

## **Education, Industry, Trade and Development of European and Eurasian Countries in 1980-99**

Guisan, M.Carmen\*

Aguayo, Eva

---

### ***Abstract***

This paper presents a comparative analysis of economic development in European and Eurasian countries, focusing on the educational level of population, fertility rates, production by sector and foreign trade. Countries are classified into 5 large areas: three for Western Europe, one for Central Europe, Baltic and East Mediterranean, and the other for Eurasia. The highest levels of development in Western European countries are mainly explained by educational level of population and a high degree of industrialization. We analyse the main challenges and opportunities in terms of institutional, physical and human capital, for Central and East countries with low levels of development.

*JEL Classification:* E6, F0, I2, O1, O50, O52, O57

**Keywords:** European Economic Growth, Western Europe, Central Europe, Eastern Europe, Economic Growth in Russia and Eurasia, Education and development, Industrial development.

---

### **1. Production by sector in European countries, 1980-99.**

The following tables present the values of real production by sector and per inhabitant, corresponding to the variables Pha, Phi, Phs and Pht, which are, respectively, real Gross Domestic Product per inhabitant in Agriculture, Industry, Services and Total. Agriculture includes farming, fishing and forestry, while Industry includes industrial activities and Building.

---

\* Faculty of Economics, University of Santiago de Compostela, Spain, e-mail: [eccg@usc.es](mailto:eccg@usc.es) and [aguayo@usc.es](mailto:aguayo@usc.es)

Figures correspond to the years 1980, 1990 and 1999 and are expressed in dollars at 1999 prices and purchasing power parities, PPPs. Some figures are only provisional estimations, especially in the case of former Soviet Union countries, FSU, for the years 1980 and 1990, due to problems of unavailability of data and contradictions among different sources for available figures.

The tables include data for countries with over one million inhabitants and available data for the estimation of the variables. We also include a reference to population and production per inhabitant of other countries and territories of each area.

The areas and countries with more than million people, and available data, included in this area are the following ones:

1) Nordic, Baltic and British Europe: Denmark, Finland, Ireland, Norway, Sweden, United Kingdom, and the newly independent Baltic countries: Estonia, Latvia and Lithuania, which are to join European Union in the year 2004.

2) Latin Europe: France, Italy, Portugal and Spain

3) Germanic Europe and Benelux: Austria, Belgium, Germany, Netherlands and Switzerland.

4) Central Europe, Baltic and East Mediterranean. This area includes Central Europe: Czech Republic, Hungary, Poland, and Slovak, together with the following East European countries: the 3 Baltic countries: Estonia, Latvia, and Lithuania, formerly Soviet Union, which are to join the European Union in 2004, Albania, Bulgaria, Croatia, Greece, Macedonia, Romania and Slovenia. In this area we also include Turkey, an important East Mediterranean and Eurasian country that belongs to the Council of Europe.

The Former Yugoslavian countries, FY, Bosnia-Herzegovina and Serbia-Montenegro also belong to this area, although they are not included in the tables due to problems with unavailability of data.

5) Eurasia. This area includes 3 East European Countries which have previously belonged to the Former Soviet Union, FSU: Belarus, Moldova and Ukraine, 4 Eurasian countries, which belong to the Council of Europe: Russia and the 3 Caucasus countries (Armenia, Azerbaijan, and Georgia), and 5 Central Asian countries FSU which belong to CIS: Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan. All of these countries are socio-economically linked to Russia as the Commonwealth of Independent States, CIS, set up after the dissolve of the FSU.

Table 1. Ph in Agriculture and Total: Nordic and British Europe  
(dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80a	Ph90a	Ph99a	Ph80t	Ph90t	Ph99t
Denmark	353	476	537	18772	23891	26843
Finland	1000	944	921	16794	22558	23036
Ireland	646	816	986	10666	14114	24642
Norway	431	409	553	16329	20793	27659
Sweden	408	459	441	15733	19767	22053
UK	190	229	219	13551	18010	21864
Total Area 1	300	344	353	14306	18798	22677
Europe+East Med.	526	545	564	13045	15866	17860
Europe+Eurasia	526	549	558	11780	13915	13715

Table 2. Ph in Industry and Services: Nordic and British Europe  
(dollars per inhabitant at 1999 prices and PPPs)

Country	ph80i	ph90i	ph99i	ph80s	ph90s	ph99s
Denmark	6370	8410	9663	12050	15006	16642
Finland	4787	6376	7371	11007	15238	14743
Ireland	3892	5313	8871	6128	7985	14786
Norway	4336	5799	8851	11561	14585	18255
Sweden	3988	5097	6395	11338	14212	15216
UK	4366	5811	6340	8995	11970	15305
Total Area 1	4456	5909	6849	9549	12545	15475
Europe+East Med.	4370	5059	5360	8149	10261	11935
Europe+Eurasia	4327	4911	4203	6926	8455	8954

Nordic and British Europe is an area with population below one hundred million in 1999. The most populated country is the United Kingdom with 59.1 million inhabitants in 1999, and the total population of the countries that appear in tables 1 and 2 was 86.7 in that year.

Other than the six countries included in the tables, there are two other areas with a population below one million inhabitants which also belong to this area: Iceland, with population of 278 thousand inhabitants in 1999 and Ph99t of 27835 dollars, and Greenland, an autonomous territory of Denmark, with population in 1999 equal to 58 thousand and Ph99t of 16100 dollars.

