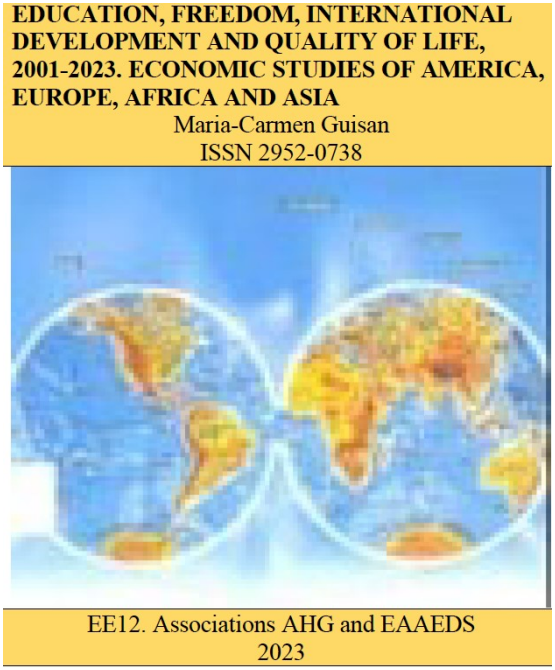

BOOK EE12

EDUCATION, FREEDOM, INTERNATIONAL DEVELOPMENT AND QUALITY OF LIFE, 2001-2023: INTERNATIONAL. ECONOMIC STUDIES OF AMERICA, EUROPE, AFRICA AND ASIA

Maria-Carmen GUISAN

ASSOCIATION HISPALINK-GALICIA (AHG)
EURO-AMERICAN ASSOCIATION OF ECONOMIC DEVELOPMENT STUDIES (EAAEDS)
Second Edition 2024

EDUCATION, FREEDOM, INTERNATIONAL DEVELOPMENT AND QUALITY OF LIFE, 2001-2023: INTERNATIONAL. ECONOMIC STUDIES OF AMERICA, EUROPE, AFRICA AND ASIA

GUISAN, Maria-Carmen:

Abstract

The book EE12, presents a summary of several international studies published by the author and other researchers, on World development,t for 2001-2023. EE12 includes 6 chapters relating Education, Investment, Production and several indicators of Quality of Life (Quality of Government, Freedom, Air Pollution, Peace, Political Stability and Life Satisfaction: 1) Education, World Development and Quality of Life, 2001-2023. 2) Econometric Models of OECD countries, 2001-2023 on macroeconometrics of supply and demand for the explanation of real Gross Domestic Product, Employment and real Wages, Industrial development, Exports and Imports. 3) Development studies of Latin America, 2001-2023. 4) Development studies of Europe and Eurasia, 2001-2023. 5) Development studies of Africa, 2001-2023. 6) Development studies of Asia and Oceania, 2001-2023. The book has been preceded by EE11, also published by the Euro-American Association of Economic Development Studies, in the serie EEbooks, which includes a survey of studies of World development for the period 1960-2000.

JEL codes: C3, C5, E2, F1, J13, J2, J3, O1, O14, O5, O51, O52, O53, O54, O55, O56, O57.

Keywords: Education and World Development, Quality of Life, International econometric models of Demand and Supply, Industry, Employment and Wages in OECD countries, Latin America, Europe and Eurasia, Africa, Asia and Oceania.

Web of the research team: https://www.usc.gal/econo met/eaat.htm
Web of the author: https://www.usc.gal/econo met/guisan2.htm
Book EE12 of the Series "Estudios Económicos/Economic Studies". Published by the Euro-American Association of Economic Development Studies and the Association Hispalink Galicia (AHG). Editor: Maria-Carmen Guisan, Professor of Econometrics:
Available at https://www.usc.gal/econo met/ebooks.htm and at Ideas-Repec
ISSN 2952-0738
Webmaster: Pilar Exposito. Lecturer of Econometrics, USC
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Reports updates on the Blogs of World Development:
https://euroamericanassociation.blogspot.com (English)
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Book EE12, available at https://www.usc.gal/economet/ebooks.htm

Prologue

This book, EE12, presents a summary of several quantiative studies on international development for the period 2001-2023, published by our research team in articles and reports since year 2004. A previous book, EE11, includes a summary of our studies for the period 1960-2000. Both books show the great impact of Education on socio-economic development.

Regarding our studies on World development beyond 2023, we expect to include references and links to future reports in the updates of the working paper EcoDev127, or other ones, of our series Economic Development.

The main focus of our research is to highlight the great importance of Education on sustainable international development and quality of life, and the convenience of increasing international cooperation for Education, Political Stability, Freedom and Peace, in order to foster production per capita, real income per capita, life satisfaction and diminishing contamination.

Chapter 1 presents studies on World development, including the models by Guisan(2021) and (2022) on the relationship between education, economic development and several indicators of quality of government and quality of life. It also includes the important role of Education to avoid high increases of Total emissions of CO2 in the World, with several scenarios for year 2030.

Chapter 2 analyzes panel econometric models and other studies of OECD countries in the two first decades of the 21st century, including a comparison of the United States with the 5 major economies of Europe (France, Germany, Italy, Spain and the United Kingdom) and with other OECD countries.

Chapters 3 to 6 include a summary of our studies on economic development for 2001-2023 in the following geographical areas: Latin America, Europe and Eurasia, Africa, Asia and Pacific.

We try to contribute to foster economic policies addressed to poverty eradication by means of education, development, freedom, and quality of life.

First version at Ideas.Repec, on October of 2023. Second version on March of 2024. We include many links to data and studies available in internet.

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https://www.usc.gal/economet/guisan2.htm

CHAPTER 1
EDUCATION, WORLD DEVELOPMENT AND QUALITY OF LIFE, 2001-2023

GUISAN, Maria-Carmen

1.1. Studies of 2014-2017: Investment and Manufacturing in 132 countries.

In this chapter we analyze the evolution for the period 2001-2023. The most outstanding finding of these studies is the great importance of Schooling for World development.

Guisan(2014): Production and Investment in 21 Areas for 2000-2010

The article, entitled World Development, 2000-2010: Production, Investment and Savings In 21 Areas of America, Africa, Asia-Pacific, Europe and Eurasia, was published in journal RSES 14-2 by Guisan(2014), and includes an econometric model estimated with data of 132 countries.

There are big differences in investment and savings per capita (IH and SH) between areas with low average level of schooling and areas with high average level. Low levels of Investment per capita usually imply low levels of Industrial and Manufacturing production per capita. Low levels of Manufacturing per capita usually imply low levels of Non Manufacturing per capita and thus, a low level of real Production per capita (GDPH).

Table 1.1. Real values per capita of Manufacturing (QMH), Gross Domestic Product (GDPH), Investment (IH) and Savings (SH) (Dollars at 2005 prices and parities)

Area	QMH 00	QMH 10	GDPH 00	GDPH 10	IH 00	IH 10	SH 00	SH 10
Africa	278	282	2080	2638	413	620	733	578
Asia & Pacific	903	1443	4004	6333	1093	2115	2625	2315
America	3312	3052	19865	21908	3977	3811	3471	3094
Europe&Eurasia	3220	3191	17408	20828	3722	4151	4310	4195
World	1494	1728	7905	9852	1788	2403	2746	2422

Source: Elaborated by Guisan(2014), in RSES, from World Bank(2014), for year 2000-2010. In case of unavailable data, we included our own estimations.

Areas of America and Europe and Eurasia in 2010, had GDPH more than twice the World average of GDPH , while the average of the group of African countries was very low (2638) and the average of Asia Pacific was low (6333).

Maria-Carmen Guisan, Honorary Professor of Econometrics, University of Santiago de Compostela, Spain. https://www.usc.gal/economet/guisan2.htm

World average of QMH experienced and increase from 1494 in year 2000 to 1728 in year 2010. Asia Pacific experienced an important increase, from an average of 903 in year 2000 to an average of 1443 in 2010.

Table 1.2 presents data of 21 geographical areas for the following variables in years 2000 and 2010, expressed in Dollars per inhabitant at 2005 prices and Purchasing Power Parities (PPPs):

qmh = Manufacturing Production per capita

gdph = Gros Domestric Product per capita

ih = Investment per capita

sh = Savings per capita

Table 1.2. Manufacturing, GDP, Investment and Savings, per inhabitant in 21 areas, years 2000 and 2010. (US Dollars at Prices and Purchasing Parities of year 2005)

Area	qmh 00	qmh 10	gdph 00	gdph 10	ih 00	ih 10	sh 00	sh 10
1. North Africa	659	752	4412	5851	1012	1657	1684	1427
2. NW Africa	94	144	1359	1894	80	412	733	567
3. Central Afri.	87	86	729	878	118	170	159	120
4. NE Africa	33	38	534	907	108	193	190	146
5. Eastern Africa	100	124	965	1246	168	293	280	213
6. Southern Afri.	645	529	3924	4859	659	931	973	810
7. Western Asia	1149	1262	10800	12237	2005	2172	2926	2303
8. SW Asia	513	646	3741	4836	1023	260	451	368
9. India & South	245	411	1635	2887	393	983	1168	975
10.China & NE	1444	2648	5547	9606	1657	3671	4333	4109
11. Indochina	708	1044	2555	4039	614	1169	1370	1257
12. South Pacific	1207	1278	5320	6978	1281	1882	2436	2054
13. US&Canada	6249	5617	38456	41594	7691	6511	5269	4801
14. Mexico&C.	1858	1764	9237	9848	2155	2344	2539	2172
15. Andean	1219	1217	7064	9181	1421	2089	2483	2189
16. SE America	1544	2442	8748	11921	1443	2117	1544	2442
17. North Europe	5109	3819	30081	33474	5634	5458	5705	5428
18. Central West	6387	6668	31306	34227	6949	6229	8389	8260
19. West Latin	4761	3562	27173	27659	5995	5698	5216	4792
20. Central & EM	2150	2695	10812	15093	2522	3213	2573	2524
21.Russia & former	1052	1527	6038	10208	1172	2435	2729	2745

Source: Elaborated by Guisan(2014) in RSES. Note: Data of IH of area 16 updated on 5th October of 2015.

Figures 1.1 presents the list of areas and figures 1.2 to 1.5 shows countries by area and Population (Pop) in years 2000 and 2010.

Figure 1.1. List of areas: Africa (areas 1 to 6). Asia-Pacific (areas 7 to 12), America (areas 13 to 16), Europe and Eurasia (areas 17 to 21).

Africa	1. North Africa: Northern Africa
	2. NW Africa: North West Africa
	3. Central Afr.: Sahel-Central Africa
	4. NE Africa: North East Africa
	5. Eastern Africa
	6. Southern Afri. : Southrern Africa
Asia and Pacific	7. Western Asia
	8. SW Asia: South Western Asia
	9. India & South
	10.China & NE = China and North East
	11. Indochina
	12. South Pacific
America	13. US & Canada: United States and Canada
	14. Mexico & C.: Mexico and Central America
	15. Andean: Andean America
	16. SE America: South Eastern America
Europe and Eurasia	17. North Europe: Nordic and British Europe
	18. Central West: Central West Europe
	19. West Latin: West Latin Europe
	20. Central & E.Med.=Central Europe and East Mediterranean
	21. Russia and East

The article includes data of 132 countries. The lists of countries by area are presented in the following figures. The number of each country corresponds to its position in a general alphabetical order.

Population by area was calculated by Guisan(2014) from World Bank statistics. For the period 2000-2010 World Population increased as follows

In Africa, from 748 to 946 million, with an increase of 26.47%.

In Asia and Pacific, from 3453 to 3913, with an increase of 13.32%

In America, from 813 to 912 million, with an increase of 12.18%

In Europe and Eurasia, from 851 to 876, with an increase of 2.94%

The sum of the 132 countries of the 21 areas, evolved from 5865 in year 2000 to 6647 million people in year 2010, with an increase of 13.33%.

Figure 1.2. Africa: areas, countries and population (million)

Area	Countries and territories	Pop 2000	*Pop 2010*
1. N Africa	2 Algeria, 37 Egypt AR, 77 Mauritania, 81 Morocco, 119 Tunisia	138	*162*
2. NW Africa	12 Benin 31 Cote d´Ivoire 46 Ghana 49 Guinea 90 Nigeria 104 Senegal, 105 Sierra Leone 118 Togo	190	*246*
3.Sahel-Central Africa	17 Burkina F. 18 Burundi 20 Cameroon 22 C.African R 23 Chad 28 Congo DR, 29 Congo 76 Mali 89 Niger 102Rwanda	130	*172*
4. NE Africa	39 Eritrea 41 Ethiopia	68	*88*
5. EasternAfrica	63 Kenya 73 Madagascar 116 Tanzania 122 Uganda	106	*139*
6.Southern Africa	*3 Angola 14 Botswana 70 Lesotho 74 Malawi 82 Mozambique 84 Namibia 109 South Africa 131 Zambia 132 Zimbabwe*	*116*	139
Africa	Areas 1 to 6	748	946

Source: Elaborated by Guisan(2014) with World Bank statistics.

Figure 1.3. Asia and Pacific: areas, countries and population (million)

Area	Countries and territories	Pop 2000	*Pop 2010*
7. Western Asia	57 Israel 61 Jordan 65 Kuwait 69 Lebanon 103 Saudi Arabia 114 Syrian, 130 Yemen	73	*93*
8. SWAsia	55 Iran 92 Pakistan	202	*248*
9. India and S.	9 Bangladesh 53 India 85 Nepal 111 Sri Lanka	1189	*1424*
10.China and NE	25 China 26 H-K cn 60 Japan 64 Korea R 80 Mongolia	1446	*1524*
11.Indochina	19 Cambodia 67 Lao PDR 83 Myanmar 117 Thailand 129 Vietnam	206	*224*
12.South East & Pacific	6 Australia 54 Indonesia 75 Malaysia 87 N. Zealand 94 Papua N.G., 97 Philippines 106 Singapore	337	*400*
Asia&Pacific	áreas 7 to 12	*3453*	*3913*

Source: Elaborated by Guisan(2014) with World Bank statistics.

Figure 1.4. America: areas, countries and population (million)

Area	Countries and territories	Pop 2000	*Pop 2010*
13. USA&Canada	21 Canada 125 USA	313	*343*
14. Mexico & Central America	30 Costa Rica 35 Dominican R. 38 El Salvador 48 Guatemala , 50 Haiti, 51 Honduras 59 Jamaica 78 Mexico 88 Nicaragua 93 Panama	152	*178*
15.SW:Andean America	13 Bolivia 24 Chile 27 Colombia 36 Ecuador 96 Peru 128 Venezuela	128	*146*
16. SE America	4 Argentina 15 Brazil 95 Paraguay 126 Uruguay	220	*245*
America	Areas 13 to 16	*813*	*912*

Source: Elaborated by Guisan(2014) with World Bank statistics.

Figure 1.5. Europe and Eurasia: areas, countries and population (million)

Area	Countries and territories	Pop 2000	*Pop 2010*
17. Nordic and British Europe	34 Denmark 42 Finland 56 Ireland 91 Norway 112 Sweden 124 UK	87	*92*
18. W Europe Central	7 Austria 11 Belgium 45 Germany 86 Netherlands, 113 Switzerland	124	*126*
19. W. Latin Europe	43 France 58 Italy 99 Portugal 110 Spain	167	*182*
20. Central, Baltic, East Mediterranean	1 Albania 16 Bulgaria 32 Croatia 33 Czech R. 40 Estonia 47 Greece, 52 Hungary, 68 Latvia 71 Lithuania 72 Macedonia 98 Poland 100 Romania 107 Slovak R. 108 Slovenia 120 Turkey	192	*196*
21. Russia and East	*5 Armenia 8 Azerbaijan 10 Belarus 44 Georgia 62 Kazakhstan 66 Kyrgyz R.79 Moldova 101 Russian F. 115 Tajikistan 121 Turkmenistan 123 Ukraine 127 Uzbekistan*	*281*	279
Europe&Eurasia	areas 17 to 21	851	876

Source: Elaborated by Guisan(2014) with World Bank statistics.

Europe includes areas 17 (North), 18 (Western Europe Central), 19 (Western Latin Europe) and parts of aeas 20 and 21.

Eurasia is considered as a group of 6 countries that geographically belong partly to Europe and partly to Asia: Russia, Turkey, 3 Caucasian countries (Armenia, Azerbaijan and Georgia) and Kazakhstan.

Cyprus is included in the group of Europe and Eurasia although geographically is assigned to Western Asia, because its cultural relationships with Greece and is membership of the European Union.

Area 21, Russia and East, includes 5 Eurasian countries (Russia, Armenia, Azerbaijan, Georgia and Kazakhstan), several countries of East Europe (Belarus, Moldova, Ukraine) and several not geographically European nor Eurasian countries of Central Asia that have or have had a close relationship with Russia (Kyrgyz R, Tajikistan, Turkmenistan and Uzbekistan)

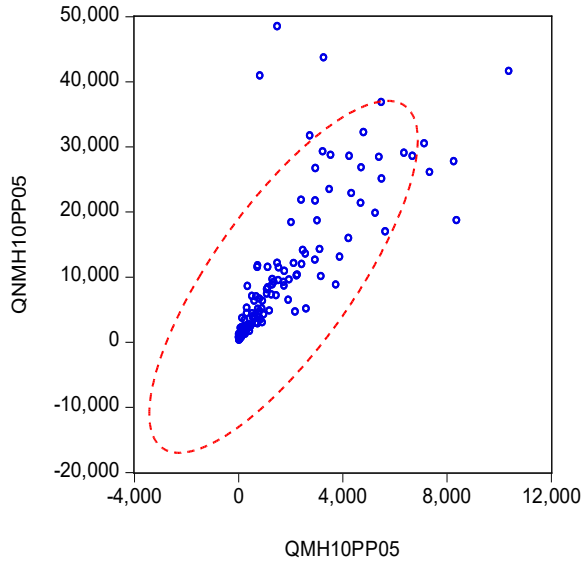
Impact of Education

The countries and areas with high level Education have moderate average fertility rates and reach high levels of Savings and Investment per capita, with positive impact on QMH and GDPH. There is a great difference between the rates of Savings per capita from the low value of Africa (578 Dollars in year 2010) to the highest average by continent in Europe with more than 4000.

Impact of Manufacturing on Manufacturing for the period 2000-2010

Graph 1.1 shows the positive relationship between Manufacturing per capita (QMH) and Non-Manufacturing Production per capita (QNMH) in 132 countries of the World in year 2010.

Graph 1.1. Manufacturing and Non-Manufacturing: 132 countries, year 2010



Source: Elaborated by Guisan(2014) from World Bank statistics. Note: Real values of QMH and QNMH in year 2010, in Dollars at 2005 Priees and Purchasing Power Parities.

Equation 1.1 shows the positive effect of manufacturing on non manufacturing production with a sample of 132 countries.

Equation 1.1. Effect of manufacturing on non manufacturing production

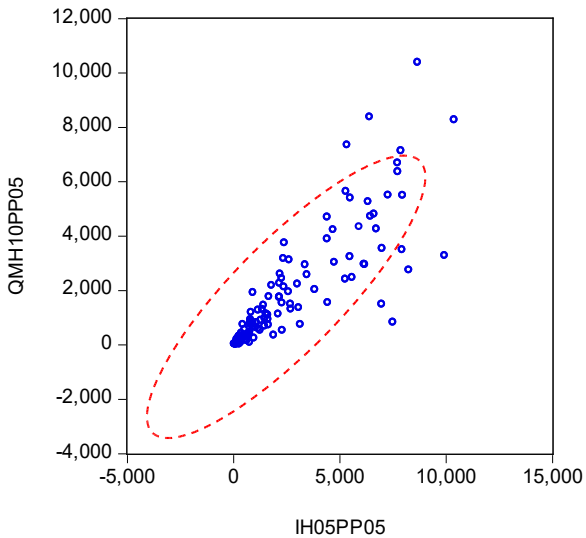
Dependent Variable: QNMH10PP05. Method: Least Squares. Sample: 1 132				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QNMH00PP05	1.233731	0.014558	84.74536	0.0000
QMH10PP05-QMH00PP05	1.478117	0.280626	5.267208	0.0000
R-squared	0.967429	Mean dependent var		10044.67
Adjusted R-squared	0.967179	S.D. dependent var		10911.97
S.E. of regression	1976.877	Akaike info criterion		18.03146
Sum squared resid	5.08E+08	Schwarz criterion		18.07514
Log likelihood	-1188.076	Hannan-Quinn criter.		18.04921
Durbin-Watson stat	1.964938			

Source: Estimated by Guisan(2014) with data of 132 countries.

Impact of real Investment per capita on real GDP per capita

Graph 1.2 shows the positive impact of Investment per capita (IH) on Manufacturing Production per capita (QMH)

Graph 1.2.. Investment and Manufacturing per capita in 132 countries, year 2010



Source: Elaborated by Guisan(2014) from World Bank Statistics. Real value of IH and QMH in Dollars at 2005 Prices and Purchasing Power Parities.

Equation 1.2 shows the positive effect that investment per capita, usually has on economic development. The equation relates real GDP per capita of each country in year 2010 (expressed in USD at 2005 prices and purchasing power parities) with its lagged value in year 2000, and the value of investment per head for the period 2001-2010.

Equation 1.2. Effect of Investment on real Production per head

Dependent Variable: PH10PP05. Method: Least Squares. Sample: 1 132				
Variable	Coefficient	Std. Error	t-Stat	Prob.
PH00PP05	0.835181	0.063063	13.24359	0.0000
Investment per head (accumulated)*	0.141855	0.025679	5.524061	0.0000
R-squared	0.968362	Mean dependent var		11767.71
Adjusted R-squared	0.968119	S.D. dependent var		12598.27
S.E. of regression	2249.449	Akaike info criterion		18.28979
Sum squared resid	6.58E+08	Schwarz criterion		18.33347
Log likelihood	-1205.126	Hannan-Quinn criter.		18.30754
Durbin-Watson stat	1.790740			

Source: Guisan(2014). *Note: Investment per head (accumulated) for the period 2001-2010 is the sum of IH for those years. Variables in US Dollars at 2005 prices and Purchasing Power Parities (USD at PP2005).

