	28	140	73	310
112	55	2	74	28	133	70	308
113	47	6	65	29	149	71	322
114	52	5	68	29	142	75	319
115	64	5	73	28	140	69	316
116	21	6	108	30	160	66	371
117	52	4	92	27	132	69	324
118	37	6	39	28	139	68	282
119	16	5	49	29	169	75	327
120	36	4	20	40	137	77	278

TABLE 3
Value-added by sector and region
(Dollars per capita in 1985 at current prices and exchange rates)

Num.	VA1H	VA2H	VA3H	VA4H	VA5H	VA6H
1	716	702	1229	433	2789	839
2	309	1233	1891	617	3123	895
3	429	155	2555	566	3599	874
4	185	741	3818	430	3706	882
5	573	64	3361	411	3798	900
6	970	87	6186	541	3494	914
7	702	677	2251	527	3428	964
8	30	130	1798	459	5070	1326
9	821	701	1623	430	3070	909
10	901	572	1101	588	2466	777
11	785	701	414	439	2100	813
12	216	411	2941	426	4228	711
13	389	282	2057	459	3770	832
14	258	262	846	727	7982	688
15	671	287	1010	488	2615	949
16	712	574	1110	509	3111	800
17	393	182	509	556	4196	914
18	103	168	2235	713	7538	3253
19	920	271	1953	672	3942	2519
20	1011	147	2634	725	4632	2472
21	434	572	4358	562	5532	1168
22	296	573	2194	1581	7304	1591
23	358	759	2027	549	7355	1613
24	305	635	4790	729	6871	1078
25	708	257	2500	935	6435	1732
26	568	502	3719	779	5377	1234
27	407	448	2738	819	5806	1789
28	806	548	4053	666	6161	1363
29	309	508	3824	626	5643	1486
30	574	247	2744	683	4471	1552
31	553	561	3126	692	4997	1423
32	326	517	1654	582	6902	2170
33	401	303	1190	619	3588	1352
34	621	593	1745	736	4099	1406
35	639	203	1171	934	3286	1499
36	701	344	1138	562	3411	1359
37	611	259	777	833	2771	1415
38	726	265	475	656	2858	1367
39	711	584	669	562	3416	1321
40	492	703	916	873	3478	1580

Num.	VA1H	VA2H	VA3H	VA4H	VA5H	VA6H
41	437	532	2206	556	4367	1899
42	54	523	4254	727	12429	2296
43	224	602	3928	545	3557	1743
44	164	721	3028	588	4412	1743
45	553	365	1738	609	4637	1743
46	558	552	2636	581	3740	1743
47	43	671	4065	617	7786	2120
48	81	810	3854	603	5079	1578
49	83	674	3214	576	5737	1578
50	286	1433	2621	586	4863	1578
51	173	181	4281	545	5025	1578
52	112	969	3958	573	4171	1578
53	87	521	3650	676	7718	1626
54	156	281	3272	630	5993	1626
55	258	541	3128	568	6231	1626
56	212	384	3166	627	4498	1564
57	386	287	2620	581	4028	1564
58	252	432	4289	575	4065	1564
59	142	527	5293	720	5243	1505
60	73	760	4149	763	5681	1505
61	205	393	4122	730	4518	1505
62	415	375	4545	725	4562	1505
63	184	514	3103	768	7223	1493
64	521	430	3327	633	3844	1493
65	380	371	3045	703	4580	1493
66	356	441	4411	584	4175	1493
67	305	391	4232	688	4631	1493
68	326	447	3584	754	5124	1493
69	318	384	3593	796	5093	1493
70	64	1133	3046	565	4476	1545
71	24	442	4891	836	5697	2892
72	312	620	2858	640	5009	1398
73	280	444	1969	597	3839	1652
74	3	771	2169	722	9873	3428
75	666	3120	1894	505	4059	1339
76	553	332	1819	538	4381	1411
77	396	1925	1759	609	6656	1596
78	539	260	2879	520	4448	1179
79	307	263	3498	609	6881	1430
80	656	270	1862	422	2502	1200

Num.	VA1H	VA2H	VA3H	VA4H	VA5H	VA6H
81	166	621	2765	555	3712	1742
82	183	1012	2563	615	4177	1611
83	206	570	3384	564	3944	1576
84	411	238	2816	745	4695	1728
85	79	550	2471	778	7013	2023
86	284	297	2547	724	4612	1981
87	154	414	3312	583	4012	1432
88	72	861	3321	599	4381	1570
89	319	1892	2217	553	3515	1723
90	223	538	2742	760	4275	1915
91	301	264	2156	538	2736	2285
92	289	158	1363	283	1717	509
93	616	84	2091	311	1501	533
94	295	316	1685	300	3655	934
95	1083	200	599	378	1848	599
96	1303	263	1159	347	1709	833
97	775	263	1195	367	2502	1067
98	1840	263	354	614	2445	835
99	71	1127	3339	852	9411	2617
100	1308	279	2848	542	4051	2010
101	724	129	2865	497	4134	1787
102	402	2028	2956	697	4529	1849
103	829	438	2628	653	4423	1980
104	744	228	2294	594	4189	1945
105	757	231	2663	549	4043	1908
106	239	448	2454	519	4213	1696
107	339	436	2485	562	3896	2137
108	333	359	3648	581	4965	1918
109	419	139	3365	466	4009	1905
110	720	424	2301	602	4313	1622
111	819	177	1652	565	4193	2029
112	769	193	1876	553	4131	1917
113	804	1205	1892	622	4719	2021
114	673	391	1725	643	4234	1939
115	437	268	1787	549	3869	2069
116	316	528	3075	759	4994	1924
117	490	255	2260	509	3710	1929
118	699	365	1254	580	4145	1935
119	334	669	1494	761	5724	2337
120	594	434	578	976	4647	2173

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