Table 3. Ph in Agriculture and Total: Latin Europe  
(dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80a	Ph90a	Ph99a	Ph80t	Ph90t	Ph99t
France	397	460	462	17634	21255	23078
Italy	618	611	675	16338	20354	22490
Portugal	462	659	627	9208	13764	15687
Spain	568	585	528	11304	14546	17609
Total Area 2	521	555	561	15142	18883	21132
Europe+East Med.	526	545	564	13045	15866	17860
Europe+Eurasia	526	549	558	11780	13915	13715

Table 4. Ph in Industry and Services: Latin Europe  
(dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80i	Ph90i	Ph99i	Ph80s	Ph90s	Ph99s
France	5588	5923	6000	11649	14873	16616
Italy	5389	6425	6972	10331	13319	14844
Portugal	2905	4479	4706	5841	8626	10354
Spain	3973	4978	5987	6764	8983	11094
Total Area 2	4966	5787	6256	9655	12540	14315
Europe+East Med.	4370	5059	5360	8149	10261	11935
Europe+Eurasia	4327	4911	4203	6926	8455	8954

The most populated country of this area is France, with 59.1 million inhabitants in 1999, followed by Italy, with 57.6. France and Italy have the highest values of total production per inhabitant, superior to the average of *Europe and East Mediterranean* while Spain and Portugal have levels slightly below that average. There are also some small countries belonging to this area: Andorra with 67 thousand inhabitants in 1999 and Ph99t of 18000 dollars, Monaco with 34 thousand inhabitants in 1999 and Ph99t of 27000 dollars, San Marino with 27 thousand inhabitants in 1999 and Ph99t of 20000 dollars, and the special case of the very small state of the Vatican in Italy.

Table 5. Ph in Agriculture and Total: Germanic Europe and Benelux  
(dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80a	Ph90a	Ph99a	Ph80t	Ph90t	Ph99t
Austria	528	581	519	18763	23128	25964
Belgium	191	229	260	19790	23686	26040
Germany	176	205	242	17819	22049	24176
Netherlands	421	559	733	18007	21527	24433
Switzerland	956	1068	851	23666	27680	28375
Total Area 3	272	325	360	18387	22509	24723
Europe+East Med.	526	545	564	13045	15866	17860
Europe+Eurasia	526	549	558	11780	13915	13715

Table 6. Ph in Industry and Services: Germanic Europe and Benelux  
(dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80i	Ph90i	Ph99i	Ph80s	Ph90s	Ph99s
Austria	6327	7526	8049	11908	15021	17396
Belgium	5532	6762	7291	14067	16695	18489
Germany	6562	7294	7253	11081	14550	16682
Netherlands	5417	6030	6353	12169	14939	17347
Switzerland	7719	9313	9080	14992	17299	18444
Total Area 3	6383	7220	7298	11732	14965	17065
Europe+East Med.	4370	5059	5360	8149	10261	11935
Europe+Eurasia	4327	4911	4203	6926	8455	8954

All the countries in tables 5 and 6 have a value of Ph99t higher than the average of the *Europe and East Mediterranean* group. In 1999, population rose to 123.2 million inhabitants, Germany being the most populated country with 82 million inhabitants. There are also two small countries belonging to this area: Liechtenstein with its population in 1999 equal to 33 thousand and Ph99t of 23000 dollars, and Luxembourg with a population in 1999 equal to 432 thousand inhabitants and Ph99t of 42769. Income per inhabitant in Luxembourg has a more moderate value, similar to that of Belgium, and this outstanding value of production per inhabitant is due to a high degree of integration with neighbouring countries.

Table 7. Ph in Agriculture and Total: Central Europe, Baltic and East Mediterranean (dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80a	Ph90a	Ph99a	Ph80t	Ph90t	Ph99t
Albania	891	909	1468	2436	2406	2718
Bulgaria	1020	817	920	4226	5866	5112
Croatia	983	974	725	8937	8986	8053
Czech Rep.	701	617	569	8762	8816	14233
Greece	1170	1098	1266	12618	14688	15819
Hungary	753	903	704	8854	10377	11739
Macedonia	784	425	581	6034	6067	4841
Poland	392	351	346	5345	5981	8654
Romania	983	943	988	6730	6767	6173
Slovakia	402	449	428	8585	9524	10698
Slovenia	987	698	676	12343	13767	16894
Turkey	1038	925	1002	4512	5443	6678
<i>Central and East</i>	835	784	808	6556	7329	8372
Estonia	576	606	594	7728	8871	8660
Latvia	332	349	342	9647	11191	6971
Lithuania	641	675	641	8780	9627	6751
<i>Baltic countries</i>	523	554	537	8859	9993	7179
Total Area 4	821	775	797	6659	7441	8325
Europe+East Med.	526	545	564	13045	15866	17860
Europe+Eurasia	526	549	558	11780	13915	13715

Table 8. Ph in Industry and Services: Central Europe, Baltic and East Mediterranean (dollars per inhabitant at 1999 prices and PPPs)