Both increases of manufacturing per head and investment per head, as well as other variables (like Agriculture, Energy, Tourism, Trade), are usually necessary to foster economic development and poverty diminution. Education is very important because contributes to increase investment per capita.

Study by Guisan(2017): Manufacturing and Development, 2000-2015

The study by Guisan(2017), in the RGE, analyses the evolution of Manufacturing and Development in the World for the period 2000-2015. The article is available at Ideas.Repec and includes data of Manufacturing and Non Manufacturing Production per capita (QMH and QNMH) of 132 countries.

QMH has usually an important positive impact on QNMH, although other industrial sectors (mining, energy), as well as Agriculture, Tourism and International Trade, have also a positive impact on Services and Building).

In this study, the equation relating QNMH with its lagged value and with the increase of QMH, was estimated separately for the countries of Africa, America, Asia-Pacific, Europe and Eurasia, and compared with the estimation with the sample of 132 countries of the World. The results appear in equations 1.3 to 1.7.

Equations 1.3 to 1.7. QNMH in year 2010: 5 estimations

Equation		Lagged dep.variable	Increase of QMH	R^2
1.3	Africa	1.203965	3.582825	0.996992
1.4	America	1.201132	2.351296	0.991983
1.5	Asia-Pacific	1.253758	0.930252	0.996193
1.6	Europe&Eurasia	1.222405	2.541376	0.980595
1.7	World	1.222653	2.48 general (1.04 in Asia [1])	0.991372

Source. Guisan (2017). Notes: [1] We have tested the homogeneity of the coefficient of the increase of QMH in the equation of QNMH among different areas, and we have found a significant difference, with a value for Asia-Pacific lower than in other areas.

There was a high degree of homogeneity of the coefficient of the lagged value of QNMH but a significant difference of the coefficient of QMH in the group of countries of Asia and Pacific, in comparison with other areas. The estimation with the full sample of 132 countries, allowing for a different coefficient for QMH in Asia and Pacific, provides 2.48 as the general estimator for Africa, America, Europe and Eurasia, and 1.04 for Asia-Pacific.

A most complete analysis should include other variables like the increase of Exports and Imports, as indicated in Guisan(2013), and in Chapter 2 of this book, but this simple model is enough to show the high degree of dependence of many non Manufacturing activities on the degree of industrial development:

QNMH f(QNMH(-10), D(QMH))

Being D(QMH)=QMH-QMH(-10). The lagged values of each variable, in t-10, are indicated with (-10) within parenthesis.

Kaldor (1957), (1967) and (1968) highlights the positive impact of Manufacturing on Production and Productivity of other sectors of the economy.

Tables 1.3 to 1.12 show several groups of countries accordingly to their levels of real Gross Domestic Product in year 2015. They include values of QMH, QNMH and GDPH for each country in years 2000 and 2015. We would like to include data of QIH (Industrial real value-added, with Manufacturing, Mining and Energy) but the World Development Indicators include Industry together with Building and not separate figures for Building. In case of unavailable data we indicate with NA (Nota Available). Column 1 is the number of each country in the alphabetical order of 132 countries, and the 2nd column indicates the geographical area: AF=Africa, AM=America,

ASP=Asia and Pacific, EUR=Europe and Eurasia. The area EUR includes countries of Europe, Eurasia and a few countries close to East Asia and Eurasia, geographically in Asia (Cyprus and Central Asia).

Table 1.3. Production per capita over 35000 Dollars at 2005 prices and PPPs

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
6	ASP	Australia	3760	2290	25166	34209	28926	36500
7	EUR	Austria	6430	6582	25719	29531	32149	36113
21	AM	Canada	6171	3670	26306	33118	32477	36778
26	ASP	Hong-Kong (China)	1489	609	28296	45731	29785	46339
45	EUR	Germany	6734	8183	23877	28001	30611	36185
56	EUR	Ireland	8358	18915	23788	29743	32146	48657
65	ASP	Kuwait	1008	1539	32595	44354	33603	45893
86	EUR	Netherlands	5036	4853	28540	32811	33576	37664
91	EUR	Norway	4364	3338	39278	44630	43642	47968
106	ASP	Singapore	10445	10628	26859	47760	37304	58388
112	EUR	Sweden	6087	5235	22899	30635	28986	35870
113	EUR	Switzerland	6260	6799	28518	31445	34778	38245
125	AM	United States	6257	5796	32851	39424	39108	45221

Source: M.C.Guisan(2017) from WB statistics. Canada in year 2015, updated . Table 1.3 includes 12 countries: 7 from Europe, 2 from America and 3 from Asia (Kuwait, Singapore and the Chinese Territory of Hong-Kong).

Table 1.4. Production per capita (25000 to 35000 Dollars at 2005 prices and PPPs

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
11	EUR	Belgium	5751	4199	24515	29138	30266	33337
34	EUR	Denmark	4758	4233	26963	28992	31721	33226
42	EUR	Finland	7140	4016	20323	27030	27463	31045
43	EUR	France	4384	3031	24841	27328	29225	30359
57	ASP	Israel	4154	NA	18837	NA	22991	NA
58	EUR	Italy	5544	4133	22176	21538	27720	25671
60	ASP	Japan	6009	5728	22604	26633	28613	32361
64	ASP	Korea. Rep.	5072	9139	12417	21290	17489	30428
108	EUR	Slovenia	5127	6149	14591	19306	19718	25455
110	EUR	Spain	4521	3721	20598	22972	25119	26693
124	EUR	UK	4668	3376	24504	31174	29172	34549

Source: Elaborated by M.C.Guisan(2017) from WB statistics. This group includes 11 countries: 8 from Europe and 3 from Asia (Israel, Japan and Korea Republic).

Almost all of the countries with high value of GDP per capita also have a high level of QMH, but in a few cases there are other main factors explaining their high levels of real Gross Domestic Product per capita: Energy in the cases of Kuwait and Norway, Mining in the Case of Australia, International Trade in the case of Hong Kong.

Table 1.5. Production per capita (18001 to 25000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
33	EUR	Czech R	4390	6972	12496	17345	16886	24317
40	EUR	Estonia	1879	3013	9174	16887	11053	19900
47	EUR	Greece	2183	2351	18391	18016	20574	20366
52	EUR	Hungary	3263	4942	10334	14005	13597	18947
71	EUR	Lithuania	1789	3892	7628	15994	9417	19885
87	ASP	New Zealand	3736	NA	18239	NA	21975	NA
98	EUR	Poland	2231	4079	9512	16095	11743	20174
99	EUR	Portugal	3468	3093	16934	18028	20402	21121
103	ASP	Saudi Arabia	1972	2620	17744	20093	19716	22713
107	EUR	Slovak R	3181	5131	9542	17517	12723	22648

Source: Elaborated by M.C.Guisan(2017) from WB statistics. This group includes 10 countries: 8 from Europe and 2 from Asia and Pacific (New Zealand and Saudi Arabia).

Table 1.6. Production per head (12000 to 18000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
4	AM	Argentina	1544	2277	8748	12414	10292	14691
10	EUR	Belarus	1859	3692	3951	9512	5810	13203
14	AF	Botswana	587	775	9196	13596	9783	14371
16	EUR	Bulgaria	1234	2502	5620	10358	6854	12860
24	AM	Chile	1781	1853	8694	13899	10475	15752
32	EUR	Croatia	2114	2750	8456	13808	10570	16558
62	EUR	Kazakhstan	973	1389	4433	11387	5406	12776
68	EUR	Latvia	1195	1797	7338	14585	8533	16381
75	ASP	Malaysia	3184	3651	7087	11990	10271	15641
78	AM	Mexico	2414	2609	9657	10749	12071	13358
93	AM	Panama	815	754	7334	15674	8149	16428
101	EUR	Russian F	1465	2063	7150	12741	8615	14804
120	EUR	Turkey	2041	3246	7235	13105	9276	16351
126	AM	Uruguay	1241	1999	7621	12700	8862	14699

Source: Elaborated by M.C.Guisan(2017) from WB statistics. This group includes 14 countries, 7 belonging to the group EUR (Europe and Eurasia), 4 from America (Chile, Mexico, Panama and Uruguay) and 1 from Africa (Botswana).

Table 1.7. Production per head (10001 to 12000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
15	AM	Brazil	1347	1036	6574	9158	7921	10194
27	AM	Colombia	965	1176	5468	8936	6433	10112
30	AM	Costa Rica	2029	1679	6088	10197	8117	11876
35	AM	Dominican R	1289	2158	3668	7869	4957	10027
69	ASP	Lebanon	1083	1016	7245	9138	8328	10154
72	EUR	Macedonia	1519	1417	5712	8921	7231	10338
96	AM	Peru	950	1294	4636	8853	5586	10147
100	EUR	Romania	1094	NA	5744	NA	6838	NA
128	AM	Venezuela.RB	1913	NA	7651	NA	9564	NA

Source: Elaborated by M.C.Guisan(2017) from WB statistics This group includes 9 countries: 6 from America, 2 from Europe and 1 from Asia and Pacific.

Table 1.8. Production per head (6001 to 10000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
1	EUR	Albania	335	748	4452	7752	4787	8499
2	AF	Algeria	426	NA	5661	NA	6087	NA
8	EUR	Azerbaijan	149	423	2341	8894	2490	9317
25	ASP	China	852	NA	1812	NA	2664	NA
36	AM	Ecuador	1043	1208	4448	7077	5491	8286
38	AM	El Salvador	1244	1307	3731	5120	4975	6427
44	EUR	Georgia	211	823	2131	5280	2342	6103
55	ASP	Iran. Islamic	997	1330	6670	8338	7667	9668
59	AM	Jamaica	633	682	5125	6295	5758	6977
84	AF	Namibia	509	594	3407	6223	3916	6817
109	AF	South Africa	1421	1094	6059	8714	7480	9808
117	ASP	Thailand	1948	2621	3781	6007	5729	8628
119	AF	Tunisia	980	1405	4464	7425	5444	8830
121	EUR	Turkmenistan	403	NA	3265	NA	3668	NA

Source: Elaborated by Guisan(2017) and updated from WB statistics. This group includes 14 countries: 4 from Europe and Eurasia, 4 from Africa, 3 from America (Ecuador, El Salvador, Jamaica) and 3 from Asia (China, Iran, Thailand).

The 45 countries of table 1.10 to 1.12, had low indicators of Schooling for the period 2000-2015 and very low levels of Investment per capita, low levels of Manufacturing production per capita and high percentages of poverty. Many of the 45 countries with lower levels of real production per capita c belong to Africa (29), 9 to Asia-Pacific, 4 to the area Europe and Eurasia, and 3 to America.

Table 1.9 . Production per head (4000 to 6000 Dollars at 2005 prices and PPPs)

	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
3	AF	Angola	79	NA	2554	NA	2633	NA
5	EUR	Armenia	435	624	1855	5357	2290	5981
13	AM	Bolivia	534	645	3029	4611	3563	5256
29	AF	Congo. R	91	315	2930	3763	3021	4078
37	AF	Egypt. AR	800	835	3411	4846	4211	5681
48	AM	Guatemala	832	918	3131	3743	3963	4661
53	ASP	India	258	533	1460	3490	1718	4023
54	ASP	Indonesia	760	1089	1954	3675	2714	4764
61	ASP	Jordan	581	847	3051	3776	3632	4623
80	ASP	Mongolia	162	411	1867	4944	2029	5355
81	AF	Morocco	507	743	2473	4032	2980	4775
95	AM	Paraguay	618	867	3174	4633	3792	5500
97	ASP	Philippines	633	858	2004	3517	2637	4376
111	ASP	Sri Lanka	522	933	2546	4970	3068	5903
114	ASP	Syrian R	261	NA	3464	NA	3725	NA
123	EUR	Ukraine	702	808	2994	4944	3696	5752

Source: Elaborated by Guisan(2017) and updated from WB statistics. Notes: R=Republic, AR= Arab Republic. Tabla 1.9 includes 16 countries: 7 from Asia and Pacific, 4 from Africa, 3 from America and 2 from Europe and Eurasia.

Table 1.10. Production per head (2001 to 4000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
19	ASP	Cambodia	172	448	837	2119	1009	2568
20	AF	Cameroon	385	421	1447	1880	1832	2301
51	AM	Honduras	667	776	2231	3048	2898	3824
66	EUR	Kyrgyz R	285	276	1216	2074	1501	2351
67	ASP	Lao PDR	87	304	1365	2821	1452	3125
77	AF	Mauritania	208	76	1389	2339	1597	2414
79	EUR	Moldova	233	521	1222	2870	1455	3391
83	ASP	Myanmar	41	173	541	2195	582	2368
88	AM	Nicaragua	296	510	1819	2707	2115	3218
90	AF	Nigeria	58	242	1398	2134	1456	2376
92	ASP	Pakistan	290	364	1641	2278	1931	2642
94	ASP	Papua NG	157	NA	1806	NA	1963	NA
127	EUR	Uzbekistan	147	NA	1485	NA	1632	NA
129	ASP	Vietnam	271	635	1326	2999	1597	3635

Source: Elaborated by Guisan(2017) from World Bank statistics.

Table 1.11. Production per capita (1001 to 2000 Dollars at 2005 prices and PPPs)

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GDPH 2000	GDPH 2015
9	ASP	Bangladesh	135	358	766	1551	901	1909
12	AF	Benin	94	109	1084	1465	1178	1574
17	AF	Burkina Faso	143	62	753	1168	896	1231
23	AF	Chad	79	77	799	1256	878	1333
31	AF	Cote d'Ivoire	317	NA	1444	NA	1761	NA
41	AF	Ethiopia	32	59	494	1273	526	1332
46	AF	Ghana	102	86	914	1813	1016	1898
49	AF	Guinea	40	70	972	1002	1012	1072
63	AF	Kenya	154	139	1133	1567	1287	1705
70	AF	Lesotho	167	176	1029	1505	1196	1681
82	AF	Mozambique	61	137	445	888	506	1025
85	ASP	Nepal	81	84	824	1162	905	1245
102	AF	Rwanda	45	63	595	1261	640	1324
104	AF	Senegal	210	NA	1193	NA	1403	NA
115	EUR	Tajikistan	341	NA	662	NA	1003	NA
116	AF	Tanzania	78	117	786	1406	864	1523
118	AF	Togo	69	51	700	950	769	1001
122	AF	Uganda	62	112	713	1143	775	1255
130	ASP	Yemen R.	124	91	1940	1307	2064	1398
131	AF	Zambia	113	138	916	1412	1029	1549

Source: Elaborated by Guisan(2017) from World Bank statistics.

Table 1.12. Production per capita below 1000 Dollars at 2005 prices and PPPs

Nb	Area	Country	QMH 2000	QMH 2015	QNMH 2000	QNMH 2015	GPDH 2000	GDPH 2015
18	AF	Burundi	41	31	297	328	338	359
22	AF	Central Afri. R	44	32	690	467	734	498
28	AF	Congo. DR	26	36	230	348	256	385
39	AF	Eritrea	68	NA	613	NA	681	NA
50	AM	Haiti	163	NA	1027	NA	1190	NA
73	AF	Madagascar	103	NA	755	NA	858	NA
74	AF	Malawi	92	97	613	736	705	833
76	AF	Mali	34	NA	823	NA	857	NA
89	AF	Niger	40	NA	528	NA	568	NA
105	AF	Sierra Leone	15	13	366	790	381	803
132	AF	Zimbabwe	441	71	2318	575	2759	645

Source: Elaborated by Guisan(2017) from World Bank statistics. Table 1.12 includes 11 countries with the lowest values of Gross Domestic Product per capita: 10 from Africa and 1 from America (Haiti).

1.2. Economic Studies, 2020: Food, Poverty and CO2 Emissions

Study by Guisan and Exposito (2020 a): Education and CO2 Emissions

Guisan and Exposito (2020 a), in AEID 20-1, analyze the causes of the increase of CO2 Total Emissions in the World, for the period 2000-2017, finding that around 85% of the increase is due to an important increase of Population in countries and areas with low levels of average Schooling. Education is the most positive policy for moderation of excessive rates of Population growth and to avoid high increases of CO2 Total Emissions.

Table 1.13. Population and Total Emissions in 3 groups of countries, 1970-2015

Countries	Population (million)		Total CO2 Emissions (million Tm)		Emissions Increase (mill. Tm)
	1970	**2015**	**1970**	**2015**	**1970-2015**
Europe 6	278.078	328.912	2666	2191	-475
USA	205.052	321.040	4325	5159	835
Group 1: OECD 7	**483.130**	**649.952**	**6991**	**7350**	**360**
Russia	130.079	144.097	1337	1715	378
China	818.315	1371	949	10598	9649
India	553.943	1310	227	2450	2223
Group 2: 3 countries	**1502.337**	**2825.097**	**2513**	**14763**	**12250**
Group 3: ROW	1698.533	3865.951	8339	14078	**7998**
Total World	**3684**	**7341**	**15583**	**36191**	**20608**

Source: Elaborated by Guisan and Exposito(2020 a) from EU(2014), EU(2019) and World Bank Indicators. Data without discount of the effects of wildfires. Note: ROW=Rest of the World.

The effect of the increase of Population from 3584 to 7341 million people explains more than 85% of the increase of 20608 million Tm in the Total CO2 Emissions in year 2015 in comparison with year 1970.

Education is the variable with the most important effects on the moderation of excessive Population increase, on the moderation of Total Emissions of CO2 and on fostering economic development and quality of life. In section 1.3 we analyze empirical evidence in this regard.

The study includes a table with 9 hypotheses for Total Emissions in year 2009. depending on 3 options of World Population and 3 options of average Emissions per capita.

Table 1.14. Total CO2 Emissions in year 2030 (in million Tonnes, Tm) under 3 hypotheses for Population and 3 for Emissions per capita,

World Population	Emissions per capita		
	(1) 3 Tm	(2) 4 Tm	(3) 5 Tm
(1) 8249	24747	32996	41245
(2) 8374	25122	33496	41870
(3) 8733	26199	34932	43665

Source: Elaborated by Guisan and Exposito(2020).

Guisan and Exposito (2020 a) say: "*The lowest value in table 1 is of 24747 million Tonnes, which is lower than the value of year 2015 (36191) and would imply a diminution of 31.62%, although it would be higher than the value of year 1970 (15583). In order to moderate Total CO2 Emissions and to avoid high increases of CO2 ppm in the atmosphere, for the period 2020-2030 and at the same time, foster sustainable economic development, we should have into account these questions:….*"

They highlight:

1) the great importance of fostering international cooperation for Education, in order to increase average years of Schooling in the countries with low educational level, with its effects on family planning and moderation of the increase of Population.

2) The diminution of CO2 Emissions per capita, from 4.93 of year 2015 to an amount between 3 and 4 in year 2030 in order to get that total Emissions would be lower than in year 2015.

3) Policy of Mitigation of CO2 emissions, accordingly to suggestions by scientists.

They conclude: *"Thus, Mitigation of CO2, diminution of Emissions per capita, and the increase of Education with its effects on the moderation of World Population growth, are three great challenges in order to foster environmental sustainable economic development and poverty eradication in all the countries of the World".*

The most pessimist option in table 1.14 would be 43665 million Tm of Total CO2 Emissions in year 2030, what imply an increase of 21% in the value of year 2015. The most important policy is to foster cooperation for Education.

Study by Guisan and Exposito(2020 b): Food and Poverty in the World

Guisan and Exposito (2020 b), in RSES 20-1, analyze the evolution of Food, Agricultural production, Population and Poverty in the World for the period 2000-2017.

Table 1.15 shows the evolution of Food Production in the World.

In the last column shows important percentages of increase, for the period 1979-2017, of some productions like Maize (363%), Lentils (398%) and Soybeans (298%). Population increased by 72% and almost all the groups of food of the table 1.14 experienced a higher increase, what implies more food resources per capita in the World.

Table 1.15. World Production (thousand Tms, million Kg) and Population (million people), for 1979-2017

Production And Population	1979	2007	2017	Factor 2017/1979	% of increase 1970-2017
Maize	397371	792733	1841528	4.63	363
Wheat	424144	606681	771719	1.82	82
Rice	375239	656556	769658	2.05	105
3 Cereals	1196754	2055970	3382905	2.83	183
Chickpeas	7587	9662.261	14722	1.94	94
Beans (dried)	4481	3892.723	5370	1.20	20
Lentils	1284	3225.085	6393	4.98	398
3 Legumes	13352	16780	26485	1.98	98
Soybeans	88698	219793	353027	3.98	298
Potatoes	283332	314208	388191	1.37	37
Milk	420403	648220	827880	1.97	97
Meat	138143	-	333600	2.41	141
Fish	72380	-	173000	2.39	139
Population	4358	6675	7511	1.72	72

Source: Elaborated by Guisan and Exposito (2020 b) from FAO statistics. World Population from WB(2020). Retrieved on 6th March 2020.

Table 1.16 shows the evolution of food per capita in Kg per inhabitant. For the period 1979-2017 There was a great increase of production per inhabitant of maize (169%) and a more moderate amount of wheat (6%) and rice (19%). The increase of production per capita of milk was also moderate (14%) and the production of potatoes per capita diminished by 20%.