Country	Ph80i	Ph90i	Ph99i	Ph80s	Ph90s	Ph99s
Albania	1062	1105	680	482	392	571
Bulgaria	1148	1887	1380	2057	3162	2812
Croatia	3217	3986	2577	4737	4165	4751
Czech Rep.	3505	3614	5551	4556	4584	8113
Greece	3659	3948	3638	7789	9642	10915
Hungary	2983	3086	3991	5118	6388	7044
Macedonia	2232	1581	1355	3017	3548	2905
Poland	1738	1673	2856	3214	3957	5452
Romania	2750	2852	2469	2972	2971	2716
Slovakia	4767	5545	3423	3416	3530	6847
Slovenia	5678	5645	6589	5678	7048	9630
Turkey	1308	1796	1870	2166	2721	3807
<i>Central and East</i>	2287	2534	2647	3433	4011	4917
Estonia	3787	4347	2338	3365	3918	5728
Latvia	4437	5148	2300	4878	5695	4329
Lithuania	2722	2984	2228	5417	5968	3882
<i>Baltic countries</i>	3517	3965	2272	4819	5474	4370
Total Area 4	2342	2595	2632	3496	4072	4896
Europe+East Med.	4370	5059	5360	8149	10261	11935
Europe+Eurasia	4327	4911	4203	6926	8455	8954

The twelve Central European and East Mediterranean countries included in tables 7 and 8 reached a population of 182 millions of inhabitants in 1999, Poland in Central Europe, and Turkey in East Mediterranean being the main countries, with respective populations of 38.7 and 64.4 million in 1999. They are followed by Romania with 22.5 million inhabitants.

Slovenia with a Ph99t value of 16894 dollars, Greece with 15819 and Czech Republic with 14233, are the most outstanding countries of this area in the value of real production per inhabitant, with figures clearly over the area average and nearing the average of the *Europe and East Mediterranean* group.

There is also a group of countries with production per inhabitant higher than the area average although with a value below the average of the group of countries of *Europe and East Mediterranean*: Croatia with an estimated value of 8053, Hungary with 11739 and Poland with 8654.

The high increase of 45% in Poland during the period 1990-99 is very remarkable, and so is the high increase in industrial production of Hungary since 1992.

There are two countries with a Ph99t lower than area level but higher than 6 thousand dollars per inhabitant: Romania with 6173 and Turkey with 6678. Turkey, the most populated country of this area, has evolved positively during the period 1980-99, with an increase in Ph99t of 48%, which is higher than the average increase in this area of 36%.

The poorest countries are very much below the area average, and even below world average in the value of Ph99t: Albania with 2718, Bulgaria with 5112, and Macedonia with 4841, while world average in that year was 7031 according to our estimations.

Two countries with a population higher than one million inhabitants could not be included in the tables, due to particular difficulties with data estimation: Bosnia-Herzegovina with a population of 3.3 million inhabitants in 1999 and an estimated value of Ph99t of 1770 dollars, and Serbia-Montenegro with a population equal to 10.6 million and an estimated value of Ph99t of 1800 dollars.

There are two small countries in this area with a population lower than one million people: Cyprus, with 854 thousand inhabitants in 1999 and a value of Ph99t equal to 19006 dollars, and Malta with 388 thousand inhabitants and a Ph99t of 15189.

Tables 9 and 10 present the estimations of production by sector and per inhabitant for Eurasia. These figures are provisional estimations, as it is very difficult to assess with accuracy the changes



of these countries during the last years of the communist system and the first years following the political change to the market system. Although there is a scarcity of data and even significant discrepancies, among different sources of statistical data for this area, all the estimations highlight a general decline in Industry and Services during the period 1990-99.

Table 9. Ph in Agriculture and Total: East Europe and Eurasia  
(thousands of dollars at 1999 prices and PPPs)

Country	Ph80a	Ph90a	Ph99a	Ph80t	Ph90t	Ph99t
Armenia	740	784	768	3775	3845	2375
Azerbaijan	589	620	608	6764	6903	3264
Georgia	796	838	821	9511	10569	3809
<i>Caucasus/3South CIS</i>	696	729	711	7093	7452	3243
Belarus	782	825	869	7043	7896	6687
Moldova	393	414	406	5417	5878	1970
Russia	479	504	493	11294	12602	7196
Ukraine	522	549	538	8228	9366	3919
<i>Russia+3 West CIS</i>	502	528	520	10220	11454	6291
Kazakhstan	464	488	478	7079	7655	4877
Kyrgyz Rep.	1157	1218	1064	6490	6300	3581
Tajikistan	206	217	72	3975	3539	1006
Turkmenistan	691	727	712	6284	5730	2909
Uzbekistan	649	683	669	3064	2774	2203
<i>5 East CIS</i>	587	621	586	5120	4949	2988
Total Area 5	527	557	545	9229	10050	5457
Europe+East Med.	526	545	564	13045	15866	17860
Europe+Eurasia	526	549	558	11780	13915	13715

Eurasia clearly experienced economic stagnation during the period 1980-90 which probably had a significant influence upon the political crisis experienced by the FSU at the end of that period. After the fall of the communist system these countries achieved independence from former Soviet Union in 1991, and have begun, albeit with many difficulties, a transition towards democracy and a free market economic system.

Many of these economies in transition have experienced important recessions during the period 1990-99 according to Maddison(2001) and other international sources.