Table 1.16. Food Production per Capita in the World

(kg per inhabitant and year)

Product	1979	2007	2017	Factor 2017/1979	% of increase
Maize	91	119	245	2.69	169
Wheat	97	91	103	1.06	6
Rice	86	98	102	1.19	19
3 Cereals	275	308	450	1.64	64
Chickpeas	1.74	1.45	1.96	1.13	13
Beans (dried)	1.03	0.58	0.71	0.69	-31
Lentils	0.29	0.48	0.85	2.93	193
3 Legumes	3.06	2.51	3.53	1.15	15
Soja bean	20	33	47	2.35	
Potatoes	65	47	52	0.80	-20
Milk	96	97	110	1.14	14
Meat	32	na	44	1.37	37
Fish	17	na	23	1.35	35

Source: Elaborated by Guisan and Exposito(2010), from FAO statistics. World Population from WB(2020). Retrieved on 6th March 2020.

Guisan and Exposito(2020 b) indicate: "*Total Production of Hen Eggs evolved from 463 Bn in year 1979 to 1120 in 2007 and 1340 Bn in year 2017, multiplying by a factor of 2.89, and a percentage of increase of 189%. Production of Eggs per capita evolved from 106 units in 1979 to 168 in 2007 and to 178 in year 2017. This variable multiplied by a factor of 1.68 what implies an increase of 68% per cent".*

They also present a table, elaborated from FAO(2020) Pocket Book, with the net trade of food by continent in year 2016:

Africa has negative balance in Cereals, Meat, Milk products and positive in "Fruits and Vegetable" and Fish. America has positive balance in all the groups of food with exception of milk. Asia present positive balance in Fish and negative balance in other groups of food. Europe presents positive balance in Cereals Meat and Milk and negative in "Fruits and Vegetable" and Fish. Oceania present positive balance in all the groups of food.

The study by Guisan and Exposito(2020 b) also analyzes the percentages of people on poverty and the low levels of production by sector in many countries, calling for international cooperation for Education and Investment, in order to diminish poverty and improve living conditions.

In the Annex they found that in a list of 200 countries and territories, at the World Bank data, there are 113 without available data (NA) for safe water and 123 without data for sanitation.

Among countries with available data, many have less than 25% of population with safe water and sanitation systems. Only 38 countries got percentages of population higher than 85% with good sanitation. They found that 71 countries got percentages of safe water higher than 85%,

Good sanitation, safe water and increase of investment and production per capita are very important to increase health and health services, increasing Life Expectancy and quality of life.

1.3. Econometric models, 2021-2023: Quality of Life in 164 countries

We present a summary of three econometric studies: 1) Guisan(2021), in AEID 21-2, on Education and Quality of Life, Guisan(2022). 2) Guisan(2022), in AEID 22-1, on Political Stability and Development. 3) Guisan(2023),in AEID 23-2, on Economic Freedom and Development. These three studies include data of many indicators in 164 countries.

1)Guisan(2021): Education, Development and Quality of Life in 164 countries

Data of 164 countries included in the study by Guisan(2021): Production per head (PH95, PH19), Education (Tyr10), Fertility (Fer19), X1=Life Satisfaction around year 2019, X2=Quality of Government (Voice of Citizens) around year 2019, X4 = Positive indicator of Peace around year 2019; X8=Hom (Homicides rate per 100 thousand inhabitants).

Guisan(2021), in AEID 21-2, analyzes World development for 1995-2019, and estimates econometric equations that relate Human Capital, Development, Quality of Government and Life Satisfaction in 164 countries. In the Entry 47 of our Blog of the Euro-American Association of Economic Development Studies, we present a summary of the contents of the article

Table 1.17 presents some relevant indicators of average values of production per capita and of indicators of quality in 9 groups of countries. The indicators of average years of Schooling of adult population is one of the most important to explain the differences in development.

Real production per capita increased in 6249 Dollars (at 2017 prices and purchasing power parities) in a period of 24 years (from 1995 to 2019), what implies an average of 260 Euros per year, but in the poorest countries the increase was very low with only 20 Euros per year in group 1).

Table 1.17. Average of PH, Tyr, Fer, X1, X2, X3, X4 and XM (mean of X1, X2, X4) in 9 Groups of countries (values of PH in $ at 2017 prices and PPPs)

Group	Ph 95	Ph 19	Incr.	Tyr 10	Fer 19	X1 Happi	X2 Gov	X4 Peace	XM Mean
1	1172	1668	496	3.38	4.82	4.25	3.12	4.00	3.79
2	2268	3591	1323	4.90	3.75	4.59	3.26	4.57	4.14
3	3171	5674	2503	6.57	3.42	4.94	4.10	4.52	4.52
4	5133	8667	3534	6.52	2.54	5.46	4.51	4.87	4.95
5	7165	12930	5765	8.71	2.56	5.25	4.30	4.52	4.69
6	9691	19444	9753	8.63	2.02	5.63	4.98	4.95	5.19
7	15924	31060	15136	10.73	1.79	6.07	5.94	5.47	5.83
8	33389	44521	11132	11.01	1.65	6.71	7.14	5.70	6.52
9	50482	69249	18767	11.66	1.53	7.07	8.24	6.30	7.20
All	9886	16135	6249	8.09	2.40	5.35	5.0	4.80	5.38

Source: Elaborated by Guisan(2021), in AEID 21-1, with data of 164 countries, from WB(2021) WDI and WGI, UNDP(2021), WHR(2021), EIP(2021), and own elaboration from table A1, in the Annex, as explained in 3.1. Notes: Non-weighted averages of each group. Incr. is the increase of PH for the period 1995-2019.

Indicators of Development and Quality of Life included in table 1.17:

PH = real Gross Domestic Product per capita at 2017 prices and purchasing parities in years 1995 (PH95) and 2019 (PH19).

Tyr10= average of Total Years of Schooling of Population 25+ in year 2010.

Fer is the average of Fertility rates of the countries of each group.

XM= average of 3 indicators of quality of life X1, X2 and X4, all of them with positive impact and measured in the decimal scale.

X1 (Happiness), in decimal scale

X2 (Voice of Citizens), in decima scale

X4 (Peace, from 0 lack of Peace to 10 Maximum of Peace).

Countries with high levels of Schooling usually have good indicators of Production per inhabitant (PH) and high levels of the indicators of quality of life. Tyr 10 was 3.38 in group 1 and 11.66 in group 9.

The indicator of Happiness (X1) varies between an average value of 4.25 in group 1 to a value of 7.07 in group 9. The indicator of Quality of Government (X2=Voice of Citizens) varies between an average of 3.12 in group 1 and an average of 8.24 in group 9. The indicator of Peace (X4)

varies between a low average value of 4 in group 1 and a value of 6.30 in group 9. Figure 1.6 includes some of the main conclusion of Guisan 2021)

Figure 1.6. Main conclusions of the study by Guisan(2021), for 1995-2019

*" **1) Education and Development**: Usually Education is the variable with the highest impact on economic development and quaality of life. The indicator Tyr10 is "Total years of schooling of adult population (+25 years old) in year 2010. The value varied between a low average of 3.38 years of Schooling in group 1 (lowest level of economic development) to 11,66 in group 9 (highest level of economic development). World average was 8.09.*
***2) Average Fertility rate**: As seen in the econometric model of Guisan, Aguayo and Exposito (2021) (journal AEID Vol. 1-1), there is an important impact of Education in the moderation of average fertility rates. Countries with the lowest levels of Schooling have high average Fertility rates (4.82 children while countries with high educational levels have moderate average Fertility rates (1.53 children per women).*
3) Indicators of Quality of Life from 0 (minimum) to 10 (maximum). ***Indicator X1**=Happiness varies from an average of 4.27 in group 1 to 7.07 in group 9, usually increasing with real income, health care access, working conditions, and other variables.* ***Indicator X2**=Government Quality (in the scale 0 to 10) regarding Voice of citizens) varies between 3.12 in group 1 to 7.07 in group 9-* ***Indicator X4= Peace.** The average value of X4 varies between 4.00 in group 1 to 6.30 in group 9, usually increasing Peace with socio-economic development.*
***4) Indicator XM** is the mean of the indicators X1, X2 and X4. The average value varies between 3.79 in group 1 to 7.20 in group 9.*
***5) Other contents of the Development Report 2021**:* Cooperation in the increase of Schooling contributes to diminution of total CO2 Emissions.

Source: Summary of the study by Guisan(2021) in AEID 21-2, included by the author at Entry 47 of the Blog on World Development (Euro-American Association)

World average experienced an increase of 6249 Dollars per inhabitant for a period of 24 years (1995-2019), what amounts to an annual increase of 260 Dollars. This implies a high increase of total real Gross Domestic Product.

There was a diminution of -4.34% in year 2020 as consequence of the Pandemic of Covid19, as seen in the annex of Guisan(2021).

Figure 1.7 indicates the names of the countries of each group. Data for each country are included in the Annex in Guisan(2021).

Figure 1.7. Countries of each group in alphabetical order, year 2019

Groups	Countries
1) 19 countries Ph19 <5000	Afghanistan, Burkina Faso, Burundi, Central African R, Chad, Congo DR, Ethiopia, Gambia, Guinea-Bissau, Liberia, Madagascar, Malawi, Mali. Mozambique, Niger, Rwanda, Sierra Leone, Togo, Uganda.
2) 21 countries Ph19 (2500-5000):	Bangladesh, Benin, Cambodia, Cameroon, Comoros, Congo R, Guinea, Haiti,Kenya, Lesotho, Nepal, Pakistan. Papua-New Guinea, Sao Tome and Principe, Senegal, Sudan, Tajikistan, Tanzania, Timor-Leste, Zambia, Zimbabwe.
3) 16 countries PH19 (5000-7500)	Angola, Cabo Verde.Cote d´Ivoire, Djibouti, Ghana, Honduras, India, Kyrgyz R, Mauritania, Myanmar, Nicaragua, Nigeria,Samoa, Tonga, Uzbekistan, West Bank and Gaza,
4)10 countries PH19 (7500-10000)	Bolivia, El Salvador, Eswatini (former Swaziland), Guatemala, Jamaica, Lao PDR, Morocco,Namibia, Philippines, Vietnam,
5) 25 countries PH19 (10000-15000)	Albania, Algeria, Armenia, Azerbaijan, Bosnia-Herzegovina, Brazil, Colombia, Ecuador, Egypt, Gabon, Georgia, Guyana, Indonesia, Iran, Iraq, Jordan, Lebanon, Moldova, Mongolia, Paraguay, Peru, South Africa, Sri Lanka, Tunisia, Ukraine.
6) 19 countries PH 15000-25000):	Argentina, Belarus, Botswana, Bulgaria, Chile. China, Costa Rica, Dominican R, Equatorial Guinea, Libya, Maldives, Mauritius, Mexico, Montenegro, North Macedonia, Serbia, Thailand, Turkmenistan, Uruguay.
7) 20 countries PH19 (25000-40000):	Croatia, Estonia, Greece,Hungary, Kazkhstan, Latvia, Lithuania, Malaysia,Oman, Seychelles, Panama, Poland, Portugal, Puerto Rico, Romania,Russian Fed., Slovak R, Slovenia,Trinidad and Tobago, Turkey.
8) 17 countries PH19 (40000-50000):	Australia, Bahrain, Canada, Cyprus,Czech R, Finland, France,Israel, Italy, Japan, Korea R, Kuwait,Malta, New Zealand, Saudi Arabia, Spain, UK.
9) 17 countries, o territories, PH19 >50000	Austria, Belgium, Bermuda, Denmark, Germany, Hong-Kong (China), Iceland, Ireland, Luxembourg, Netherlands, Norway, Qatar, Singapore, Sweden, Switzerland, United Arab Emirates, USA.

Source: Elaboration by Guisan(2021) from World Bank WDI statistics.

Table 1.18 present a summary of the econometric models estimated by Guisan(2021) with a sample of 164 countries.

Table 1.18. Econometric models relating Education, Development and Quality of Life, in 164 countries, year 2019

Model	Dep. variable	C, Dummies	Explanatory variables (estimated coefficient)	R^2
1	FER19	+ , +	XTYR (-0.3074)	0.7148
2	PH19	no, no	PH10(1.0015), XTYR (496), XFER (-528)	0.9638
3	X1	+, +	PH19/1000 (0.0227), X2 (0.2218), DUM3(-1.85)	0.7346
4	X2	+, +	PH19/1000(0.0458). TYR19 (0.1427), X4(0.4880)	0.8406
5	X4	+, +	X2(0.4005), DUM5 (-2.0990)	0.7029

Source: Elaborated by Guisan(2023) in EE12 from Guisan(2021) AEID 21-2. Notes_ C + means intercept or constant term included. Dum + means included Dummies.

FER19= Fertility rate in year 2019 (expected children per woman in her life).

XFER=(FER19+FER10)/2. Indicator of Fertility for 2010-2019

XTYR = (TYR10+TYR19)/2. Indicator of Educational level for 2010-2019.

PH19= GDP per capita in year 2019 (Dollars at 2017 prices and purchasing parities)

PH10 = GDP per capita in year 2010 (Dollars at 2017 prices and purchasing parities)

X1 = Happiness (decimal scale)

X2 = Quality of Government (Indicator Voice of Citizens) (decimal scale)

X4 = Peace = Decimal scale (0 minimum Pease, 10 maximum Peace).

Dummies: DUM3 is a dummy variable for countries with actual value of X1 lower than expected in equation 3. DUM5 is a dummy variable, equal to 1 in the countries with values of X4 lower than expected in equation 5.

Figure 1.8. Missing explanatory variables and high goodness of fit

The high goodness of fit of Model 2, for PH19, does not mean that the explanatory variables are the only factors of development. It means that the relevant missing variables are linearly related with the included regressors and are represented through them. In the case of Model 2, some missing variables are Investment per capita, Industrial Production per capita, and other ones whose effect may be well represented by XTYR.

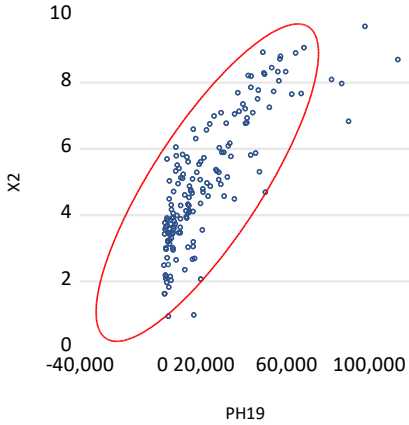
Source: Elaborated by M.C.Guisan, having into account the books by Guisan(1997), (2022) and the Annex in the article Guisan(2022).

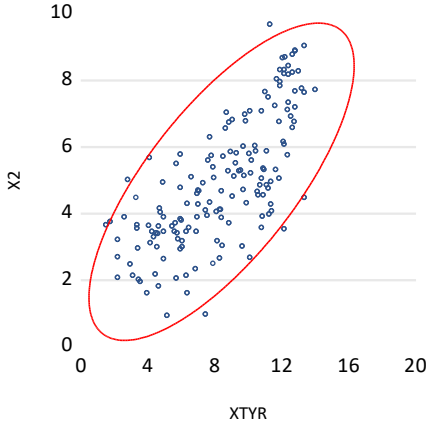
DUM3 is equal to 1 in the following cases: Afghanistan, Botswana, Hong-Kong (China), India, Rwanda, Singapore and Zimbabwe.

DUM5 is equat to 1 in the following cases: Afghanistan, Colombia, Congo DR, India, Iraq, Israel, Pakistan, Russia, Turkey and the United States

The following graphs show the relationships between these variables.

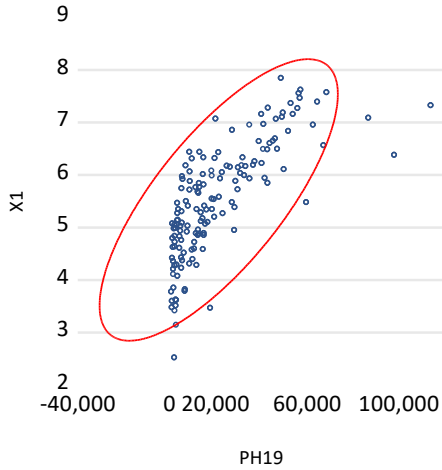
Graph 1.3. Qualitiy of Goverment and PH. Graph 1.4 Quality of Government and Education



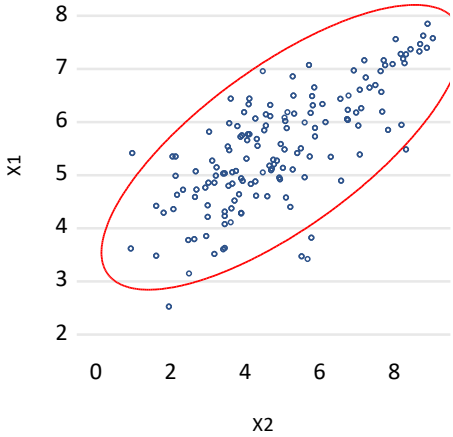


Source: Guisan(2021), AEID 21-2. Data of 164 countries in year 2019

Graph 1.5. Happiness and PH

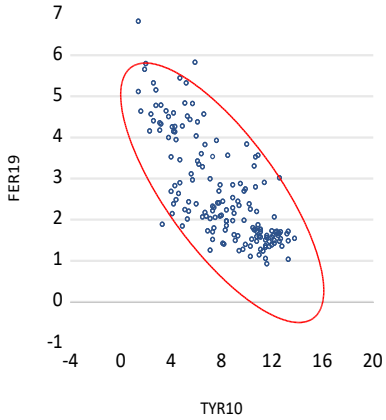


Graph 1.6. Happiness & Quality of Government

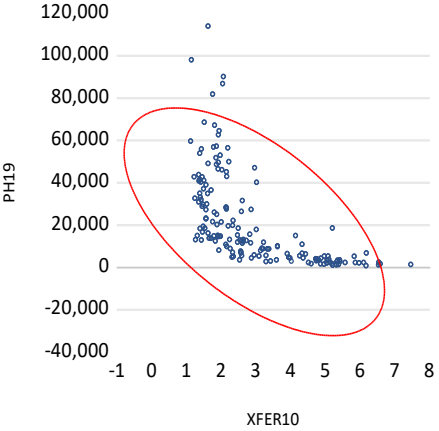


Source: Guisan(2021), AEID 21-2. Data of 164 countries in year 2019

Graph 1.7. FER and Education.

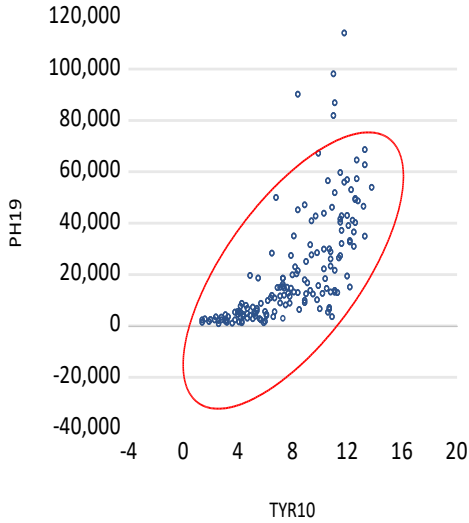


Graph 1.8. PH and FER

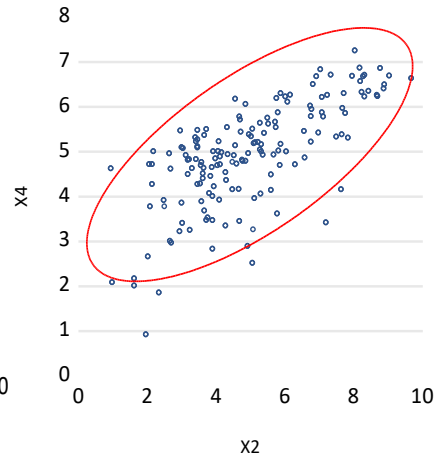


Source: Guisan(2021), AEID 21-2. Data of 164 countries in year 2019. FER is average Fertiliy rate and Tyr is Average Years of Schooling (Population 25+).

Graph 1.9. PH and Education.



Graph 1.10. Peace (X4) and Voice of Citizens(X2)



Source: Guisan(2021), AEID 21-2. Data of 164 countries in year 2019

Figure 1.9. Several positive effects of Education on Quality of Life

1) Education usually contributes to moderate average values of FER.

2) Education usually contributes to increase PH (directly in equation 2 and indirectly through its effect on diminution of FER in equation 1).

3) Education usually contributes to increase X2 (Voice of Citizens) in equation 4, directly and indirectly through its positive effect on PH.

4) Education usually contributes to increase X4 (Peace) in equation 5, through the positive impact of X2.

5) Education usually contributes to increase X1=Happiness in equation 3, indirectly through the effects of PH and X2.

Source: Elaborated by M.C. Guisan(2023) in this book EE12

The World Happiness Report, WHR (2023) highlights six factors that help explain countries degrees of Happiness:

1) Production per capita (PH), 2) Healthy Life Expectancy 3) Social Support 4) Freedom to make life choices. 5) Perception of Fair Management (not corruption). 6) Generosity or social support.

An important question is how to improve those factors in less developed countries, and we highlight the important role of Education and international cooperation.

2) Study by Guisan(2022): Political Stability, Peace and Development

Guisan(2022), in AEID 22-1, analyze the effects of Political Stability on Peace and Economic Development in 164 countries for the period 2010-2020.