Table 10. Ph in Industry and Services: East Europe and Eurasia  
(thousands of dollars at 1999 prices and PPPs)

Country	Ph80i	Ph90i	Ph99i	Ph80s	Ph90s	Ph99s
Armenia	1963	1999	760	1072	1062	847
Azerbaijan	2908	2968	1404	3267	3315	1252
Georgia	3138	3488	495	5577	6243	2493
<i>Caucasus/3 South CIS</i>	2786	2928	974	3611	3795	1558
Belarus	3310	3711	3076	2951	3360	2742
Moldova	1788	1940	473	3235	3525	1091
Russia	5421	6049	2519	5394	6049	4184
Ukraine	3620	4121	1372	4086	4696	2009
<i>Russia+3 West CIS</i>	4805	5385	2233	4913	5541	3538
Kazakhstan	3115	3368	1463	3500	3799	2936
Kyrgyz Rep.	2336	2268	788	2997	2814	1729
Tajikistan	1352	1203	302	2417	2119	632
Turkmenistan	1903	1719	1200	3690	3284	997
Uzbekistan	1028	915	602	1387	1176	842
<i>Central Asia/East CIS</i>	1985	1911	914	2548	2417	1487
Total Area 5	4241	4617	1898	4461	4876	3014
Europe+East Med.	4370	5059	5360	8149	10261	11935
Europe+Eurasia	4327	4911	4203	6926	8455	8954

The fall in industrial production has been remarkable in this area during 1990-95 and it has had negative consequences on other sectors, especially in services, although a recovery did occur in several cases over the following years.

In this regard we find a possible overestimation of that fall, due to some degree of overestimation in the values of real value-added by sector over the last years of communist systems in several countries, affecting the figures for the years 1980 and 1990, and their comparison with the year 1999.

Table 11 presents production by sector and per inhabitant of European and Eurasian large areas in the year 1999, and table 12 presents real Gross Domestic Product, Gdp, and population of these areas, including not only the biggest countries but also the countries and territories with population below one million inhabitants.

Table 11. Production per head in Agriculture and Industry:  
Europe and Eurasia (dollars at 1999 prices and PPPs)

Area	Ph99a	Ph99i	Ph99s	Ph99t
Nordic and British Europe	353	6849	15475	22677
Latin Europe	561	6256	14315	21132
Germanic Europe and Benelux	360	7298	17065	24723
Central, Baltic and East Med.	808	2647	4917	8372
Eurasia	545	1898	3014	5457
Europe and East Med.	564	5360	11935	17860
Europe and Eurasia	558	4203	8954	13715
Total World (210 countries)	591	2285	4154	7031

Table 12. Gross Domestic Product and Population of European and Eurasian areas in 1980-99 including small countries.  
(Billions of dollars at 1999 prices and PPPs)

Area	Gdp			Population		
	1980	1990	1999	1980	1990	1999
Nordic and British	1177	1582	1973	82.3	84.2	87.0
Latin Europe	2386	3084	3512	157.6	163.3	166.2
Germanic and Benelux	2144	2681	3058	116.6	119.1	123.7
Central+Baltic+E. Med.	1198	1501	1708	179.9	201.7	205.2
Eurasia	2385	2775	1549	258.4	276.1	283.8
Europe+East Med.	6905	8848	10251	536.4	568.3	582.1
Europe+Eurasia	9290	11623	11800	794.8	844.4	865.9
World (210 countries)	24063	32572	42113	4429	5257	5971

The share of Europe and East Mediterranean on world totals for Gdp evolved from 47.5% in 1980 to 41.1% in 1999, and the share of population from 11.9% in 1980 to 9.6% in 1999.

The share of the group Europe and Eurasia fell even more, due to the significant apparent diminution of former Soviet Union during this period. The share of Gdp for the total Europe and Eurasia group of countries, in the period 1980-99, evolved from 64% to 47% and the share of population from 17.5% to 14.0%.

Although the important increase in Asian production will imply a loss of the relative weight of Europe and Eurasia on world production, we think that the evolution of Europe and Eurasia will probably be good in terms of production per inhabitant, as it is expected that the economies in transition of Russia, and countries FSU will overcome their difficulties and notably improve their development over the next decades.

Economic perspectives are also good for Central Europe, Baltic and East Mediterranean countries, because of their increase in the educational level of their populations, which in turn favours industrial development.

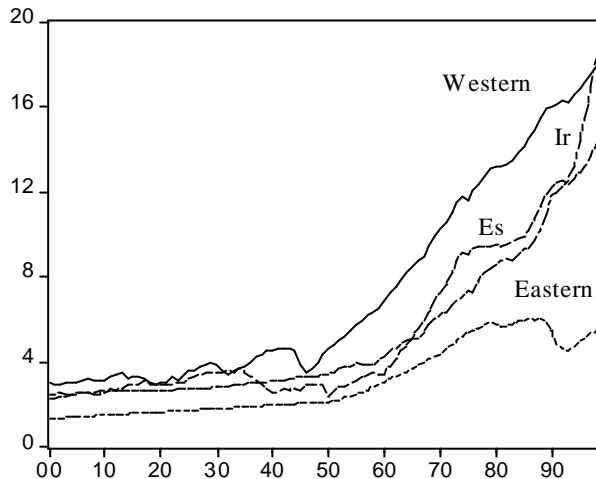
The enlargement of the EU, with 10 new members in 2004: Poland, Hungary, Czech Republic, Slovakia, Slovenia, Malta, Cyprus and the 3 Baltic countries, and the increasing cooperation from EU with the other countries of that area will contribute positively to their development.

The positive effect will be much higher in countries with a high educational level of population, as occurred in previous enlargements such as with Ireland taking more advantage than Spain, Portugal and Greece, mainly because its higher educational level.

Graph 1 shows the estimated values of Gdp per inhabitant (Pht) in thousands of dollars, at 1990 prices and purchasing power parities, according to Maddison(2002) and our provisional estimations based on OECD and historical statistics, for Western Europe (corresponding to areas 1, 2 and 3 and Greece), Eastern Europe (including Central and Eastern Europe and the Former Soviet Union, corresponding to areas 4 and 5 without Greece and Turkey).

In some cases the estimations for the first half of the 20<sup>th</sup> century take into account the changes due to war periods, while in other cases, such as Eastern Europe, the estimation represents the general trend without specific information for special years.

Graph 1. Gdp per inhabitant in Western and Eastern Europe  
(thousands of dollars at 1990 prices and PPPs)



We can see that Ireland and Spain in Western Europe, with levels of education below Western average in 1960, experienced an important development during the period 1960-99 thanks to the improvements in education, industry and trade, while Eastern Europe and the FSU, with lower levels of expenditure on education experienced a more moderate growth.

It is important for the less developed countries of Europe, East Mediterranean and Eurasia to foster international cooperation in order to increase the educational level, both in quantity and quality, and to favour higher levels of socio-economic capital: physical capital of industry and services, human capital and institutional capital. Institutional capital has proved to be very important in favouring economic development through a positive evolution of

democracy, freedom, security, peace, education and human rights, as already pointed out by North(1990) and other authors.

## **2. Education, fertility and development in Europe and Eurasia**

Tables 13 to 17 present data of population, in millions of people, for the years 1980, 1990 and 1999, in countries with more than one million inhabitants, at country level.

Other variables included in the tables are the following:

Eduh = Public Expenditure in education per inhabitant in 1995, estimated in Guisan(1997) and elaborated from UN sources, in dollars per inhabitant at 1995 prices and purchasing power parities.

Tyr99 = Average total years of schooling of population over 15 years old, according to data from Barro and Lee(1999), and our own estimations for missing data.

Fer00 = Fertility rate in the year 2000, according to UN figures published by Akal(2002), representing the average number of expected children per woman.

Totals per area also include data of population and estimations for the other variables, for countries belonging to the area but which are not individually presented in the table, due to unavailability of data or because of their small size.

Table 18 presents a summary for all the countries in each area, together with European averages and World averages for 210 countries, including all the countries with more than one million inhabitants and a high percentage of countries and territories below that level.

Table 13. Population, Education and Fertility in countries of Area 1

Country	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
Denmark	5.1	5.2	5.3	1591	10.1	1.7
Finland	4.8	5.0	5.2	1238	10.1	1.7
Ireland	3.4	3.5	3.7	1019	9.0	1.9
Norway	4.1	4.2	4.5	1949	11.9	1.8
Sweden	8.3	8.6	8.9	1511	11.4	1.5
UK	56.3	57.4	59.1	955	9.3	1.7
Total Area 1	82.3	84.2	87.0	1122	9.7	1.7
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4

Table 14. Population, Education and Fertility in countries of Area 2

Country	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
France	53.9	56.7	59.1	1157	8.4	1.7
Italy	56.4	57.7	57.6	1055	7.0	1.2
Portugal	9.8	9.9	10.0	642	4.9	1.5
Spain	37.4	38.9	39.4	654	7.3	1.2
Total Area 2	157.6	163.3	166.2	969	7.4	1.4
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4

Table 15. Population, Education and Fertility in countries of Area 3

Country	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
Austria	7.6	7.7	8.1	1213	8.8	1.4
Belgium	9.8	10.0	10.2	1063	8.7	1.6
Germany	78.3	79.4	82.0	835	9.7	1.3
Netherlands	14.2	15.0	15.8	1141	9.2	1.5
Switzerland	6.3	6.7	7.1	1270	10.4	1.5
Total Area 3	116.6	119.1	123.7	942	9.5	1.4
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4

Table 16. Population, Education and Fertility in countries of Area 4

Country	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
Albania	2.7	3.2	3.4	141	5.4	2.6
Bulgaria	8.9	9.0	8.2	245	6.8	1.1
Croatia	4.6	4.6	4.5	157	6.7	1.7
Czech Rep.	10.2	10.4	10.3	459	8.1	1.2
Greece	9.6	10.1	10.5	361	8.5	1.3
Hungary	10.7	10.6	10.1	423	8.8	1.4
Macedonia	1.9	1.9	2.0	39	6.0	1.9
Poland	35.6	38.1	38.7	296	9.9	1.5
Romania	22.2	22.5	22.5	91	6.6	1.3
Slovakia	5.0	5.2	5.4	380	7.5	1.4
Slovenia	1.8	1.9	2.0	443	8.4	1.2
Turkey	44.5	56.1	64.4	157	4.8	2.7
<i>Central+E.Med.</i>	172.5	188.9	197.7	235	7.0	1.9
Estonia	1.5	1.5	1.4	212	7.1	1.2
Latvia	2.5	2.5	2.4	346	7.2	1.1
Lithuania	3.4	3.6	3.7	143	6.7	1.4
<i>Baltic countries</i>	7.4	7.6	7.5	222	6.9	1.3
Total Area 4	179.9	196.5	205.2	234	7.0	1.8
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4

In area 1 the Nordic countries stand out with very high levels of education expenditure, and Ireland shows the high level achieved after several decades of interesting economic policies that have extraordinarily increased the educational level of its population and its degree of economic development.

In area 2 there are important differences between France and Italy with higher levels of expenditure on education, and Spain and Portugal, countries with levels of this variable below not only European Union average, but also below the average corresponding to Western and Central Europe and East Mediterranean.



In area 3 all the countries have high levels although we might observe some degree of underestimation in the case of Germany, as analysed in Guisan and Arranz(2001).