Data of 164 countries included in the study by Guisan(2022): The study includes table A1 with the following indicators for years 2010 and 2019 (expressed in Dollars at 2017 international prices): X5 IPS= Index of Political Stability (IPS10, IPS19, IPS20); PH=Production per capita (PH10, PH19),) and MEH Military Expenditure per capita (MEH10, MEH19)

The Index of Political Stability IPS was calculated in decimal scale, from the World Bank WGI where the Index was in the scale -2.5 to 2.5. Our study includes a table with 9 groups of countries classified by IPS value in year 2020 with the following conclusions: 1) There are 95 countries with low levels of stability, with IPS20 below 5: 26 countries with a value below 3, 30 countries with a value between 3 and 4 and 39 countries with value between 4 and 5. 2)

There are 56 countries with intermediate levels of stability, with IPS20 between 5 and 7, and only 15 countries with high level of stability.

The World non-weighted average of 164 countries in year 2019 was 6.04, but there are differences among countries. The correlation coefficients of IPS with other indicators, in 164 countries in year 2019, are shown in table 1.19

Table 1.19. Correlation coefficients of IPS19 with X1, X2, X4, PH19 and TYR19

	X1	X2	X4	PH19	TYR19
X5=IPS19	0.6221	0.7610	0.9139	0.6559	0.6025

Source: Guisan(2023) with data from WB por IPS and the sources indicated below table 1.17 for other variables. Notes: TYR= Schooling, X1=Satisfaction win Life, X2=Voice of Citizens), X4=Peace. PH real GDP per capita.

In the study by Guisan(2022) we have found positive significant impacts of Political Stability on several indicators of development and quality of life.

In some cases there may be a bilateral relationship. For example between Political Stability and Peace, because usually Political Stability favors Peace and Peace may contribute to Political Stability.

The following equation shows the positive impact on IPS19 of its lagged value IPS10, the increase of Education (TYR19-TYR10) and the indicator X2=Voice of Citizens (X2). The equation also includes 2 dummy variables (DN1 and DN2) to have into account special circumstances of some countries.

Equation 1.8 IPS19 relared with IPS10, X2, Tyr19 and dummy variables

Dependent Variable: IPS19. Method: Least Squares				
Sample: 1 164. Included observations 163				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IPS10	0.694430	0.040722	17.05294	0.0000
TYR19-TYR10	0.290491	0.100612	2.887247	0.0044
X2	0.251516	0.039156	6.423504	0.0000
DN1	-3.702449	0.535129	-6.918803	0.0000
DN2	-2.487135	0.524914	-4.738178	0.0000
R-squared	0.836120	Mean dependent var		4.654356
Adjusted R-squared	0.831971	S.D. dependent var		1.789982
S.E. of regression	0.733738	Akaike info criterion		2.248866
Sum squared resid	85.06273	Schwarz criterion		2.343766
Log likelihood	-178.2825	Hannan-Quinn criter.		2.287394
Durbin-Watson stat	1.875651			

Source: Elaborated by M.C. Guisan from the international indicators analyzed in Guisan(2021) and (2022).

The indicator X2=Voice of Citizens usually is a good indicator of the quality of Democracy and shows a positive impact on IPS=Political stability. The increase of average Education (Tyr19-Tyr10) also shows a positive impact on IPS19.

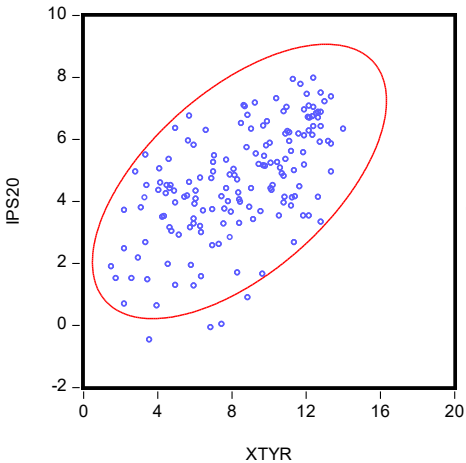
DN1 and DN2 are dummy variables that take account of some negative factors, due to special circumstances, that diminish the value of IPS. DN1= 1 in 87) Libya and 94) Mali. DN2=1 in 31) Hong-Kong (China) and 157) Ukraine. Both variables are equal to zero in other countries.

These correlations, and the econometric models estimated by Guisan(2022), suggest that Political Stability usually contributes to Quality of Life and to Economic Development.

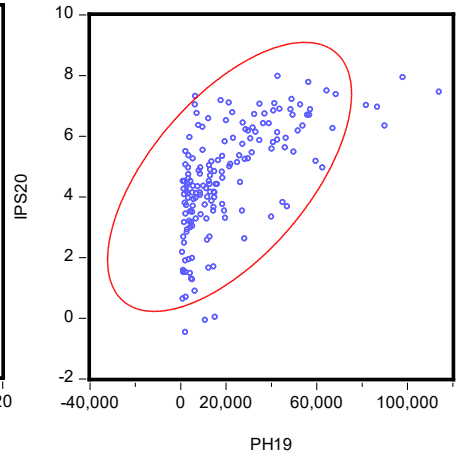
The econometric models and the following graphs show some positive relationships in 164 countries of the World in year 2019. There may be exceptions to the general relationships in case of special features of the countries (effect of missing variables not linearly related with the included regressors in the models).

Graphs 1.11 and 1.12 show the positive impact of Education and PH on Political Stability. Graphs 1.13 and 1.14 show a positive effect of Political Stability on Happiness and Voice of Citizens. There may be also, in some cases, a positive effect of Voice of Citizens on Political Stability.

1.11. Political Stability and Education

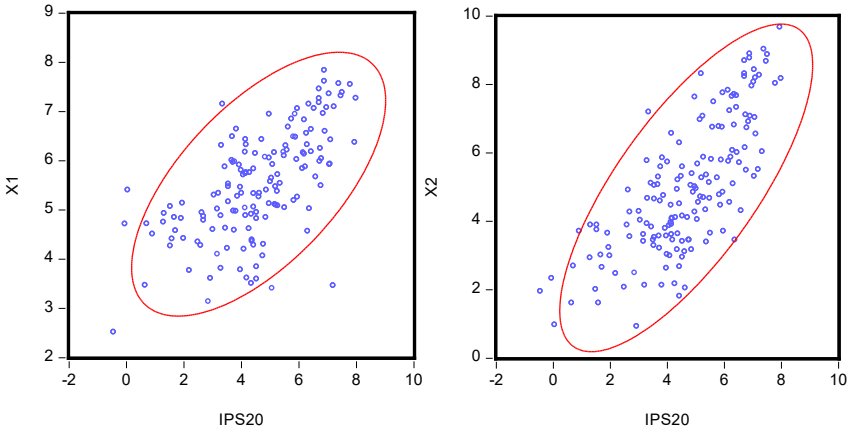


1.12. Political Stability and PH19



Source: Elaborated by M.C. Guisan from international data, based in several sources published in Guisan(2021) and (2022).

1.13. Happiness and Political Stability 1.14. Voice of Citizens and Political Stability



Source: Elaborated by M.C. Guisan from international data, based in several sources published in Guisan(2021) and (2022).

Equation 1.9, IPS19 relared with IPS10, X2 and Tyr19, with dummy variables

Dependent Variable: IPS19. Method: Least Squares. Observations: 163				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IPS10	0.694430	0.040722	17.05294	0.0000
TYR19-TYR10	0.580983	0.201224	2.887247	0.0044
X2	0.251516	0.039156	6.423504	0.0000
DN1	-3.702449	0.535129	-6.918803	0.0000
DN2	-2.487135	0.524914	-4.738178	0.0000
R-squared	0.836120	Mean dependent var		4.6543
Adj. R-squared	0.831971	S.D. dependent var		1.7899
S.E. of regression	0.733738	Akaike info criterion		2.2488
Sum squared resid	85.06273	Schwarz criterion		2.3437
Log likelihood	-178.2825	Hannan-Quinn criter.		2.2873
Durbin-Watson stat	1.875651			

Source: Elaborated by Guisan(2023), in EE12, with data of Guisan(2022).

DN1 and DN2 are dummy variables that take account of some negative factors, due to special circumstances, that diminish the value of IPS. DN1= 1 in country 87 (Libya) and 94 (Mali). DN2=1 in territory 31 (Hong-Kong, China) and 157 (Ukraine). Both dummy variables are equal to zero in other countries.

Political stability usually contributes to development and quality of life. One of the exception, regarding the positive effects of PH and IPS on X1=Quality of life, is the case of Botswana, country included by WHR in 2023, and in previous years, among the most unhappy countries of the World. In the Annex of Guisan and Exposito(2021) in RSES 21-2, there are some links related with the low indicator of happiness in Botswana.

The study by Guisan(2022) confirm the positive effect of Education on Peace, through the impact of Education on Political Stability (IPS) and the positive effect of IPS on the increase of the Index of Peace (X4). Diminution of Conflicts is very important, as well as fostering Political Stability, Freedom and other indicators that increase quality of life.

The study showed that MEH, depends on economic development but usually it is not a direct factor of development, although it may have positive effect on development and quality of life when it contributes to Peace, Political Stability, Economic Freedom or other indicators that have a positive direct on development.

3) Study by Guisan(2023): Freedom, Development and Quality of Life

The study by Guisan(2023) includes the estimation of an econometric model, with data of 164 countries in year 2019, that relates the variable X6=Freedom with economic development and quality of life.

Data of 164 countries included in the study by Guisan(2023): The study includes a table with data, for 164 countries, of the following indicators: Indicators already included in Guisan(2021) (PH95, PH19, TYR19, X1, X2) and the indicators X6=Free (Indicator of Freedom in decimal scale) and X7=Pollution (PM2.5 indicator of Particles 2.5 per cubic meter of air).

Freedom for labor, investment and business usually contributes to foster economic development, and freedom for choosing the own choices in the life has usually a positive impact on X1=Satisfaction with life.

Equation 1.10 relates PH19 with its lagged value in year 1995 (PH95) and two expalantory variables very much related with factors of development (X2=Voice and X6=Free). It shows a positive impact of X2=Voice of Citizens and X6=Free on Production per capita (PH19)

Equation 1.11 relates X1=Life Satsifaction with shows a positive effect of X6=Free on X1=Satisfaction with Life with PH and with the sum of X2=Indicator of Voice and X6=Indicator of Freedom.

Equation 1.10. PH19/1000 related with lagged value, X2 and X8

Dependent Variable: PH19/1000. Method: Least Squares				
Sample: 1 164. Included observations: 157				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PH95/1000	0.938906	0.038974	24.09085	0.0000
X2=Voice of Citizens	2.494999	0.480337	5.194270	0.0000
X6=Freedom/10	1.329558	0.677197	1.963326	0.0515
C	-12.20457	2.701671	-4.517415	0.0000
D71	37.81689	5.316384	7.113272	0.0000
D135	29.15025	5.371833	5.426499	0.0000
D154	-44.48723	6.003932	-7.409682	0.0000
R-squared	0.942403	Mean dependent var		21.16546
Adjusted R-squared	0.940099	S.D. dependent var		21.38315
S.E. of regression	5.233451	Akaike info criterion		6.191580
Sum squared resid	4108.352	Schwarz criterion		6.327846
Log likelihood	-479.0391	Hannan-Quinn criter.		6.246923
F-statistic	409.0506	Durbin-Watson stat		1.869016
Prob(F-statistic)	0.000000			

Source: Elaborated by Guisan(2023), in AEID 23-2, with data from World Bank for and from Heritage. Dummy variables: D71 (Ireland), D135 (Singapore), D154 (UAE).

Equation 1.11. Relationship of X1=Satisfaction with Life with development and social quality (measured by the sum of X2+X8), in 147 countries

Dependent Variable: X1. Method: Least Squares				
Sample: 1 164. Included observations: 147				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.860750	0.243827	11.73271	0.0000
PH19/1000	0.014043	0.003819	3.677606	0.0003
X2+X6	0.220498	0.027388	8.050840	0.0000
D18	-2.289379	0.551366	-4.152197	0.0001
DN	-1.601426	0.252156	-6.350943	0.0000
R-squared	0.754402	Mean dependent var		5.536224
Adjusted R-squared	0.747483	S.D. dependent var		1.090707
S.E. of regression	0.548092	Akaike info criterion		1.668673
Sum squared resid	42.65743	Schwarz criterion		1.770389
Log likelihood	-117.6475	Hannan-Quinn criter.		1.710001
F-statistic	109.0449	Durbin-Watson stat		1.740413
Prob(F-statistic)	0.000000			

Source: Elaborated by Guisan(2023), in AEID 23-2, with data from WB, WHR and Heritage. Dummy variables: D18=Botswana, DN=Dummy for negative effects in several countries that showed a a value of X1 below expected (Georgia, India, Rwanda, Singapore, Tanzania).

Dummy variables, that take the value 1 in special countries, and zero in the other countries, were included to have into account special features of a few countries where the value of the dependent variable was higher or lower than expected by the equation.

Figure 1.10. Freedom Indicator (%) (countries in descending order)

Index	Countries
>80	Singapore, Switzerland, Ireland, New Zealand, Luxembourg, Taiwan
70 - 80	Estonia, Netherlands, Finland, Denmark, Australia, Iceland, Norway, Canada, Germany, Lithuania Latvia, Korea South, Chile, Czech R, Austria, Cyprus, UK, USA, Georgia, Malta Barbados, Bulgaria, Mauritius, Portugal, Slovenia, United Araba Emirates (UAE)
60-70	Uruguay, Japan, Slovak R, Belgium, Bahamas (The), Poland, Samoa, Spain, Malaysia, Israel, Qatar, Croatia, Jamaica, Romania, Hungary, Cabo Verde, Albania, Peru, France, Macedonia North, Saint Vincent&Grenadines, Costa Rica, Panama, Italy, Armenia, Serbia, Colombia, Botswana, Brunei Darussalam, Indoneia, Kazakhstant, Sain Lucia, Mongolia, Mexico, Bosnia&Herzegovina, Guatemala, Thailand, Dominican R, Vanuatu, Paraguay, Bahrain, Azerbaijan, C*ote d´Ivoire, Greece, Moldova, Seychelles, Philippines, Benin, Micronesia, Tonga, Vietnam, Sao Tome&Principe, Kosovo, Jordan
50-60	Senegal, Ghana, El Salvador, Guyana, Honduras, Tanzania, Bhutan, Namibia, Kiribati, Morocco, Madagascar, Trinidad&Tobago, Burkina Faso, Kuwait, Gambia (The), Montenegro, Togo, Rwanda, Cambodia, Turkey, Oman, Belize, Solomon I., Fiji, South Africa, Russia, Mali, Gabon, Kyrgyz R, Uzbekistan, Saudi Arabia, Mauritania, Djibouti, Niger, Nicaragua, Papua New Guinea, Nigeria, Dominica, Ecuador, Uganda, Tunisia, Guinea, Ukraine, India, Sri Lanka, Brazil, Malawi, Belarus, Cameroon, Bangladesh, Kenya, Angola, Sierra Leone, Eswatini, Mozambique, Comoros, Argentina
40-50	Haiti, Chad, Tajikistan, Nepal, Burma, Ethiopia, Laos, Egypt, Pakistan, Zambia, Congo R, Suriname, Lesotho, China, Liberia, Congo DR, Maldives, Lebanon, Equatorial Guinea, Timor-Leste, Turkmenistan, Guinea-Bissau, Algeria, Central African R, Bolivia, Iran
30-40	Eritrea, Burundi, Zimbabser, Sudan
<30	Cuba, Venezuela, Korea North

Source: Heritage(2023). Index of Economic Freedom 2023. Note: There are links to more information of each country at https://www.heritage.org/index/ranking

Freedom has positive correlation with other indicators of development and quality of life, in some cases because they are cause and /or consequence of Freedom or are related with a common variable.

Table 1.19. Correlation of Freedom with several indicators, around year 2019

PH19	TYR19	X1	X2	X4	IPS19
0.7153	0.6614	0.7526	0.8388	0.7394	0.7631

Source, Elaborated by author: Data of 164 countris in year 2019. Note Gdp per capita (PH19), Average Years of Schooling of Adult Population (Tyr19). X1=Satisfaction with Life, X2=Voice of Citizens. X4=Peace. X5=Indicator of Political Stability.

1.4. Other international comparisons of quality of life, in year 2019

Comparison of the 11 most populated countries with OECD average

Table 1.7 presents a comparison of Indicators of Development and Quality of Life in 11 big countries of the World: 7 non OECD and 4 OECD countries (Brazil, USA, Japan and Mexico)

Table 1.7. Indicators of Quality of Life in OECD and 11 most populated countries, around years 2017-2019 and change of Life Satisfaction for 2003-2020

Countries	X1= Life Satisfation 2019 (1)	PH19= Production per capita 2019 (2)	Life Expectancy 2020 (3)	X8= Homicides rate 2017 (4)	X2= Voice of citizens 2019 (5)	X4= Peace 2019 (6)	X7= Pollution 2017 (7)	Change of (1) (8)
OECD	6.7	49947	80	2.6	7.4	5.9	14	0.15
Brazil	6.3	14759	76	29.5	4.1	3.9	12.7	-0.34
China	5.3	16092	77	0.6	6.3	4.7	52.7	1.02
India	3.8	6717	70	3.2	5.8	3.6	90.9	-1.57
Indonesia	5.3	11812	72	0.5	5.7	5.5	16.5	0.29
Pakistan	4.9	4690	67	4.4	3.9	2.8	58.3	-0.71
USA	6.9	62555	79	5.3	7.6	4.2	7.4	-0.20
Bangladesh	5.0	4754	73	2.5	3.4	4.8	60.8	0.84
Japan	5.9	41477	84	0.3	8.2	6.6	11.7	-0.48
Mexico	6.3	19701	75	19.3	4.7	3.4	20.9	-0.45
Phillipines	5.9	8915	71	11.0	5.1	4.0	18.1	1.23
Russia	5.5	27211	73	10.8	5.1	2.5	16.2	0.49
World	**5.5**	**16135**	**73**	**6.2**	**5**	**5**	**46**	**0.15**

Sources: Elaborated by Guisan(2022 b) in RSES 22-1: (1) based on WHR(2021), (2) WB(2022) (production per capita in year 2019, expressed in Dollars at 2017 prices and Exchange Rates). (3) OECD. Health at a Glance. (5) and (6), in decimal scale, elaborated by Guisan(2022) from World Bank WGI and IEP(2021). (7) from Indexmundi(2022) based in Brauer et al(2017), Mean annual exposure to PM2.5 micrograms per cubic meter of air. (8) Change in the indicator of Life Satisfaction, for the period 2003-2020, from Ortiz-Espina and Roser (2021). OECD non weighted average.

(1) Life satisfaction: Among countries with more than 100 million inhabitants the indicator varies between 3.8 in India and 6.9 in the United States. The average of OECD countries was 6.7 and the World average 5.5.

(2) Production per capita. The OECD had an average of 49947 Dollars per capita (at 2017 prices and parities) and the World average was 16135.

(3) Life Expectancy: The OECD average (80 years) was higher than the World average (73 years).

(4) Homicide rates. The OECD average (2.6) was lower than the World average (6.2 intentional homicides per 100 thousand people).

(5) Voice of Citizens: as indicator of quality of Government, reached an average of 7.4 points in the OECD much higher than the World average (5).

(6) The indicator of Peace, in a positive decimal scale (maximum peace 10) (reached a value of 5.9 in the OECD, higher than the World average (5).

(7) The indicator of Pollution (PM2.5 per cubic meter) had an average of 14 in the OECD much lower than the World average (46).

Violences and Intentional Homicides in the World

Table 1.8: Homicides rates in OECD and in the World by Continent (number of homicides per 100 thousand people among men, women and all)

	Men	Women	All
OECD	4.4	0.9	2.6
Africa	21.5	4.5	13.0
America	31.2	3.6	17.4
Asia	3.1	1.5	2.3
Europe	4.3	1.7	3.0
Oceania	3.9	1.8	2.8
World	9.9	2.3	6.2

Sources. Elaborated by Guisan(2022 b) from UN(2017) and OECD(2022).

Global Study on Homicides (UNODC(2019): *"464,000 people estimated to have been victims of intentional homicide in 2017. An average global homicide rate of 6.1 victims per 100,000 population was estimated in 2017. About 90 per cent of all homicides …were committed by male perpetrators. Men make up almost 80 per cent of all homicide victims recorded worldwide"*

There are many types of violence that generate social suffering and insecurity. Usually, the rates of violence are higher in countries with low values of several positive indicators (Schooling, Voice of Citizens, Political

Stability, Peace and other ones). World Bank(2019) includes information about violence against women and girls, and UNODOC(2023) includes information about several types of delinquency. WPR(2023) presents an indicator of Women Danger Index in 50 countries.

Education, Women Empowerment, Development and Quality of Life

Table 2.9 presents 8 groups of countries by the value of the Gender Inequality

Table 1.9 Gender Inequality Index (GII), from UNDP(2023)

GII	Country
(0, 0.1]	Australia, Austria, Belgium, Canada, Croatia, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Japan, Korea R, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland,United Arab Emirates, UK
(0.1, 0.2]	Albania, Bahrain, Belarus, Bosnia and Herzegovina, Chile, China, Cyprus, Czechia, Greece, Kazakhstan, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Poland, Serbia, Slovakia, Turkmenistan, Ukraine, USA
(0.2, 0.3]	Argentina. Armenia. Azerbaijan. Barbados. Brunei Darussalam. Bulgaria. Costa Rica. Georgia. Hungary. Libya. Malaysia. Moldova R. Oman. Qatar. Romania. Russian Fed.. Saudi Arabia. Tajikistan. Tunisia. Turkey, Uruguay, Uzbekistan, Viet Nam
(0,3 0.4]	Bahamas, Belize, Brazil, Cabo Verde, Cuba, Ecuador, El Salvador, Fiji, Jamaica, Kuwait, Kyrgyzstan, Maldives, Mauritius, Mexico, Mongolia, Panama, Peru, Rwanda, Saint Lucia, Saint Vincent and the Grenadines, Sri Lanka, Thailand, Timor-Leste, Trinidad and Tobago
(0.4, 0.5]	Algeria, Bhutan, Bolivia, Botswana, Cambodia, Colombia, Dominican R, Egypt, Guatemala, Guyana, Honduras, India, Indonesia, Iran IR, Jordan, Lao PDR, Lebanon, Morocco, Myanmar, Namibia, Nepal, Nicaragua, Paraguay, Philippines, Samoa, Sao Tome and Principe, South Africa, Suriname, Syrian AR, Venezuela
(0.5, 0.6]	Angola, Bangladesh, Burundi, Cameroon, Congo, Eswatini, Ethiopia, Gabon, Ghana, Iraq, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Pakistan, Senegal, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe
(0.6, 0.7]	Afghanistan, Benin, Burkina Faso, Central African R, Chad, Congo DR, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Haiti, Liberia, Mali, Mauritania, Niger, Nigeria, Sierra Leone, Tonga
> 0.7	Papua New Guinea, Yemen

Source: Elaborated by author from UNDP(2023). Low values of GII indicate equality and highest values indicate strong inequalities with lower levels of rights for women in comparison with men.