Area 4 has levels of public expenditure on education clearly below Western Europe, with an average of only 234 dollars per inhabitant compared with a European average of 740. Differences would be even greater with quantities in exchange rates instead of PPPs. The most outstanding countries of this area are Czech Republic, Greece, Hungary and Slovakia and Slovenia, both in the level of expenditure on education, and in the real value of Gdp per inhabitant, as seen in tables 7 and 17, although all of them should, in our opinion, make an effort to increase education expenditure, similar to that of Ireland, in order to improve their economic development.

Table 17. Population, Education and Fertility in countries of Area 5

Country	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
Armenia	3.1	3.5	3.8	158	6.2	1.4
Azerbaijan	6.2	7.1	8.0	112	5.9	1.9
Georgia	5.1	5.3	5.5	34	6.1	1.6
<i>Caucasus/3 South CIS</i>	14.4	15.9	17.3	97	6.0	1.7
Belarus	9.6	10.0	10.2	266	6.9	1.3
Moldova	4.0	4.3	4.3	152	6.0	1.6
Russia	139.0	144.9	146.5	231	7.8	1.2
Ukraine	50.0	51.1	49.9	203	6.6	1.3
<i>Russia+3 West CIS</i>	202.6	210.3	210.9	225	7.4	1.3
Kazakhstan	14.9	16.0	15.4	153	6.0	2.1
Kyrgyz Rep.	3.6	4.3	4.7	62	5.2	2.9
Tajikistan	4.0	5.2	6.2	130	4.4	3.7
Turkmenistan	2.9	3.7	4.8	247	4.9	3.6
Uzbekistan	16.0	20.6	24.5	263	5.3	2.8
<i>5 East CIS</i>	22.5	25.5	26.3	196	5.5	2.6
Total Area 5	258.4	276.0	283.8	212	6.9	1.0
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4

Eurasia shows an average of public expenditure on education slightly below Eastern Europe. In spite of this low value, many countries have reached an average of years of schooling higher than 6, with a few exceptions below that figure mainly in Central Asia.

The following table presents a comparative summary of the 5 European and Eurasian areas.

Table 18. Population, Education and Fertility in the large areas

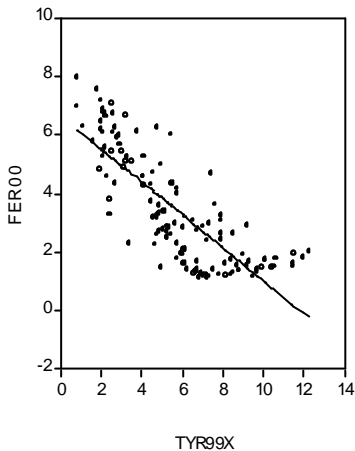
Area	Pop80	Pop90	Pop99	Eduh	Tyr99	Fer00
Nordic and British	82.3	84.2	87.0	1122	9.7	1.7
Germanic and Benelux	116.6	119.1	123.7	942	9.5	1.4
Latin Europe	157.6	163.3	166.2	969	7.4	1.4
Central+Baltic+E. Med	179.9	196.5	205.2	234	7.0	1.8
Eurasia	258.4	276.0	283.8	212	6.9	1.0
Europe+East Med.	536.4	563.1	582.1	740	8.1	1.6
Europe+Eurasia	794.8	839.1	865.9	562	7.7	1.4
World (210 countries)	4429	5257	5971	258	5.8	2.8

Expenditure in education has been very low in areas 4 and 5. Both Eastern Europe and Eurasia have shown in part as a consequence of this feature, lower levels of development during the second half of the 20<sup>th</sup> century, as seen in graph 1.

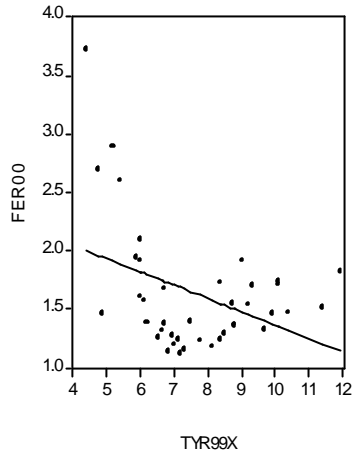
As seen in previous world development reports, and in Guisan, Aguayo and Exposito(2001), countries with higher levels of education are generally also the best in general economic performance, with lower fertility rates and higher levels of industrial production per inhabitant and income per capita.

The following graphs show that the effect that Education has on Fertility is negative until a level of Total average Years of Schooling of population, Tyr, nearly 8, and does not have significant effect after that value. The graph on the left corresponds to the world and the graph on the right to the group of countries of Europe and Eurasia, for the year 1999.

Graph 2. Fertility and Education  
in the World



Graph 3. Fertility and Education  
in Europe and Eurasia



In these graphs we can observe that the behaviour of average fertility, in relation with the educational level of population, is very similar in both cases, at world level, and in the group of European and Eurasian countries.

The impact of education on the diminution of the average fertility rate is very clear until an average level of about 7 or 8 total years of schooling and it is rather constant after that value. Increases in real income per inhabitant and/or government aids to families could explain slight increases in fertility rates in some cases.

### **3. External Trade in European and Eurasian countries**

Industrial development usually implies an increase in trade, both internal and external, and in the case of small countries a high degree of foreign trade because the opportunities for internal trade are generally more limited than in big countries.