Countries with high levels of Quality of Life usually have good indicators related with working conditions, living conditions, and social conditions, both for men and women, and thus they have low levels of Gender inequalities (GII). Low levels of GII is usually a necessary condition, but not a sufficient one, for high Quality of Life. High values of Freedom, Voice of Citizens and other indicators are also necessary for Quality of Life of women and men.

Countries with high levels of inequalities measured by GII, may present sometimes other negative indicators of lack of quality of life for women (indicators of homicides and other violent acts, lack of equality of opportunities to access education and work, and other ones.

Even in the cases of countries with low levels of inequality we may found low levels of social support for people that have to conceal working activities with care of dependent family members (new born, other children, older members or other persons). Usually, the majority of the caring people are women, More social support in this regard is important.

In Guisan and Aguayo(2011), in AEID 11-1, we have analyze the relationship between Education, Development and Women Empowerment, with a sample of 41 countries belonging to Europe (28), America (11), Eurasia and Central Asia (2). We found a high positive correlation between the indicator GEM of Gender Empowerment from United Nations and three indicators of Life Satisfaction.

The Women´s danger index published by the World Population Review (WPR(2023), has into account indicators of: Street Safety, Intentional Homicides, Partner and Non-Partner Sexual Violence, Legal discrimination, Global Gender Gap, Gender Gap, and Attitudes against violence.

Among the 50 countries in the list of WPR(2023) the 5 most secure countries for women were: Spain, Singapore, Ireland, Austria and Switzerland, followed by a group of 10 countries: Norway, Portugal, Croatia, Canada, Poland, UK, Netherland, France, Denmark, Italy and Czech Republic.

Cooperation for Education, Development and Poverty eradication

For the periods 1950-2000 and 2000-2023, the World experienced some important positive advances in real income per capita, poverty diminution and in several indicators of quality of life (increase of Life Expectancy, Women Empowerment, Freedom, Political Stability and other ones), being the effect of Education when of the main factors of those improvements. In a few countries there has been little advance, in spite of an increase of average schooling, due to lack of Peace, lack of Freedom or to other problems.

Guisan, Aguayo and Exposito(2015) highlight 7 channels of foreign aid per capita, estimating an average effect on many developing countries with income below World average, with a total Population of 3440 people in year 2010. Table 2.10 shows the estimations.

Table 2.10. Average Aid received per capita in developing countries, 2010

Channel	Aid per capita
1. Foreign Direct Investment (FDI)	543
2. Trade: income from Exports	628
3. Income from foreign Tourism	63
4. Private aid: donations	39
5. Remittances (by workers from abroad)	38
6. Official Development Aid (ODA)	23
7. Financial support (Investment less Savings)	97

Source: Guisan, Aguayo and Exposito(2015). Summary in the Entry 24 of our Blog on World Development: https://euroamericanassociation.blogspot.com

The most important channels, on average are: Exports, FDI, Financial support and Tourism, followed by Private donations and Remittances and in the last position the Official Development Aid (ODA) from the OECD countries. All the aids are important but investment on infrastructures and production capital are the most outstanding, as well as Education aids.

The 45 countries of table 1.10 to 1.12, had low indicators of Schooling for the period 2000-2015 and very low levels of Investment per capita, Manufacturing production per capita and high percentages of poverty. Many of the 45 countries with lower levels of real production per capita c belong to Africa (29), 9 to Asia-Pacific, 4 to the area Europe and Eurasia, and 3 to America.

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CHAPTER 2
ECONOMETRIC MODELS OF OECD COUNTRIES AND REGIONS, 2001-2023

GUISAN, Maria-Carmen*

2.1. Econometric models of 6 OECD countries: Inputs and Production

The studies by Guisan(2011 a,b) and (2013) present an econometric analysis of macroeconomic relationships with a panel of OECD countries for the periods 2000-2010 and 2000-2012.

The estimations included in this section are based on the approach by Guisan, having into account, Demand and Supply of Primary Inputs (Production Function) and the Supply of Intermediate Inputs (from domestic and foreign origin).

International studies of OECD countries have several advantages for Econometrics applications of panel data, thanks to the availability of data from OECD statistics for important variables, and to the variability of many variables, both through time and countries, which contributes to diminish multicollinearity and to increase precision of estimations.

Macroeconometric approach in the studies by Guisan(2011) and (2013):

Demand, Supply Primary Inputs and Supply of Intermediate Inputs

$$Q = \min (Q^d , Q^{s1}, Q^{s2}) \quad (1)$$

$$Q^d = C + G + GFCF + EXP - IMP \quad (2)$$

$$Q^{s1} = F(K^*, L, ti) \quad (3)$$

$$Q^{s2} = QA+QI+QB+QS = QI + QNI \quad (4)$$

$$QNI = f(QNI(-1). D(QI), D(IMPG) \text{ y } D(EXPG) \quad (5)$$

The system may include more equations, where Imports of Goods depend on other variables and Exports of Goods depend on QI

Maria-Carmen Guisan, Honorary Professor of Econometrics, Editor of the journals AEID and RSES, https://www.usc.gal/economet/guisan2.htm

Main variables are expressed at constant prices:

Q = Gross domestic Product

C = Private Consumption

G = Government Consumption (Public Consumption)

GFCF = Gross Fixed Capital Formation

EXPG = Exports of Goods

IMPG = Imports of Goods

QA = Agriculture Value-Added

QI = Industrial Value-Added

QB = Building Value-Added

QS = Services Value-Added

Following our approach to the impact of intermediate inputs (from domestic and foreign origin) to domestic development, Guisan(2013) estimated the following relationship with a panel of 6 OECD countries of table 2.1 for the period 1993-2010

QHNI = f (QHNI(-1), D(QHI); D(MHG) D(XHG)

where

QHNI is Non-Industrial Production per capita= real value-Added of Non Industrial Sectors (Agriculture, Building and Services) per inhabitant.

QHNI(-1) is the value of QHNI lagged one year.

D(QHI) is the annual increase of industrial production per capita

D(MHG) is the annual increase of Imports of Goods per capita

D(XHG) is the annual increase of Exports of Goods per capita

Data was elaborated by Guisan(2013) from the OECD National Accounts Statistics. The variables are expressed in Dollars per inhabitant at 2000 prices and exchange rates.

Notice that Imports and Exports have several direct and indirect effect on economic development. Exports usually has a direct positive effect on the

Demand Side and an indirect positive effect on the supply side when the Exports contribute to increase the Imports of intermediate inputs or stock of capital necessary to increase domestic production.

Equation 2.1. shows is a mixed dynamic model that relates non industrial production (QHNI) with its lagged value and with the increases of industrial production (QHI), imports of goods (MHG) and exports of goods (XHG). The direct effect is expected positive for MHG and negative for XHG, although the final effect of XHG may be positive when contributes to increase MHG, QHI and QHNI.

Equation 2.1. QHNI= F(QHNI(-1), D(QHI), D(MHB), D(XHB)

Dependent Variable: QHNI00? Method: Pooled Least Squares				
Sample (adjusted): 1993 2010. Included observations: 18 after adjustments				
Cross-sections included: 6. Total pool (unbalanced) observations: 86				
White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
QHNI00?(-1)	1.015261	0.001539	659.6649	0.0000
D(QHI00?)	0.388669	0.210720	1.844478	0.0687
D(MHG00?)	0.670343	0.160444	4.178048	0.0001
D(XHG00?)	-0.405141	0.155843	-2.599669	0.0111
R-squared	0.998371	Mean dependent var		17.64640
Adjusted R-squared	0.998312	S.D. dependent var		5.198703
S.E. of regression	0.213596	Akaike info criterion		-0.204067
Sum squared resid	3.741100	Schwarz criterion		-0.089911
Log likelihood	12.77489	Hannan-Quinn criter.		-0.158125
Durbin-Watson stat	1.252632			

Source:Guisán(2013) in AEID 13-2. Data in thousand Dollars per capita at 2000 prices and exchange rates, elaborated from OECD statistics

The coefficient of the lagged value of QHNI is significantly higher than 1 with the test of the t de Student: t=(1.015261-1)/0.001539=9.92.

All the coefficients are significantly different from zero at the 7% level of significance, and several of them at the 1% level of significance. The signs of the estimated coefficients are as expected: positive for the parameters of QHNI, D(QHI), D(MHG), and negative for D(XHG).

The coefficients measure the direct effect on QHNI of changes in the explanatory variables. The total effect of the variables should have into account other relationships.

For example, an increase of QHI has an estimated direct effect of 0.388689, but the total effect is higher because an increase of one unity in QHI may be have effects on foreign trade. Usually the increase of XHG implies an increase of MHG with a positive effect on QHNI. The increase of MHG may have also a positive impact on QHI with an additional impact on QHNI.

The following tables present a comparison of data of 6 OECD countries: France, Germany, Italy, Spain the United Kingdom and the United States, for the period 1993-2010.

Table 2.1 includes data of real Value-Added per inhabitant in Industrial activities (including Energy, Mining and Manufacturing) at constant prices of year 2000.

Table 2.1. QHI00 in 6 OECD countries, 1993-2010

	Spain	Germany	France	UK	Italy	USA
1993	2.173	4.848	3.260	4.337	3.269	5.047
1994	2.181	4.760	3.386	4.555	3.469	5.325
1995	2.252	4.732	3.445	4.623	3.669	5.596
1996	2.288	4.657	3.427	4.674	3.608	5.647
1997	2.411	4.815	3.540	4.728	3.746	5.829
1998	2.519	4.878	3.656	4.720	3.790	5.945
1999	2.622	4.915	3.708	4.825	3.786	6.148
2000	2.712	5.218	3.809	4.884	3.926	6.282
2001	2.760	5.264	3.824	4.800	3.866	5.880
2002	2.712	5.181	3.756	4.699	3.805	5.907
2003	2.693	5.211	3.701	4.653	3.779	6.095
2004	2.680	5.390	3.738	4.691	3.766	6.286
2005	2.644	5.551	3.716	4.583	3.703	6.398
2006	2.684	5.851	3.701	4.565	3.816	6.380
2007	2.702	6.163	3.731	4.563	3.853	6.378
2008	2.600	6.196	3.618	4.377	3.689	6.082
2009	2.161	5.210	3.151	3.910	2.994	5.350
2010	2.166	5.818	3.321	4.031	3.130	5.584

Source: Elaborated by Guisan(2013) from OECD National Accounts. Note: Data in thousand Dollars at constant prices and Exchange rates of year 2000.

We may notice an increase of QHI until year 2007 and a decrease for the period 2007-2010, as consequence of the financial crisis of year 2007.

Development in 6 OECD countries for 1965-2012

Tabla 2.2. Consumption per capita: CH00 in 6 OECD countries, 1965-2012 (thousand Dollars per inhabitant at 2000 prices and purchasing parities)

obs	Spain	Germany	France	Italy	UK	USA
1965	3.434	5.807	5.842	4.191	7.284	11.335
1970	4.361	7.144	7.105	5.633	7.890	13.055
1975	5.459	8.228	8.124	6.414	8.718	14.397
1980	5.788	9.823	9.232	7.730	9.190	15.944
1985	5.652	10.610	10.001	8.304	10.287	17.880
1990	7.004	11.515	11.019	9.477	12.505	19.680
1995	7.278	12.093	11.219	10.262	13.648	20.697
2000	8.554	13.400	12.566	11.497	16.447	23.862
2005	8.932	13.800	13.501	11.647	18.039	26.277
2010	8.724	14.571	13.916	11.206	18.077	27.204
2012	8.459	15.152	13.802	10.611	17.681	28.235

Source: Elaborated by Guisan(2013) from OECD National Accounts

Tabla 2.3. Industry per capita: QHI in 6 OECD countries, 1965-2012 (thousand Dollars per inhabitant at 2000 prices and purchasing parities)

Year	Spain	Germany	France	Italy	UK	USA
1965	0.893	2.656	1.990	1.689	3.270	3.119
1970	1.270	3.458	2.534	2.292	3.503	3.511
1975	1.708	3.507	2.754	2.411	3.545	3.640
1980	1.803	4.124	3.167	3.086	3.759	4.234
1985	1.789	4.293	3.103	2.940	3.909	4.405
1990	2.167	4.909	3.522	3.423	4.412	4.787
1995	2.252	4.732	3.445	3.669	4.623	5.596
2000	2.712	5.218	3.809	3.926	4.884	6.282
2005	2.644	5.551	3.716	3.703	4.583	6.398
2010	2.067	5.818	3.321	3.130	4.029	5.584
2012	1.948	6.205	3.219	2.965	3.950	5.780

Source: Elaborated by Guisan(2013) from OECD National Accounts

There was an important increase of Private Consumption per capita in the countries of table 2.2 for the period 1965-2010. There was a diminution for the period 2010-2012 in Spain, France, Italy and the United Kingdom.

There was an increase of QHI in Spain, France, Italy and the United States for the period 1965-2000 and a diminution for 2000-2012.

Model by Guisan(2013) with a panel of 6 OECD countries for 1991-2012

The study by Guisan(2013), in AEID 13-2, includes the estimation of a non linear system to explain Total Employment (LT) and real Wage (W). with a panel of 6 OECD countries for the period 1991-2012.

Figure 2.1 presents the equations and figure 2.2 shows the estimations.

Figure 2.1. Non linear system between LT and W

Dependent variable	Equation
(2.2) Employment	NLS: LT=C(11)*LTR+C(12)*((Q/W)- QR/WR) + C(13)*DPA
(2.3) Real Wage	NLS: W=C(21)*WR+C(22)*((PM)-(QR/LTR))

Source: Guisan(2013), in AEID 13-2.

Where:

LT= Total Employment of country i in year t (i=1.---6) (t=1991,…,2012)
Q = Real Gross Domestic Product
W = Real Wage (Compensation of Employees/Number of Employees)
DPA is the annual increase of Active Population
PM=Q/LT es Mean Labor Productivity
Lagged variables, with 1 retard: LTR=LT(-1); QR=Q(-1); WR=W(-1)

The model was estimated by Non Linear 2 Stages Least Squares (NL2LS), with significant coefficients, high goodness of fit and the following results.

Figure 2.2. NLS of estimation of Employment and Wage model with a panel of 6 countries, for the period 1965-2012.

C(11) = 0.9916; C(12)=0.3747; C(13)=0.9994; R^2=0.9998	(2.2)
C(21) = 1.0012; C(22) = 0.4869; R^2 = 0.9973	(2.3)

Source: Guisan(2013), in AEID 13-2.

The estimated equations show a positive impact of the increases of Q/W and Population Activa (PA) on Employment, and the positive impact of the increase of Labor Productivity (PM) on real Wage (W).

The increase of PA only has a positive impact on real Wage when it is compatible with an increase of PM (Q/LT).

In the case of Spain the immigration policy for the period 1995-2023, addressed to increase PA but without policies addressed to increase real Production per capita and Labor Productivity, has led to an increase of Employment but to an stagnation of real Wage.

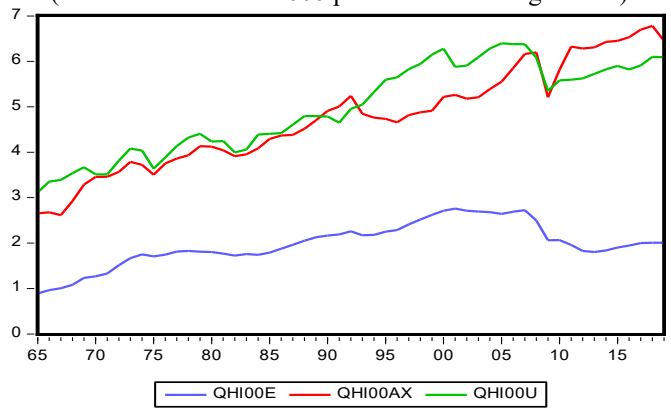
2.2. Econometric models of 3 OECD countries: Wages and Employment in Germany, Spain and the United States, 1965-2019.

In this section we present the estimations of equations of Employment, real Wage and Productivity with a sample of 3 OECD countries for the period 1965-2019. Before the presentation of the estimation we present several graphs and data and analyze the evolution of development in those countries.

A version in Spanish of these model has been included in Guisan((2022), in the book EE9 of this series.

Evolution for 1965-2019: Germany, Spain and the United States

Graph 2.1. Industrial Production per inhabitant (QHI), 1965-2019
(thousand Dollars at 2000 prices and Exchange Rates)

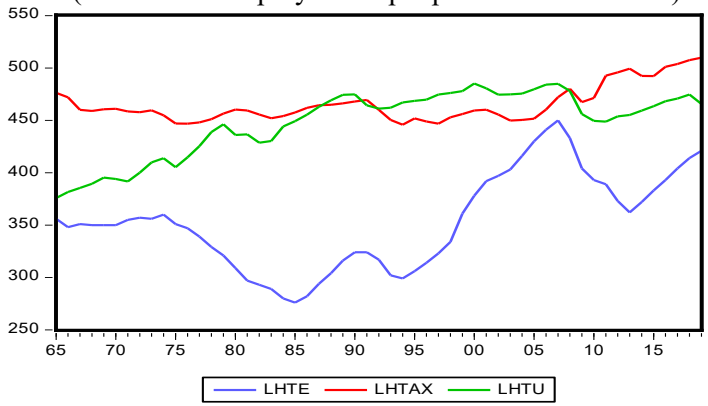


Source: Elaborated by Guisan(2022), in the book EE9, from OECD data. Notes: The blue colour (QHI00E) corresponds to Spain, the red color (QHI00AX) to Germany and the red color (QHI00U) to the Unitet States

We may notice a general trend of increase for the period 1965-2007. a negative impact of the crisis of year 2008 and an important recovery in the lasts years of the sample in Germany, a moderate recovery in the United States and a stagnation in Spain after several years of decrease.

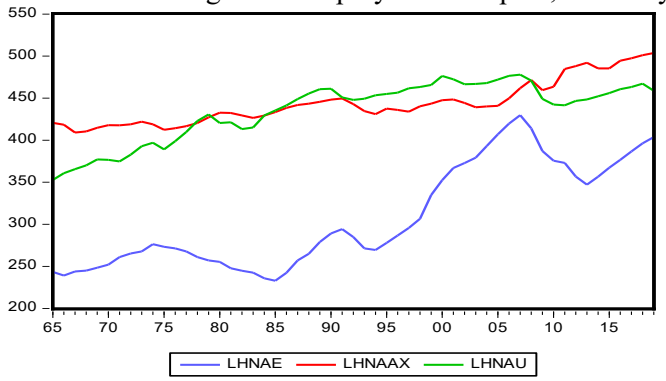
Graphs 2.2 and 2.3 show the evolution of the rates of Employment per thousand people (LHT for total employment and LHNA for non Agrarian Employment, for the period 1965-2019.

Graph 2.2. Employment rate in Spain, Germany and the USA, 1965-2019
(Number of Employed People per 1000 inhabitants)



Source: Elaborated by Guisan(2022), in the book EE9, from OECD statistics. Blue color corresponds to Spain, red color to Germany and green color to the United States.

Graph 2.3. Rate of Non-Agrarian Employment in Spain, Germany and USA



Source: Elaborated by Guisan(2022a) from OECD Labour Force Statistics (LFS)

The comparison of Spain with Germany and the United States in graph 2 shows that there was a lower distance in year 2019 than in year 1965. For the period 1965-1985, in Spain, there was an strong diminution of the Rates of Agrarian Employment (LHA) and Total Employment (LHT) and an increase of the Rate of Non Agrarian Employment (LHNA).

The highest rate of Employment, at the beginning and at the end of the period 1960-2019, corresponded to Germany. There was a high increase of Employment in the United States for the period 1965-2000 and a moderate increase for 1990-2007, followed by a decrease for 2007-2011 and a slight recovery afterwards.

Table 2.4 shows the evolution of real ·Wage, Mean Productivity of Labor and real Production per inhabitant, for the period 1996-2019.

Table 2.4. Wage, Mean Labor Productivity and Production per capita (thousand Dollars at 2000 prices and exchange rates)

	Real Watge (W)			Productividad Media (PM)			Producción per cápita (PH)		
	Es	De	USA	Es	De	USA	Es	De	USA
1996	24.3	31.9	40.6	38.5	47.3	65.3	12.3	21.0	30.7
2008	24.6	33.5	49.8	36.8	53.0	80.1	15.9	25.0	38.5
2012	24.7	35.0	51.2	40.3	52.8	85.7	14.8	25.7	38.7
2019	24.5	38.8	55.4	40.6	54.1	90.6	16.9	27.6	41.8

Source: Elaborated by Guisan(2022a), in the book EE9, from OECD statistics.