The following tables show the figures of Exports per inhabitant in goods and services for the years 1990 and 1998 at

country level in the areas of Europe and Eurasia, expressed in dollars at current prices and exchange rates. Totals per area include trade among countries both inside and outside the area. In some cases the data was only available for 1998 and we include the same value for 1990 although in those cases there could be an overestimation for that year .

As the price index in dollars was very moderate for the period 1990-98, the comparison between both years is representative of the real increase, and, in the comparison of exchange rates is adequate because international trade prices are generally more affected by exchange rates than by purchasing power parities.

Generally, small countries with high levels of industrialization have high levels of external trade, while the biggest countries with similar levels of development usually have more internal trade.

The estimations for World averages of these variables are the following: 657, 154 and 811 respectively for Exports of goods, services and total, per inhabitant, in the year 1990. For the year 1998 the corresponding figures are 917, 224 and 1141.

Table 19. Exports of goods, services and total, per inhabitant in Area (dollars at current prices and exchange rates)

Country	1990			1998		
	Expgh	Expsh	Expth	Expgh	Expsh	Expth
Denmark	7172	2476	9648	9119	2807	11926
Finland	5329	915	6244	8333	1294	9628
Ireland	6778	938	7716	17542	1795	19337
Norway	8026	2935	10961	8879	3125	12004
Sweden	6723	1572	8295	9536	1990	11526
UK	3225	926	4151	4633	1683	6316
Total Area 1	4341	1188	5529	6402	1839	8241
Europe+East Med.	3107	801	3908	4360	1173	5533
Europe+Eurasia	2191	557	2748	3024	804	3828

Table 20.Exports of goods, services and total, per inhabitant in Area 2  
(dollars at current prices and exchange rates)

	1990			1998		
Country	Expgh	Expsh	Expth	Expgh	Expsh	Expth
France	3818	1168	4986	5190	1438	6628
Italy	2954	842	3796	4215	1159	5374
Portugal	1664	512	2176	2370	835	3205
Spain	1428	710	2138	2771	1238	4010
Total Area 2	2812	904	3716	4105	1257	5362
Europe+East Med.	3107	801	3908	4360	1173	5533
Europe+Eurasia	2191	557	2748	3024	804	3828

Table 21.Exports of goods, services and total, per inhabitant in Area 3  
(dollars at current prices and exchange rates)

	1990			1998		
Country	Expgh	Expsh	Expth	Expgh	Expsh	Expth
Austria	5351	2950	8301	7758	3944	11702
Belgium	11809	2477	14286	17567	3544	21112
Germany	5306	650	5956	6627	963	7590
Netherlands	8813	1981	10794	12792	3291	16083
Switzerland	9503	2716	12219	11133	3641	14774
Total Area 3	6534	1237	7771	8654	1824	10478
Europe+East Med.	3107	801	3908	4360	1173	5533
Europe+Eurasia	2191	557	2748	3024	804	3828

Western Europe presents a high degree of economic integration among countries and that implies high values of exports per inhabitant, mainly in the cases of smaller countries. The highest value in area 1 corresponds to Ireland, with 19337 dollars in 1998, while in area 2 the first position corresponds to France with 6628, and in area 3 to Belgium with 21112.

We can observe an important increase in the value of exports per inhabitant in all Western European areas during the period 1990-98.

Table 22. Exports of goods, services and total, per inhabitant in Area 4  
(dollars at current prices and exchange rates)

	1990			1998		
Country	Expgh	Expsh	Expth	Expgh	Expsh	Expth
Albania	72	10	82	62	24	86
Bulgaria	559	93	652	515	212	727
Croatia	1009	881	1890	1009	881	1890
Czech Rep.	777	715	1492	2556	715	3271
Greece	801	643	1444	1026	880	1906
Hungary	947	254	1201	2270	481	2751
Macedonia	471	64	535	471	64	535
Poland	376	84	460	730	282	1012
Romania	220	27	247	368	53	421
Slovakia	1999	422	2421	1999	422	2421
Slovenia	4535	1025	5560	4535	1025	5560
Turkey	231	141	372	423	364	787
Estonia	2262	1030	3292	2262	1030	3292
Latvia	746	115	861	745	426	1172
Lithuania	1002	296	1298	1002	296	1298
Total Area 4	559	244	803	858	373	1231
Europe+East Med.	3107	801	3908	4360	1173	5533
Europe+Eurasia	2191	557	2748	3024	804	3828

The average of exports per inhabitant is very low in Central Europe, Baltic countries and East Mediterranean, in comparison with Western Europe. Some countries experienced an important increase during the period 1990-98, and the most outstanding values among the countries of area 4 in 1998 correspond to Slovenia with 5560 dollars per inhabitant, Estonia with 3292, the Czech Republic with 3271 and Hungary with 2751.

The exports of services in the case of Greece could be undervalued because some services related with international maritime transport are sometimes not properly included in the statistics as foreign trade of services.

Table 23.Exports of goods,services and total, per inhabitant in Area 5  
(dollars at current prices and exchange rates)

	1990			1998		
Country	Expgh	Expsh	Expth	Expgh	Expsh	Expth
Armenia	59	31	90	59	31	90
Azerbaijan	77	40	117	77	40	117
Georgia	34	51	85	34	51	85
Belarus	689	92	781	689	92	781
Moldova	147	27	174	147	27	174
Russia	505	88	593	505	88	593
Kazakhstan	340	57	397	340	57	397
Kyrgyz Rep.	110	12	122	110	12	122
Tajikistan	98	7	105	98	7	105
Turkmenistan	199	58	257	199	58	257
Uzbekistan	99	3	102	99	3	102
Total Area 5	376	71	447	371	70	441
Europe+East Med.	3107	801	3908	4360	1173	5533
Europe+Eurasia	2191	557	2748	3024	804	3828

The unavailability of data for 1990 does not allow a proper comparison of this area for the period 1990-98. Provisional data for 1990 are the same of year 1998.