We may notice that there was stagnation of W in Spain for the period 1996-2019, an increase of 6.9 thousand Dollars in Germany and an increase of 14.8 thousand Dollars in the United States.

Mean Productivity of Labor increased 2.1 thousand Dollars in Spain, 6.8 in Germany and 25.3 in the USA.

A high level of Industrial production per capita, like in Germany and The United States, increases real production of Services and generate many Employment in Services sectors, compatible with high levels of real Wage. Other factors like Tourism, social services and foreign trade also contribute to increase production and employment in Services, but without enough Industrial development it is difficult to get a general increase of productivity and real Wages.

In the case of Spain there has not been enough increase of Industrial production per capita, and even there has been diminution for the period 2007-2019. This evolution has led to stagnation of real average Wage.

Table 2.5 show the rates of Employment in Services for the period 1970-2019. In Spain the rate has increased from 122 to 318 in the period 1970-2019, while in Germany the evolution has been from 203 to 365 and in the United

States from 234 to 385. Population, in that period has increased by 39% in Spain, 7% in Germany and 65$ in the United States.Table 2.6 shows rates of Employment in 10 Services sectors in year 2005.

Table 2.5 Employment Rate in Services and Population 1970-2019
(Employeed persons per 1000 people, and Population in thousand)

	Employment Rate in Services			Population (thousand people)		
	Spain	Germany	USA	Spain	Germany	USA
1970	122	203	234	33876	77709	205052
1980	138	235	287	37386	78275	227757
1990	178	260	337	38851	79364	250181
2000	239	310	372	40500	82212	282162
2015	291	349	369	46624	81687	321040
2019	318	365	385	47026	83167	338353

Sourc: Elaborated from Guisán(2023a) and OECD data.

Tabla 2.6. Employed people per thousand inhabitants in year 2005

Services sectors	Spain	Germany	USA
Commerce	63	71	71
Hotels and Restaurants	28	22	33
Transports and Communication	24	26	27
Financial Services	8	15	24
Business Services	35	65	61
Public Administration	30	32	29
Education	21	28	42
Health	25	50	58
Other Social and Personal Serv.	18	26	33
Domestic Services	11	8	3
Total Services	**263**	**343**	**381**

Source: Guisán, Aguayo and Expósito(2018) (Ecodev119), based on Guisán et al 2011) (book EE10) and OECD statistics.

We may notice that the highest differences of Spain, in comparison with Germany and the United States, corresponds to Financial Services, Business Services, Education and Health Services. The sum of "Other Social and personal services" and "Domestic Service" reaches a rate of 29 in Spain, 34 in Germany and 36 in the United States.

Equation of Employment in 3 OECD countries, 1965-2019

Equation 2.4 shows the estimation of the Employment equation with a panel of 3 OECD countries (Spain, Germany and the United States), for 1965-2019.

Equation 2.4. Employment Equation. Panel of Spain, Germany and the USA, 1965-2019

Dependent Variable: LT?				
Method: Pooled Least Squares. Sample: 1965 2019				
Included observations: 55. Cross-sections included: 3. Total panel: 165				
White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LT?(-1)	1.001994	0.001957	512.1318	0.0000
D(GDP00?/W00?)	362.8020	50.11164	7.239875	0.0000
D(KD3?/W00?)	-54.66922	9.984645	-5.475330	0.0000
D(PA?)	0.562920	0.120658	4.665425	0.0000
R-squared	0.999869	Mean dependent var		56352.93
Adjusted R-squared	0.999867	S.D. dependent var		46788.99
S.E. of regression	539.9176	Akaike info criterion		15.44465
Sum squared resid	46933270	Schwarz criterion		15.51995
Log likelihood	-1270.184	Hannan-Quinn criter.		15.47522
Durbin-Watson stat	1.432179			

Source Elaborated by Guisan(2022 a). Book EE9. Data from OECD statistics for LT, GDP00, W00, and Active Population (PA) and from FMI for KD3 (being KD3 the stock of capital public and private). Data of GDP and W are expressed in Dollars at 2000 prices and exchange rates, and data of KD3 in Dollars at 2017 prices.

Equation 2.4 is a mixed dynamic model where LT depends on its lagged valued and the increases of the explanatory variables: Q/W, KD/W and PA. The Effect of KD/W is negative when the increase of investment does not lead to an increase of Q/W, in case of a high underutilization of the stock of capital.

Generally, the most convenient economic policy is to increase both Q and W, compatible with an increase of Employment. Increase of Q must have into account the demand side, the supply of primary inputs and the supply of intermediate inputs.

Economic policies addressed to stagnation of real Production per capita, real Productivity per worker and real Wage, as it has happened in Spain for the period 1995-2023, present several problems, increasing public debt, and leading to scarcity of resources in many social services (health, education, research and other ones) and for the payments of social assistance.

Equation of real Wage in 3 OECD countries 1965-2019

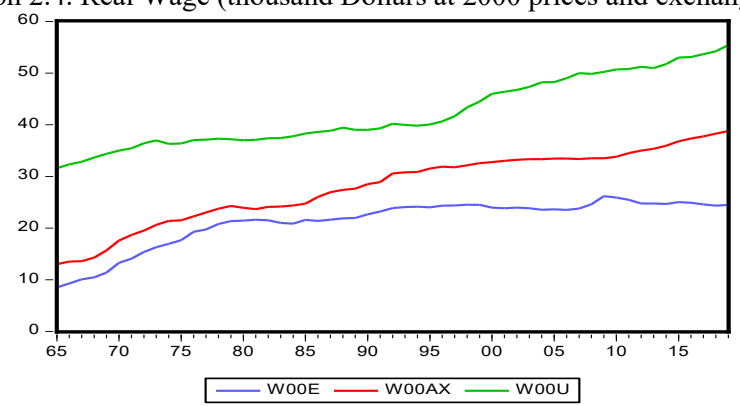
Equation 2.5. Wage related with D(PM) and D(PH) in 3 OCDE countries

Dependent Variable: W00?				
Method: Pooled Least Squares. Sample: 1965 2019				
Included observations: 55. Cross-sections included: 3. Total 165				
White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
W00?(-1)	0.999715	0.001622	616.3371	0.0000
D(PM00?)	0.399385	0.054731	7.297218	0.0000
D(PH00?(-1))	0.418295	0.093717	4.463398	0.0000
R-squared	0.998315	Mean dependent var		30.51630
Adjusted R-squared	0.998294	S.D. dependent var		10.75658
S.E. of regression	0.444316	Akaike info criterion		1.233454
Sum squared resid	31.98155	Schwarz criterion		1.289926
Log likelihood	-98.75998	Hannan-Quinn criter.		1.256378
Durbin-Watson stat	1.528145			

Fuente: Guisan(2022) in the book EE9. Data from the OCDE.

Graphs 2.4 shows the evolution of real Wage for 1965-2019

Graph 2.4. Real Wage (thousand Dollars at 2000 prices and exchange rates)



Source: Elaborated by Guisan(2022a) from OCDE statistics. Blue color (Spain), Red color (Germany), Green color (United States).

Both DPM and DPH show a positive and significant effect on the real Gross Wage. The Net Wage (Wage after deduction of social security contributions and taxes) usually increase with the Gross Wage.

2.3. Development and Quality of Life in 372 OECD Regions

In the studies by Guisan(2022a) in AEID 22-2 and (2022 b) in RSES 22-2, we analyze indicators of development and quality of life in 372 regions of 38 OECD countries in year 2016 and estimate a model relating Quality of Life with seve4ral indicators.

Studies by Guisan(2022 am b) on Quality of Life in OECD regions

The study presents de estimation of an econometric model of 372 regions of 36 OECD countries in year 2016, relating Life Satisfaction, with Income, Security and Quality of Environment, among other indicators. The initial number of regions was 402 but only 372 had availability of all the indicators.

The study includes an interesting review of the literature on econometric models and quantitative studies of Quality of Life, well based in samples of individuals, samples of countries or samples of regions.

That study includes an Annex with data of the indicators in each region. The indicators analyzed are listed in figure 2.3.

Figure 2.3. Indicators of regional development in this stuty.

R13= Satisfaction with Life

R3 = Unemployment rate (% of Active Population).

R4X = Income per capita (thousand Dollars) at Purchasing Power Parities

R5 = Homicides rate (per 100 thousand people)

R7 = Life Expectancy (years)

R8 = PM2.5. Indicator of concentration of particles with 2.5 microns of diameter, or less, by cubic meter o air. The tables of risk indicate low until 12, moderate between 12.1 and 35.5. Highest levels have graduation frm 35.5 to the maximum value of 500.

Table 2.7 presents the values of the indicators at country level in 46 OECD countries. Data for 372 regions are included in the Annex of Guisan(2022a). Guisan(2022 b) found that R4 seems to undervalue income at purchasing power parities, in some cases, in comparison with the United States, while R4X seem to avoid the undervaluation.

Tables 2.8 and 2.9 show the interval of values of R13 in the regions of each country and the names, and values of R13, of the top regions of its country.

Table 2.10 shows the average values of the Indicators in the groups of region with the lowest and the highest values of R13.

Table 2.7. Country data, from OECD statistics, for Quality of Life in year 2016

Country	R13	R4	R4X	R4*	R7	R3	R5	R8
Australia	7.3	27698	32136	38939	82.2	5.7	0.9	5.1
Austria	7.3	23770	29898	36228	81.8	5.6	0.5	16.7
Belgium	7.1	19547	27914	33824	81.5	7.2	1.5	14.5
Canada	7.4	22499	27725	33594	81.9	6.3	1.7	7.3
Chile	6.4	6871	13796	16717	79.2	6.8	8.9	16.3
Czech R	6.5	13997	19529	23664	79.1	3.0	1.3	19.8
Denmark	7.7	18064	26368	31951	80.9	5.9	0.9	9.6
Estonia	5.4	12073	16063	19464	78.0	6.1	3.3	7.6
Finland	7.5	18688	26634	32273	81.5	8.9	0.4	6.2
France	6.7	20480	27689	33551	82.7	9.6	1.4	13.3
Germany	6.7	23887	31273	37894	81.0	3.9	0.8	14.1
Greece	5.6	12958	16741	20286	81.5	21.8	0.8	18.4
Hungary	5.0	11000	15625	18933	76.2	4.2	1.0	20.3
Iceland	7.4	16290	36970	NA	82.2	3.1	0.9	1.8
Ireland	7.1	17630	22389	27129	81.8	6.9	0.8	7.2
Israel	7.3	11391	26160	NA	82.2	4.9	1.5	21.9
Italy	6.3	19552	24325	29475	83.4	11.5	1.4	19.2
Japan	6.1	19322	24173	29290	83.9	3.5	0.7	15.1
Korea R	5.9	16909	19964	24191	81.4	3.8	1.5	31.1
Latvia	5.9	10434	15421	18686	74.9	9.0	4.4	10.4
Lithuania	..	13889	19221	23290	74.9	7.3	5.2	13.3
Luxembourg	7.0	29279	36730	44506	82.7	5.6	0.9	12.3
Mexico	7.0	3415	13933	16882	75.2	4.1	19.6	15.1
Netherlands	7.5	18631	27447	33258	81.7	5.0	0.9	13.8
New Zealand	7.3	17564	22599	27383	81.4	5.3	0.9	5.0
Norway	7.5	24549	30477	36929	82.5	4.3	0.5	4.5
Poland	5.8	13011	17264	20919	78.0	5.0	1.2	22.1
Portugal	5.3	14495	19762	23946	81.3	9.3	0.6	7.1
Slovak R	5.9	12999	16435	19914	77.3	8.2	1.1	21.3
Slovenia	5.9	14772	19301	23388	81.2	6.7	1.9	17.0
Spain	6.6	16065	21472	26018	83.5	17.4	0.6	11.5
Sweden	7.4	21276	27160	32911	82.4	7.0	0.9	6.5
Switzerland	7.6	24113	33904	41081	83.7	5.0	0.5	13.9
Turkey	5.3	5946	17035	20641	78.1	11.1	2.3	21.2
UK	6.9	20610	26642	32282	81.2	4.5	1.2	9.2
USA	7.2	40002	40002	48471	78.6	4.4	5.3	10.3

Sources: Elaborated by Guisan(2022a,b) from OECD Regional Statistics. In the case of income at purchasing power parities, we have calculated R4X, having into account the ratio of each country to the USA in R4*, from OECD National Accounts at PPPs (including Disposal income in kind) or from World Bank in a few cases.

Table 2.8. R13 (Life Satisfaction) in regions of 35 OECD contries, 2016

Country	Regional values: (interval) and highest values
Australia	(7.0 to 7.7): Tasmania(7.7), Canberra (7.7).
Austria	(7.1 to 7.5): Tyrol (7.5).
Belgium	(6.8 to 7.2): Flemish region (7.2).
Canada	(7.3 to 8.1): Newfoundland-L. (8.1), Prince Edward (8.0).
Chile	(5.6 to 7.9):Aysen (7.9),Magallanes-A.(7.3), Valparaiso (7.1).
Czech R	(6.2 to 6.8): Prague (6.8).
Denmark	(7.5 to 7.7): Copehagen region (7.7), Northern Jutland (7.7).
Finland	(7.5 in all: Western, Eastern and Northern, Southern, Helsinki.
France	(6.3 to 7.3): Corsica (7.3), Brittany (6.9) and Nouvelle-Aquitain (6.9).
Germany	(6.1 to 7.0): Hamburg (7.0), (6.9 in: Baden-Wurttenberg, Bavaria, Bremen, Lower Saxony and Schleswig-Holstein).
Greece	(4.8 to 5.9): East Macedonia-Thrace (5.9), West Greece (5.9) Peloponeso (5.9).
Hungary	(4.5 to 5.3): Western Transdanubia (5.3).
Iceland	(7.1 to 7.3): Other regions 7.3, Reykjavik (7.1).
Ireland	(7 to 7.2): Border, Midland and Western (7.2).
Israel	(7.0 to 7.5): Tel Aviv (7.5), Central (7.4), South (7.4).
Italy	(5.4 to 6.8):Aosta V. (6.8), Bolzano-Bozen (6.7),Trento (6.7).
Japan	(5.7 to 6.1): (6.1 in Northern Kanto, Southern Kanto, Toukai)
Korea R	(5.7 to 6.1): Chngcheong (6.1), Seoul (6.0), Gyeongnam(6.0).
Luxembourg	(6.9).
Mexico	(6.2 to 8.6): Campeche (8.6), Tamaulips (8.2), Yucatan (8.2), Quintana Roo (8.1), Sinaloa (8.1), Sonora (8.1).
Netherlands	(7.1 to 7.8): Zeeland (7.8). Groningen (7.6), Friesland (7.6).
New Zealand	(7.1 to 7.7): Otago (7.7), West Coast (7.6).
Norway	(7.4 to 7.7): 7.7 Trondelag, 7.6 (Oslo, SE Norway, Agder&R)
Poland	(5.4 to 6.6). Zachodniopomorskie Pomerania (6.6)
Portugal	(5.1 to 5.4): Lisbon (5.4), Alentejo (5.4), Azores (5.4).
Slovakia	(6.0 to 6.5): Bratislava (6.5).
Slovenia	(5.9 to 6.2): Western Slovenia (6.2).
Spain	(6.1 to 7.0): Cantabria (7.0), Navarra (7.0).
Sweden	(7.3 to 7.6): Smaland & Islands (7.6), South Sweden (7.5).
Switzerland	(7.3 to 7.8): Eastern (7.8), Central (7.8), Zurich (7.7).
Turkey	(4.4 to 6.3): Eastern Marmara-South(6.3)(
UK	6.7 to 7.1): Scotland (7.1), SW England (7.0), N.Ireland (7.0)
USA	(6.6 to 8.1): Delaware (8.1), Vermont (8.0), North Dakota (7.9), Nebraska (7.8), Wyoming (7.8), South Carolina (7.7)

Source: Elaborated by M.C.Guisan from OECD regional statistics 2016.

Table 2.9 shows the average values of the indicators in the groups of OECD regions with lowest and highest values of R13 in comparison with the non weighted average of 372 OECD regions. Group 1 is the group of regions with lowest levels of Life Satisfaction (R13 lower than 5.1). Group 7 correspons to the OECD regions with the highest levels of Life Satisfaction (R13 higher than 7.4).

Table 2.9. Non weighted averages in groups of 372 OECD regions, 2016

Group	R13	Nb regions	xr13 satisfaction	xr3 unemployment.	rx4 income per capita(th)	xr5 homicide	xr7 life expectancy	xr8 Pollution Pm2.5
1	<5.1	13	4.77	13.72	8.10	1.54	77.94	22.08
7	>7.4	62	7.69	5.11	20.93	4.42	80.44	**9.23**
All	4.4-8.6	372	6.69	6.99	18.63	3.75	80.21	13.29

Source: Elaborated by Guisan (2022a,b) from regional statistics OECD(2022). Notes: xRi is the non weighted average of indicator Ri in the regions of each group. Nb regions is the number of regions of each group. Guisan(2022 b) includes the values of R13, R4 and R4X in the regions of OECD countries of Europe and America. Guisan(2022a) includes data of R13 and other indicators in 372 regions.

Group 1 has lowest average values of R13 (4.77) and has several objective indicators worse than OECD regional average and than the average of the group 7, which has the highest average value of R13 (7.69).

Unemployment rate is 13.72% in group 1 and only 5.11 in group 7. Income per capita is 8.10 thousand Dollars in group 1 and 20.93 in group 5. Pollution is worse in group 1 (22.08 for the indicator of PM2.5) than average (13.29) while it is better (lower pollution) in group 7 (9.23).

Quality of life is higher than 6 in the majority of the OECD regions (77% of 372 regions). The lowest value is 4.4 and the highest 8.6. Only 10 OECD regions have a value of R13 below World average(5)

Table 2.10 shows the correlation of R13 with the indicators R4, R4X, R7, R3 and R8 with data of 372 OECD regions in year 2016.

Table 2.10. Correlation of R13 with other Indicators in OECD regions

R4	R4X	R7	R3	R8
0.4021	0.7024	0.0904	-0.4050	-0.5692

Source. Elaborated by Guisan(2022 b) from OECD statistics 2016

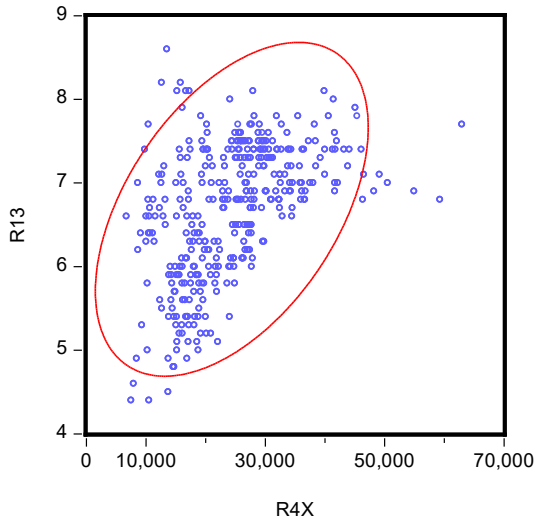
Correlation of R13 (Life Satisfaction is positive with Income per capita (R4 and R4X) and R7 (Life Expectancy). It is negative with R3 (Homicides rate) and R8 (Pollution PM2.5). Correlation with R7 is higher when the sample includes countries with a great variability in the values of R7.

We may notice that R4X (our best estimation of Income per capita at purchasing power parities, using both regional and national OECD statistics) shows a higher correlation with R13 (Life Satisfaction).

Graph 2.5 shows the general positive relationship between both variables.

We may notice that for very high levels of income per capita, income is not always the most relevant variable and other factors may have more importance (quality of working conditions, environment, quality of government, individual freedom, peace and other ones).

Graph 2.5. Life Satisfaction (R13) and Income per capita (R4X) in 372 OECD regions, year 2016



Source: Guisan(2022b). Data of 372 OECD regions. R4X of each regions was calculated from R4 of regional statistics multiplied by the ratio R4X/R4 of the country.

Equation 2.6 relate Life Satisfaction (R13) with the indicators R4x, R7, R3 and R8, in 373 regions with available data among 402 regions of OECD regional statistics of year 2016.

Equation 2.6. R13 related with R4x, R7, R3 and R8, in OECD regions 2016

Dependent Variable: REG13=Satisfacion with Life				
Method: Least Squares. Sample 1 402. Included observations 373				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.324142	0.480086	13.17294	0.0000
R4X/1000	0.010873	0.001827	5.950027	0.0000
R7	0.013371	0.006110	2.188318	0.0293
R3	-0.054189	0.002861	-18.93944	0.0000
R8	-0.008485	0.002309	-3.675177	0.0003
DN1	-1.403584	0.045363	-30.94089	0.0000
DN2	-0.723809	0.037652	-19.22368	0.0000
DN3	-0.443126	0.043025	-10.29916	0.0000
DP1	0.255658	0.058914	4.339497	0.0000
DP2	0.100590	0.049686	2.024509	0.0437
DNREG	-0.693724	0.052808	-13.13670	0.0000
DPREG	0.633684	0.046325	13.67914	0.0000
R-squared	0.923177	Mean dependent var		6.687668
Adjusted R-squared	0.920836	S.D. dependent var		0.810687
S.E. of regression	0.228096	Akaike info criterion		-0.086459
Sum squared resid	18.78201	Schwarz criterion		0.039705
Log likelihood	28.12454	Hannan-Quinn criter.		-0.036361
F-statistic	394.3723	Durbin-Watson stat		1.604569
Prob(F-statistic)	0.000000			

Source: Elaborated by M.C. Guisan in this book EE12 from the indicators included in Guisan(2022a,b) from OECD statistics. Notes: Names of variables in Figure 2.3: R4X income, R7=Life Expectancy, R3=Unemployment Rate, R8=Pollution.

Equation 2.6 shows a positive and significant effect of R4X (Income per capita at purchasing parities), and R7 (Life Expectancy). It shows a negative and significant effect of R3 (Unemployment rate) and R8 (Pollution PM2.5).

Dummies for some groups of countries: We includes dummy variables, to have into account the effects of missing variables in several countries. We include 5 country dummies: 3 for negative effects (DN1, DN2 and DN3) and 2 for positive effects (DP1, DP2). (See Guisan(2022a).

Dummies for groups of regions: We have created a dummy variable for negative effects (DNREG) and a dummy variable for positive effects (DPREG). (See Guisan(2022 a).

2.4. Regional development in the United States and 5 European countries

Comparison of 5 European countries and 8 BEA regions of the USA

In chapter 5 of the Book EE11 of this series, Guisan(2023) presents a comparison of regional development in 8 BEA regions of the United States and 5 big economies of Europe for the period 1950-2000, and in the article by Guisan(2023) we analyze regional development of those regions for 2000-2021. Here, we present a comparison of indicators of regional development in the United States and the group EU5, of 5 big European economies, in year 2016, based on OECD regional statistics.

Table 2.11 presents a comparison of indicators of development and quality of Life in the 8 BEA regions of the United States and 5 European countries .

Table 2.11. Indicators of Income per capita and Quality of Life, year 2016

	R13 Satisfaction	R4X Income pc	R7 Life Exp.	R3 Unemployment Rate	R5 Homicides Rate	R8 Pollution
France	6.7	27689	82.7	9.6	1.4	13.3
Germany	6.7	31273	81.0	3.9	0.8	14.1
Italy	6.3	24325	83.4	11.5	1.4	19.2
Spain	6.6	21472	83.5	17.4	0.6	11.5
UK	6.9	26642	81.2	4.5	1.2	9.2
Av. EU5	**6.6**	**26280**	**82.4**	**9.4**	**1.1**	**13.5**
New England	7.2	45595	80.2	3.7	2.0	8.0
Mideast	7.3	47099	78.8	4.8	7.8	10.6
Great Lakes	7.0	37765	78.5	4.3	6.1	11.6
Plains	7.5	40168	79.4	3.3	3.5	9.0
Southeast	7.2	34479	76.7	4.5	7.1	9.4
Southwest	7.1	35758	78.1	4.9	5.9	8.7
Rocky Mountain	7.1	37453	79.3	3.5	3.2	6.8
Far West	7.1	41332	79.7	4.7	4.6	7.6
USA	**7.2**	**40002**	**78.6**	**4.4**	**5.3**	**10.3**

Source: Elaborated by Guisan(2023), based on OECD regional data and other sources. Notes: R4X are estimations of Income per capita, in Purchasing Power Parities of year 2016, elaborated by Guisan(2023), with information from national and regional statistics. Life satisfaction is measured in decimal scale. Life Expectancy is in years. Unemployment rate is % of Active Population. Homicides=number of homicides per 100 thousand people. Pollution=PM2.5 concentration per cubic meter of air. BEA regions values in this table were calculated as non-weighted averages of the values at state level from OECD data.

Tables 12.1 to 12.8 show the values at state level of each BEA region, as well the average of the region and the value of the United States. Tables 13 to 17 present the indicators of regional development of EU5 countries (France, Germany, Italy, Spain and the United Kingdom).

Besides the indicators of development and quality of life we include the evolution of population for the fists 2 decades of the 21st century. There may be small discrepancies between the sum of Population of the regions of a country if the total includes also Population in other territories.

The footnote of table 12.1 also holds for tables 12.2 to 12.8 and 13 to 17.

Each table includes the values of indicators defined in Figure 2.3, with data around year 2016:

Positive Indicators R13 Life Satisfaction, R4 (Income per capita) and R7 (Life Expectancy).

Negative Indicators: R3 (Unemployment rate), R5 (Homicides rate) and R8 (Pollution PM2.5).

Population in the United States increase by 17.77% for the period 2000-2020, and this increase was compatible with an important increase of real production and real income per capita in the country and in each of the 8 BEA regions, as seen in the study by Guisan(2023) in Volume 23-2 of RSES.

Regional development in the United States

Table 12.1. BEA region 1 by state: New England

States and BEA region	Pop 2000	Pop 2020	R13	R4X	R7	R3	R5	R8
Connecticut	3405	3605	6.9	54925	80.8	4.7	2.2	9.2
Maine	1274	1362	6.8	36549	79.2	3.3	1.5	6.7
Massachusetts	6349	7029	7.0	50499	80.5	3.7	2.0	8.5
New Hampshire	1235	1377	6.9	48205	80.3	2.7	1.3	7.7
Rhode Island	1048	1097	7.5	41969	79.9	4.5	2.7	8.8
Vermont	608	643	8.0	41425	80.5	3.0	2.2	7.0
New England	13919	15113	7.2	45595	80.2	3.7	2.0	8.0
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source: Elaborated by M.C. Guisan from OECD regional data and Guisan(2022).
Note: Pop is Population in thousand people. Indicators, around year 2015 are: R13 Life Satisfaction, R4=Income per capita, R7=Life Expectancy, R3=Unemployment rate), R5=Homicides rate and R8=Pollution PM2.5. They are defined in Figure 2.3. The values of the BEA region were calculated as non-weighted average of state data.

Table 12.2. BEA region 2, by state: Mideast

States and BEA region	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Delaware	783	990	8.1	39885	78.4	4.6	5.9	11.0
Wastington DC	572	689	6.8	59267	76.5	6.0	20.4	11.5
Maryland	5296	6177	7.4	46107	78.8	4.1	8.0	10.8
New Jersey	8414	9289	7.1	49152	80.3	4.6	4.2	10.2
New York	18976	20201	7.1	46512	80.5	4.7	3.2	10.0
Pennsylvania	12281	13002	7.0	41673	78.5	4.9	5.2	10.3
Mideast	46322	50348	7.3	47099	78.8	4.8	7.8	10.6
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source: See footnote of table 12.1. This region includes 5 states and Washington DC

Table 12.3. BEA region 3, by state: Great Lakes

States and BEA region	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Illinois	12419	12812	6.9	41661	79.0	5.0	8.2	12.1
Indiana	6080	6785	7.0	35874	77.6	3.5	6.6	12.2
Michigan	9938	10077	6.9	36150	78.2	4.6	6.0	11.0
Ohio	11353	11799	6.8	36638	77.8	5.0	5.6	12.4
Wisconsin	5363	5893	7.2	38502	80.0	3.3	4.0	10.1
Great Lakes	45153	47366	7.0	37765	78.5	4.3	6.1	11.6
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source. See footnote of table 12.1

Table 12.4. BEA regions 4, by state: Plains

State and BEA region	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Iowa	2926	3190	7.5	38438	79.7	3.1	2.3	10.6
Kansas	2688	2937	7.4	40002	78.7	3.6	3.8	8.8
Minnesota	4919	5706	7.4	41291	81.1	3.5	1.8	9.6
Missouri	5595	6154	7.2	35767	77.5	3.8	8.8	9.8
Nebraska	1711	1961	7.8	40618	79.8	2.9	2.6	9.4
North Dakota	642	779	7.9	45071	79.5	2.6	2.0	6.8
South Dakota	754	886	7.1	39992	79.5	3.3	3.1	8.0
Plains	19235	21613	7.5	40168	79.4	3.3	3.5	9.0
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source. See footnote of table 12.1

Table 12.5. BEA region 5, by state: Southeast

	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Alabama	4447	5024	7.4	32686	75.4	4.4	8.4	10.1
Arkansas	2673	3011	7.0	32574	76.0	3.7	7.2	10.3
Florida	15982	21538	7.0	37510	79.4	4.2	5.4	8.3
Georgia	8186	10712	7.0	34116	77.2	4.7	6.6	10.0
Kentucky	4041	4505	7.1	32509	76.0	4.9	5.9	9.7
Louisiana	4468	4657	7.4	36214	75.7	5.0	11.8	9.7
Mississippi	2844	2961	7.3	30303	75.0	5.0	8.0	9.6
North Carolina	8049	10439	7.4	34334	77.8	4.6	6.7	8.7
South Carolina	4012	5118	7.7	32729	77.0	4.3	7.4	9.4
Tennessee	5689	6910	7.4	36500	76.3	3.7	7.3	9.4
Virginia	7078	8631	7.4	43221	79.0	3.8	5.8	9.2
West Virginia	1808	1793	6.8	31055	75.4	5.1	4.4	8.9
Southeast	69277	85299	7.2	34479	76.7	4.5	7.1	9.4
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source. See footnote of table 12.1

Table 12.6. BEA region 6, by state: Southwest

State	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Arizona	5130	7151	6.9	33304	79.6	4.9	5.5	10.6
New Mexico	1819	2117	7.1	32463	78.4	6.1	6.7	6.0
Oklahoma	3450	3959	7.0	38008	75.9	4.3	6.2	9.2
Texas	20851	29145	7.3	39256	78.5	4.3	5.3	9.1
Southwest	31250	42372	7.1	35758	78.1	4.9	5.9	8.7
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source. See footnote of table 12.1

BEA region 7, by state: Rocky Mountain

	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Colorado	4301	5773	7.4	41740	80.0	2.8	3.7	7.4
Idaho	1293	1839	6.8	32368	79.5	3.2	2.9	7.3
Montana	902	1084	6.6	34462	78.5	4.0	3.5	5.8
Utah	2233	3271	7.1	33302	80.2	3.2	2.4	7.9
Wyoming	493	576	7.8	45393	78.3	4.2	3.4	5.4
Rocky Mountain	9222	12543	7.1	37453	79.3	3.5	3.2	6.8
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

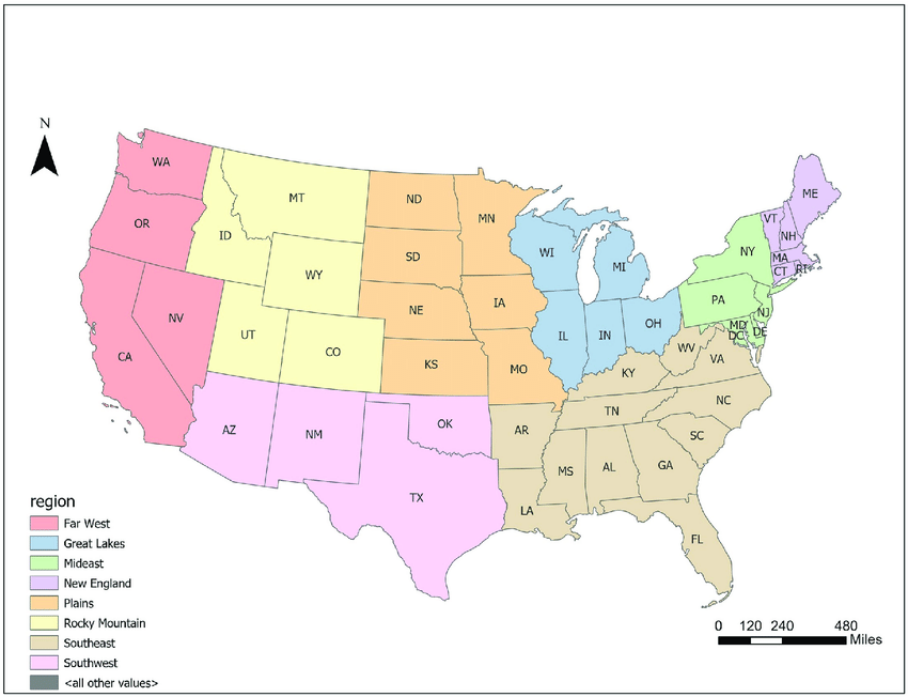
Source. See footnote of table 12.1

Table 12.8. BEA region 8, by state: Far West

	Pop 2000	Pop 2020	R13	R4x	R7	R3	R5	R8
Alaska	627	733	6.8	46338	78.3	7.1	7.0	6.7
California	33871	39538	7.4	44093	80.8	4.8	4.9	13.7
Hawaii	1211	1455	7.6	41620	81.3	2.4	2.5	5.1
Nevada	1998	3104	6.8	35987	78.1	5.0	7.6	7.3
Oregon	3421	4237	7.0	36093	79.5	4.1	2.8	5.9
Washington	5894	7705	7.2	43860	79.9	4.8	2.7	6.8
Far West	47022	56772	7.1	41332	79.7	4.7	4.6	7.6
United States	281422	331449	7.2	40002	78.6	4.4	5.3	10.3

Source. See footnote of table 12.1

Map 1. States and BEA regions of the USA.



The eight U.S. economic regions defined by the Department of Commerce Bureau of Economic Analysis: New England, Mideast, Southeast, Great Lakes, Plains, Rocky Mountains, Southwest, and Far West. Source: https://doi.org/10.1371/journal.pone.0256407.g001

Regional development in 5 European countries

Tables 13 to 17 show the values of regional indicators in France, Germany, Italy, Spain and the United Kindomg in year 2016. We also include the evolution of population in each region in years 2000 and 2021.

Table 13. France: Population (thousands) and regional indicators 2016

Regions	Pop 2000	Pop 2021	R13	R4x	R7	R3	R5	R8
Île-de-France	11020	12329	6.6	32856	84.2	8.8	1.2	16.0
Centre - Val de Loire	2450	2573	6.5	27690	82.5	8.7	0.9	12.3
Bourgogne-Franche-Comté	2793	2791	6.7	27498	82.3	9.2	0.7	13.4
Normandy	3212	3320	6.5	26997	81.9	10.1	1.0	13.0
Hauts-de-France	5941	5986	6.5	24559	80.7	12.1	1.2	15.2
Grand Est	5563	5561	6.5	26490	82.1	10.1	1.1	13.7
Pays de la Loire	3719	3883	6.8	26697	83.1	7.1	0.7	10.9
Brittany	3294	3412	6.9	26848	82.0	7.4	0.4	9.9
Nouvelle-Aquitaine	5912	6087	6.9	26849	82.9	9.5	1.2	11.2
Occitanie	5775	6060	6.8	25972	83.1	9.7	1.4	10.8
Auvergne-Rhône-Alpes	7877	8156	6.8	28161	83.6	7.5	1.2	13.9
Provence-Alpes-C.A.	5008	5140	6.7	27569	83.1	10.4	1.7	13.0
Corsica	327	349		25242	83.9	7.9	3.6	11.3
France	60913	67750	6.7	27689	82.7	9.6	1.4	13.3
EU5	331894	324799	6.6	26280	82.4	9.4	1.1	13.5

Source:See footnote of table 12.1. Porvence-Alps-C.A. is Provence-Alpes-Côte d'Azur

Map 2. French regions

Table 14. Germany: Population, in thousands, and regional indicators 2016

Regions	Pop 2000	Pop 2021	R13	R4x	R7	R3	R5	R8
Baden-Württemberg	10500	11125	6.9	34107	82.0	3.0	0.7	14.1
Bavaria	12193	13177	6.9	34279	81.7	2.4	0.9	15.9
Berlin	3384	3677	6.4	27667	80.9	7.1	1.2	14.9
Brandenburg	2602	2538	6.2	27396	80.7	4.6	1.1	14.5
Bremen	662	676	6.9	30034	80.1	4.5	1.3	12.9
Hamburg	1710	1854	7.0	34574	81.2	4.3	1.1	12.6
Hesse	6060	6295	6.8	32323	81.6	3.4	1.2	14.3
Mecklenburg-Vorpom.	1782	1611	6.5	25646	80.1	5.2	0.7	12.7
Lower Saxony	7912	8027	6.9	30171	80.5	3.9	1.2	12.5
North Rhine-Westphalia	18005	17925	6.8	30914	80.6	4.2	0.5	13.9
Rhineland-Palatinate	4033	4106	6.8	32298	81.1	3.4	0.5	13.6
Saarland	1070	982	6.7	29417	80.2	4.6	1.0	13.2
Saxony	4443	4843	6.2	27081	81.1	4.5	0.9	15.7
Saxony-Anhalt	2632	2169	6.1	26344	79.8	7.0	1.1	14.2
Schleswig-Holstein	2783	2922	6.9	31824	80.6	3.7	0.6	11.6
Thuringia	2440	2109	6.2	26657	80.4	4.5	1.0	14.1
Germany	82212	83196	6.7	31273	81.0	3.9	0.8	14.1
EU5	331894	324799	6.6	26280	82.4	9.4	1.1	13.5

Source: See footnote of table 12.1

Map 3 : German regions

Table 15. Italy: Population (thousands) and regional indicators 2016

Region	2000	2021	R13	R4x	R7	R3	R5	R8
Piedmont	4225	4256	6.5	20398	83.3	9.3	0.6	28.0
Aosta Valley	119	123	6.8	27466	83.0	7.9	0.0	21.1
Liguria	1588	1509	6.0	27692	83.6	9.7	0.5	26.2
Lombardy	8971	9943	6.3	27731	84.0	6.5	0.6	38.2
Abruzzo	1261	1276	6.1	29809	83.5	12.0	0.8	18.3
Molise	323	292	5.6	21859	83.4	14.9	0.3	15.6
Campania	5717	5624	5.6	19606	81.7	21.3	1.3	17.6
Apulia	4035	3923	5.9	17309	83.5	19.3	1.1	13.4
Basilicata	601	541	6.4	18483	83.1	13.1	0.3	11.2
Calabria	2029	1855	5.4	18139	82.9	22.0	2.4	11.4
Sicily	4994	4833	5.9	16931	82.4	21.9	8.5	12.5
Sardinia	1639	1587	6.2	17536	83.3	17.6	1.1	12.9
Trentino-Alto Adige	929	1074	6.7	31051	84.2	5.5	0.7	14.6
Veneto	4485	4848	6.3	28062	83.9	6.5	0.2	33.5
Friuli-Venezia Giulia	1178	1195	6.5	26464	83.5	6.9	0.7	22.2
Emilia-Romagna	4003	4425	6.3	27285	83.7	6.7	0.6	33.1
Tuscany	3492	3663	6.1	29586	83.9	8.8	0.7	23.6
Umbria	821	859	6.1	26182	84.1	10.8	0.9	18.6
Marche	1447	1487	6.0	24235	84.0	11.0	0.5	20.7
Lazio	5119	5715	6.1	24795	83.2	10.9	0.9	17.6
Italy	56929	59030	6.3	24325	83.4	11.5	1.4	19.2
EU5	331894	324799	6.6	26280	82.4	9.4	1.1	13.5

Source: See footnote of table 12.1.

Map 4. Italian regions

Map 4, from Wikipedia: 1. Abruzzo, 2. Valle d´Aosta,Cal 3. Puglia (Apulia), 4. Basilicata, 5. Calabria, 6. Campania, 7. Emilia-Romagna, 8. Friuli-Venezia Giulia. 9. Lazio, 10. Liguria, 11. Lombardia, 12. Marche, 13. Molise, 14. Piemonte (Piedmont), 15. Sardegna, 16. Sicilia, 17. Trentino-Alto Adige (it includes Trento and Bolzano), 18. Toscana, 19. Umbria, 20. Veneto.

Table 16. Spain: Population (thousands) and regiona indicators 2016

Regions	Pop 2000	Pop 2021	R13	R4x	R7	R3	R5	R8
Galicia	2702	2698	6.3	19895	83.0	15.8	0.4	8.1
Asturias	1068	1012	6.3	22142	82.6	13.9	0.6	8.3
Cantabria	533	585	7.0	20995	83.5	13.6	0.0	9.0
Basque Country	2085	2213	6.9	28227	83.9	11.4	0.3	10.0
Navarra	548	662	7.0	26909	84.1	10.3	0.2	10.3
La Rioja	274	319	6.2	22382	84.3	12.1	0.0	9.3
Aragon	1200	1332	6.7	23112	83.8	11.7	0.6	8.7
Madrid	5330	6727	6.4	27229	85.2	13.5	0.5	11.2
Castile and León	2473	2385	6.3	21465	84.3	14.2	0.4	8.2
Castile-La Mancha	2473	2053	6.3	17931	83.6	20.9	0.5	10.1
Extremadura	1060	1061	6.7	16297	82.6	26.4	0.6	9.3
Catalonia	6283	7750	6.4	24903	83.9	13.5	0.7	13.3
Valencia	4104	5068	6.3	18982	83.0	18.3	0.6	12.4
Balearic Islands	817	1183	6.8	21296	83.4	12.6	0.8	11.7
Andalusia	7286	8485	6.4	16813	82.2	25.7	0.8	12.7
Murcia	1169	1518	6.9	17155	82.9	18.1	0.8	12.4
Canary Islands	1659	2179	6.5	17759	82.7	23.7	1.0	14.1
Spain	40500	47416	6.6	21472	83.5	17.4	0.6	11.5
EU5	331894	324799	6.6	26280	82.4	9.4	1.1	13.5

Map 5. Spanish regions (*Comunidades Autónomas*)

Table 17. United Kingdom: Population (thousands) and regional indicators

Regions	Pop 2000	Pop 2021	R13	R4x	R7	R3	R5	R8
North East England	2544	2647	6.7	22929	79.9	5.7	1.0	6.7
North West England	6774	7422	6.8	23810	80.0	4.2	1.3	10.3
Yorkshire&The Humber	4963	5481	6.9	22901	80.7	5.0	3.0	7.8
East Midlands	4170	4880	6.9	23883	81.3	4.1	1.1	7.4
West Midlands	5273	5954	6.8	23281	80.9	5.7	1.1	7.8
East of England	5372	6348	6.9	27623	82.2	4.1	0.8	12.1
Greater London	7237	8797	6.7	34549	82.8	5.4	1.2	11.3
South East England	7989	9294	6.9	30183	82.5	3.4	0.7	10.1
South West England	4915	5713	7.0	26658	82.0	3.8	0.7	9.9
Wales	2906	3105	6.8	22923	80.4	4.7	1.1	10.5
Scotland	5066	5480	7.1	25846	79.3	4.2	1.2	7.6
Northern Ireland	1684	1905	7.0	22277	81.1	4.7	0.9	7.0
United Kingdom	58893	67327	6.9	26642	81.2	4.5	1.2	9.2
EU5	331894	324799	6.6	26280	82.4	9.4	1.1	13.5

Source: See footnote of table 12.1.