We observe a lower level of exports per inhabitant in this area than in area 4, which is indeed related to the differences in the levels of industrialization. The highest values of exports per inhabitant in this area correspond to Belarus with 781 dollars and Russia with 593.

#### 4. Conclusions

We have presented an international comparison of socio-economic development variables among European and Eurasian countries, and in this section we emphasize some of the main conclusions.

We have seen that human capital plays an important role in explaining moderation in rates of growth of population and increase in industrial development. Education expenditure per inhabitant and institutional conditions regarding market freedom have also had influence to explain the different evolution of industry in countries below EU averages in 1960, such as Ireland and Spain, in comparison with Russia and FSU countries,

The less developed countries of Europe and Eurasia need a significant improvement in education expenditure as well as in industrial production per inhabitant. External trade can help in this process as can be seen in the cases of some countries of Central Europe, which have shown an important openness and industrialization during the period 1990-99.

Those policies should be recommended especially in the case of Turkey and other Eurasian countries with high fertility rates, low educational levels and low values of industrial production per inhabitant. As seen in Canelo and Guisan(2001) Turkey experienced, together with Mexico, the highest level of increase in real Gross Domestic Product during the period 1964-94, although its excessive rates of population growth have implied very low rates of increase in income per inhabitant.

International cooperation should be strongly encouraged to improve education in some East European and Eurasian countries, in order to improve the development not only of human and physical capital, but also as a way of improving social capital, democratic institutions, and quality of life of their citizens.

The improvement of economic relations between the European Union and other countries of these areas should be developed taking into account that real convergence can only be achieved with one of the following ways, or a mix of both options: 1) Economic cooperation from the richer countries to improve socio-economic conditions and education in less developed countries. 2) Migration from the poorest areas to the richest countries.



The first way is generally the best because the result is a higher average level of development for all the areas and it avoids many human and social problems derived from excessive migration movements, both for countries of origin and for countries of destination. The second way could induce diminutions in average wages and income of European Union inhabitants and negative social reactions against excessive increases of immigration.

In this regard we should remember that many citizens from EU countries and from candidate enlargement countries show a deep concern for European policies, as shown in the survey of OPTEM(2001) for the European Commission. There is generally a disagreement with the lack of transparency and the excesses of bureaucracy that generally affect EU activities.

A change in the EU electoral system is needed to improve democracy, transparency and cooperation between EU Parliament, EU Commission and European society. It should be highly positive to develop European policies of cooperation in order to reach better socio-economic conditions not only in Europe and Eurasia, but also outside this areas fostering international aid to education and economic development in many other countries.

## **Bibliography**

Akal(2001). *“El estado del mundo 2001”*. Akal Ediciones, Madrid.

Barro, R. And Lee, J.W.(1999). *“Total years of schooling Statistics”*.

Cancelo, M.T., Guisan, M.C. and Frias, I.(2001). *“Supply and Demand on Manufacturing Output in OECD countries: Econometric Models and Specification Tests”*. *Applied Econometrics and International Development*, Vol.1-2, December 2001, pp. 7-42.<sup>1</sup>

Collier, P. and Gunning, J.W.(1999). "Explaining African Economic Performance". *Journal of Economic Literature*, vol. 37, pp. 64-111.

Fosu, A.K.(2000). "The International Dimension of African Economic Growth". Working paper n.34 of the series *CID of the Center for International Development* at Harvard.<sup>1</sup>

Guisan, M.C., Aguayo, E. and Exposito, P.(2001). "Economic Growth and Cycles: Cross-country Models of Education, Industry and Fertility and International Comparisons". *Applied Econometrics and International Development*, Vol.1-1, June 2001, pp. 9-37.<sup>1,2</sup>

Guisan, M.C. and Exposito, P.(2001). "Educación, desarrollo y emigración en África". *Estudios Económicos de Desarrollo Internacional*, edited by AEEADE.<sup>1,2</sup>

Maddison, A.(2001). "*The World Economy. A Millennial Perspective*". OECD Development Centre. OECD, Paris.

Neira, I., and Guisan, M.C.(2002). "Modelos econométricos de capital humano y crecimiento económico. Efecto inversión y otros efectos indirectos". Working Paper n.62 of the series *Economic Development* of the Euro-American Assoc. of Eco. Studies, free downloadable.<sup>1,2</sup>

OECD(2001). "*Geographical Distribution of Financial Flows to AID Recipients*". OECD, Paris.

OECD(several years). "*National Accounts of OECD countries, 1960-97*".

The Economist(1981). "*The world in figures*". London.

The Economist(1985). "*Economics Statistics 1900-1983*". Compiled and written by Thelma Liesner, London.

Ramirez, A., Ranis, G. and Stewart, F.(1997). “Economic Growth and Human Development”. Working Paper n. 787 of *the Economic Growth Center* at Yale University, free downloadable.<sup>1</sup>

World Bank(2001). “*World Development Indicators*”, Washington.

<sup>1</sup> Documents available at <http://ideas.repec.org>

<sup>2</sup> Information at <http://www.usc.es/economet/ea.htm>