Map 6, Regions of the United Kingdom

Comparison of regional indicators in year 2016

R13. Satisfaction with Life: Only 7 European regions of this group of countries, out of 77 (less than 10%) had a value of the indicator R13 equal to 7 or higher: Corsica in France, Hamburg in Germany, Cantabria and Navarra in Spain, and S.W England, Scotland and Northern Ireland in the United Kingdom. In the United States 38 regions of tables 12.1 to 12.8, out of 51 (almost 75%) reached a value of 7 or higher.

R4. Income per capita at purchasing power parities, was below 40 thousand Dollars in the 77 European regions of the group of EU5 and only in 11 regions reached a value between 30 a 40 thousand Dollars. In the United States the 51 regions of tables 12.1 to 12.8 reached 30 thousand Dollars or more (22 regions with more than 40 and 29 regions between 30 and 40).

In comparison with the United States, EU5 shows an average value of R7 (Life Expctancy) higher, an average value of R3 (Unemployment rate) higher, a value of R5 (Homicides rate) lower, and a value of R8 (Pollution PM2.5) higher.

Other studies Besides, the studies by Guisan(2023) (chapter 5 in EEbook 11, and article in Volume 23-2 of RSES, we have published the study by Guisan and Aguayo(2022) with links to 16 interregional models for the period 1994-2004 and 8 studies published for the period 2004-2022, with international comparisons of European and American regions.

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CHAPTER 3
DEVELOPMENT STUDIES OF LATIN AMERICA, 2001-2023

GUISAN, Maria-Carmen

3.1. Education, Investment and Quality of Life in 22 American countries

Study by Guisan(2014)

Table 3.1 shows the evolution of the Schooling level of adult population, and of investment and savings per capita in years 2000-2010.

Table 3.1. Education, Investment and Savings in countries of America, 2000-2010 (USD at 2005 prices and PPPs)

Country	Tyr90	Tyr00	IH00	SH00	IH10	SH10
Argentina	7.9	9.1	1647	1338	3160	3226
Bolivia	6.4	7.4	641	392	740	1087
Brazil	3.8	5.6	1426	1109	1936	1663
Canada	10.3	11.0	6495	7470	7821	6490
Chile	8.1	8.8	2305	2200	2916	3146
Colombia	5.5	6.5	1029	836	2013	1606
Costa Rica	6.9	8.0	1380	1055	2073	1588
Dominican R	5.0	6.4	1140	892	1382	611
Ecuador	6.6	7.0	1098	1428	1885	1633
El Salvador	3.7	5.2	846	796	795	657
Guatemala	3.1	3.7	713	476	629	553
Haiti	2.7	3.8	321	NA	249	19
Honduras	3.5	4.3	811	609	808	571
Jamaica	5.9	7.3	NA	979	1418	843
Mexico	5.5	6.7	2897	2414	3106	3042
Nicaragua	4.1	5.1	635	169	719	336
Panama	7.3	8.5	1956	1874	3255	2238
Paraguay	5.8	5.9	720	417	906	1049
Peru	6.6	8.0	1117	950	2090	1952
United States	12.3	12.7	7822	7039	6367	4615
Uruguay	7.2	8.0	1241	975	2413	2109
Venezuela RB	4.6	6-4	2295	3252	2285	3454
Non weighetd Av.	6.0	7.1	1835	1746	2226	1931

Note: Elaborated from WHR (Tyr), from Guisan(2014), in RSES 14-2, and World Bank data. Last row: non-weighted averages. Tyr90 and Tyr00: Tyr of 1990 and 2000.

Maria-Carmen Guisan, Honorary Professor of Econometrics, Santiago de Compostela, Spain. https://www.usc.gal/econo met/guisan2.htm

The highest levels of investment per capita of year 2010 in America corresponded to 2 countries: Canada and the United States, with more than 6000. There were 3 countries with value between 3000-3500: Argentina, Mexico and Panama, 6 countries with value of IH between 2000 and 3000: Chile, Colombia, Costa Rica, Peru, Uruguay and Venezuela, while 3 countries reached a value of IH10 between 1000 and 2000: Dominican Republic, Ecuador and Jamaica. The lowest values of IH10, below 1000, corresponded to Bolivia, El Salvador, Guatemala, Haiti, Honduras, Nicaragua and Paraguay.

Table 3.2 show the correlation of the variables of table 3.1-

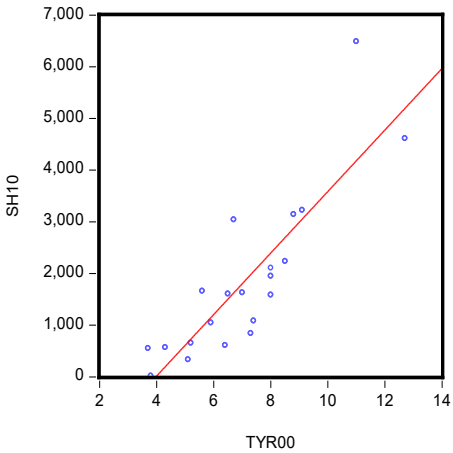
Table 3.2. Correlation between Education, Investment and Savings

	TYR90	TYR00	IH00	SH00	IH10	SH10
TYR90	1.0000	0.9841	0.8180	0.8110	0.8563	0.8470
TYR00	0.9841	1.0000	0.8109	0.8019	0.8671	0.8556
IH00	0.8180	0.8109	1.0000	0.9852	0.9358	0.8783
SH00	0.8110	0.8019	0.9852	1.0000	0.9589	0.9093
IH10	0.8563	0.8671	0.9358	0.9589	1.0000	0.9719
SH10	0.8470	0.8556	0.8783	0.9093	0.9719	1.0000

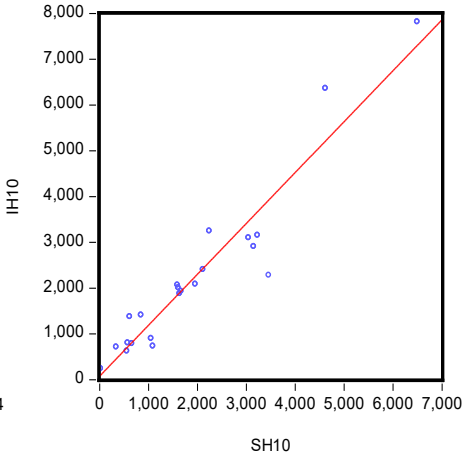
Source: Elaborated by author, from table 3.1

Graphs 3.1 show the relationship between Education and Savings per capita, and graph 3.2 shows the impact of SH10 on IH10.

Graph 3.1. Education and Savings



Graphs 3.2. Savings and Investment



Source: Graphs 3.1 and 3.2 elaborated by author from table 3.1.

The important impact of Education on Savings and Investment per capita is due to several effects, like the moderation in excessive averages fertility rates, as we have indicated in Chapter 1. The increase of investment per capita

usually increases industry and manufacturing per capita with its positive effects on economic development.

Study by Guisan(2011) on Manufacturing and Development

Table 3.2 shows the evolution of production per capita in Manufacturing (QMH) and Non Manufactuirng (QNMH), in Dollars at constant prices and purchasing power parities of year 2005.

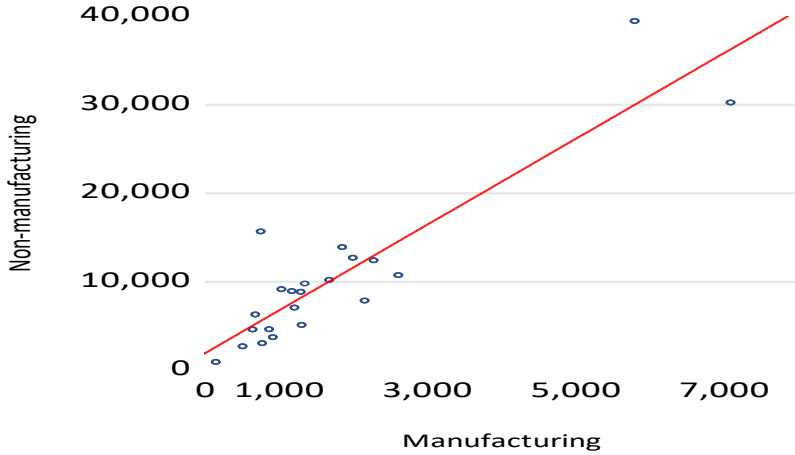
Table 3.2. Manufacturing and Non-manufacturing real value-added per inhabitant (QMH and QNMH), years 2000, 2010 and 2015 (Dollars at 2005 prices and PPPs)

		QMH 2000	QMH 2010	QMH 2015	QNMH 2000	QNMH 2010	QNMH 2015
1	Argentina	1544	2442	2277	8748	11921	12414
2	Bolivia	534	565	645	3029	3784	4611
3	Brazil	1347	1307	1036	6574	8749	9158
4	Canada	6171	6692	7088	26306	28531	30220
5	Chile	1781	1496	1853	8694	12100	13899
6	Colombia	965	1102	1176	5468	7377	8936
7	Costa Rica	2029	1764	1679	6088	8613	10197
8	Dominican R	1289	1929	2158	3668	6458	7869
9	Ecuador	1043	936	1208	4448	6265	7077
10	El Salvador	1244	1196	1307	3731	4785	5120
11	Guatemala	832	858	918	3131	3434	3743
12	Haiti	163	137	150	1027	860	942
13	Honduras	667	669	776	2231	2850	3048
14	Jamaica	633	619	682	5125	6264	6295
15	Mexico	2414	2239	2609	9657	10202	10749
16	Nicaragua	296	418	510	1819	2195	2707
17	Panama	815	732	754	7334	11474	15674
18	Paraguay	618	757	867	3174	3891	4633
19	Peru	950	1283	1294	4636	7272	8853
20	United States	6257	5499	5796	32851	36798	39424
21	Uruguay	1241	1772	1999	7621	10883	12700
22	Venezuela. RB	1913	1536	1347	7651	9437	9785
	Average	1579	1634	1733	7410	9279	10366

Source: World Bank and provisional estimations by Guisan(2017), in RGE, for Canada, Venezuela and Haiti in 2015. Values at constant prices and Purchasing Power Parities (PPPs) of year 2005. Last row includes the non weighted averages.

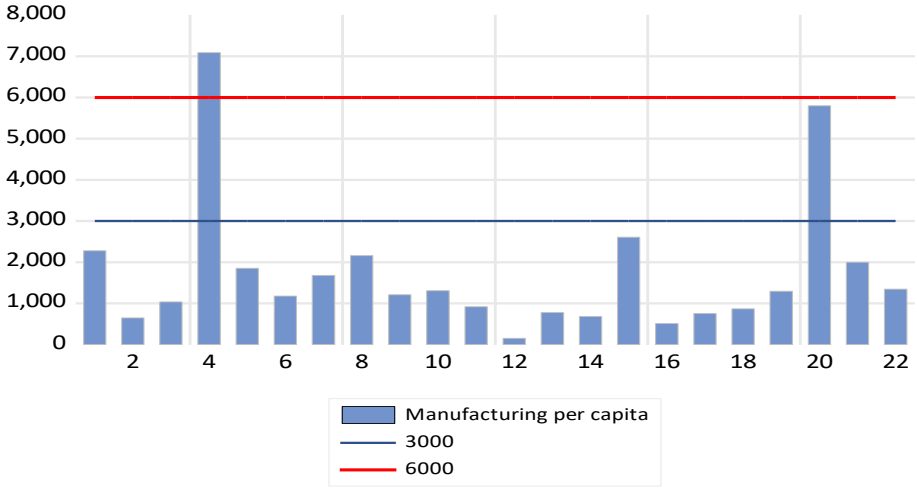
Graph 3.3 shows the positive impact of QMH on QNMH, and graph 3.4 the distribution of QMH15 (Value-Added of Manufacturing in year 2015).

Graph 3.3. Real Value.added of Manufacturing and Non Manufacturing per capita of 22 American countries in year 2015 ((Dollars at 2005 prices and PPS



Source: Elaborated by author from Table 3.2. Data in Dollars at 2005 prices and parities. Note: Countries with high values in comparison with the expected are 17 (Panama) de to the importance of transport services in the channel, and the USA.

Graph 3.4. Real value-added per capita of Manufacturing in 22 American countries, year 2015 (Dollars at 2005 prices and Purchasing Power Parities)



Source: Elaborated by author from column 3 of table 3.2.

Indicators of Quality of Life in American countries

Data of development and quality of life of 24 American countries, appear in table 3.3. We also include the World average and the American non-weighted average.

Table 3.3. Development, Schooling, and Quality of Life (X1 to X8), 2019

Country	PH 19	Tyr 19	X1	X2	X4	X5	X6	X7	X8
Argentina	22064	10.9	5.93	4.56	5.14	4.8	5.0	13.3	5.94
Bolivia	8724	9.0	5.72	3.88	4.65	3.5	4.3	21.6	6.30
Brazil	14759	8.0	6.33	4.10	3.93	3.6	5.3	12.7	29.53
Canada	49017	13.4	7.10	8.28	6.68	7.0	7.7	6.4	1.68
Chile	24969	10.6	6.17	6.98	5.42	5.0	7.4	21.0	3.46
Colombia	14585	8.5	6.01	5.08	3.27	3.1	6.5	16.5	25.50
Costa Rica	20106	8.7	7.07	5.72	5.66	5.9	6.5	15.7	11.90
Dominican R	18413	8.1	5.55	4.34	4.94	5.0	6.3	13.7	15.18
Ecuador	11371	8.9	5.76	4.12	4.89	4.5	5.4	14.9	5.85
El Salvador	8796	6.9	6.06	4.28	4.54	4.8	5.9	24.5	35.0
Guatemala	8648	6.6	6.44	3.62	4.51	3.9	6.3	24.1	27.26
Guyana	13082	8.5	6.44	4.12	4.72	4.5	5.9	22.4	18.37
Haiti	2905	5.6	3.62	0.94	4.62	3.2	5.0	15.0	10.04
Honduras	5736	6.6	5.92	3.80	4.07	3.8	5.9	20.6	56.52
Jamaica	9775	9.7	6.31	5.82	5.02	5.8	6.7	13.4	47.01
Mexico	19701	8.8	6.32	4.68	3.45	3.3	6.4	20.9	19.26
Nicaragua	5452	6.9	5.97	3.58	3.89	3.0	5.5	17.6	7.37
Panama	31440	10.2	6.18	5.14	5.20	5.6	6.5	11.4	9.67
Paraguay	12619	8.5	5.65	4.06	5.01	5.0	6.3	11.9	9.29
Peru	12854	9.7	5.84	4.52	4.92	4.7	6.6	24.8	7.67
Puerto Rico	34805	13.4	6.95	4.48	4.16	5.3	2.0*	8.4	18.51
Trinidad&Tobago	25931	11.0	NA	5.36	4.93	5.2	5.9	24.1	30.88
Uruguay	21346	8.9	6.43	6.56	5.46	7.1	7.0	9.3	7.69
USA	62555	13.4	6.95	7.64	4.16	5.3	7.2	7.4	5.35
Average America	19748	9.2	6.12	4.82	4.72	4.7	6.1	16.32	17.3
Average World	16135	8.8	5.35	5.0	4.80	4.65	6.04	28.41	6.20

Sources: Elaborated by Guisan(2021), in AEID 21-2, from WB(2021) WDI and WGI for PH, Fer and X2; WHR(2021) for X1, EIP(2021) for X3 and X4, UNDP(2021) for Tyr and UN(2021) for Homicides rate per 100 thousand population (Hom). PH is real Production per inhabitant at 2017 prices and Purchasing Power Parities (PPPs). The indicators X1=Life Satisfaction, X2=Voice of Citizens, X4=Peace, X5=Politica Stability and X6=(Freedom/10) are in decimal Scale, as indicated in Figure 3.1. Indicator X7=PM2.5 is an indicator of Pollution per cubic meter of air. X8 is the Homicides rate per thousand inhabitants. The Averages rows (America and World) include the non weighted averages). * Data of X6 in Puerto Rico from the Fraser Institute(2023) (Economic Freedom of North America).

Figure 3.1 includes the names and sources of the indicatos X1 to X8. Indicators X1 to X6 are in decimal scales and we have elaborated them from the international statistics. The indicator X7 is expressed in microns per cubic meter of air, and X8 in number of homicides per 100 thousand population.

Figure 3.1. Name and sources of Indicators X1 to X8.

X1 = Satisfaction with life from WHR
X2 = Voice of Citizens from World Bank WGI
X3 = Conflict, indicator of lack of Peace, from EIDP
X4 = Peace, indicator of Peace = 10-X3
X5 = Political Stability
X6 =Free=Freedom/10. Calculated, in decimal scale, from the Freedom indicated of the percentage of Freedom published by Heritage Foundation
X7= Pollution measured by PM2.5 per m3 of air
X8 = Homicides Rate per 100 thousand Population

Source: Elaborated by M.C. Guisan

The non-weighted average of PH19 in 23 American countries is higher than World average. In year 2019 there were the following groups of countries by Production per inhabitant:

Table 3.4. Groups of American countries accordingly to the value of PH19 (Dollars per capita t 2017 prices and parities)

1 PH>20000: Argentina, Canada, Chile, Costa Rica, Puerto Rico, Trinidad&Tobago, Uruguay and USA.
2) PH between 15000 and 20000: Dominican R. and Mexico.
3) PH between 10000 and 15000: Brazil, Colombia, Ecuador, Guyana and Peru.
4) PH between 5000 and 10000: Bolivia, El Salvador, Guatemala, Honduras and Jamaica.
5) PH below 5000: Haiti.

Source: Elaborated by M.C. Guisan from table 3.3.

Quality of Life in Latin American countries

The countries and territories included in the term "Latin America" usually are those with Spanish or Portuguese as official languages and with an important cultural and historical relationships with Latin Europe (mainly with Spain, Portugal and Italy): this includes Brazil with official Portuguese language and Hispanic American countries, with official Spanish language. They may be also called Iberian American countries.

Besides, the Latin America term, sometimes includes also territories with links to other Latin country (France), with French language or culture (French Guayana, Haiti, the Canadian Province of Quebec, or other territories of Central, South America or Caribbean.

Besides, there are almost 60 Hispanic American people, and other Latin American ones, living in the United States, particularly in several Western and Southern States that have historical relationships with Spain and Mexico.

In the following tables we include Iberian American countries with data in table 3.3. Tables 3.5 to 3.10 present groups of Iberian American countries classified by their levels in the indicators PH19, Tyr10, X1, X2, X4 and Hom. The indicators X1, X2 and X4 are in decimal scale with minimum quality 0 and maximum quality10.

The intervals are open on the left and closed on the right: they include values higher than the lower limit and lower or equal to the upper limit.

Table 3.5. Groups of Iberian American countries by PH19 (thousand Dollars)

Interval	PH19=Production per capita in 2019 (USD at 2017 prices and PPPs
(5, 10]	Bolivia, El Salvador, Guatemala, Honduras
(10, 15]	Brazil, Colombia, Dominican R, Ecuador, Paraguay, Peru
(15, 20]	Mexico
(20, 25]	Argentina, Chile, Costa Rica, Uruguay
(25, 35]	Panama, Puerto Rico

Note: Elaborated by author from table 3.3.

Table 3.6. Groups of Iberian American countries by the indicator of Schooling

Interval	Tyr10
(4, 5]	Guatemala
(5, 6]	Honduras
(6, 7]	Brazil
(7, 8]	Bolivia, Colombia, Dominican R, Ecuador, El Salvador, Mexico, Paraguay
(8, 9]	Chile, Costa Rica, Peru, Uruguay
> 9	Argentina, Panama, Puerto Rico

Note: Elaborated by author from table 3.3.

Table 3.7. Groups of Iberian American countries by Happiness

Interval	X1=Happiness, around year 2019
(5, 6]	Argentina, Bolivia, Dominican R, Ecuador, Honduras, Paraguay, Peru
(6, 6.5]	Brazil, Chile, Colombia, El Salvador, Guatemala, Mexico, Panam, Uruguaya
(6.5, 7]	Puerto Rico
>7	Costa Rica

Note: Elaborated by author from table 3.3.

Table 3.8. Groups of Iberian American countries by Voice of Citizens

Interval	X2=Voice of Citizens, around year 2019
(3.5, 4]	Bolivia, Guatemala, Honduras
(4, 5]	Argentina, Brazil, Dominican R, Ecuador, El Salvador, Mexico, Paraguay, Peru, Puerto Rico
(5, 5.5]	Colombia, Panama
(5.5, 6]	Costa Rica
(6. 7]]	Chile, Uruguay

Note: Elaborated by author from table 3.3.

Table 3.9. Groups of Iberian American countries by the indicator of Peace

Interval	X4=Peace (0 minimum, 10 maximum of Peace)
(3, 4]	Brazil, Colombia, Mexico
(4-5]	Bolivia, Dominican R, Ecuador, El Salvador, Guatemala, Honduras, Peru, Puerto Rico
(5, 5.5]	Argentina, Chile, Panama, Paraguay,Uruguay
(5.5, 6]	Costa Rica

Note: Elaborated by author from table 3.3.

Table 3.10. Groups of Iberian American countries by Homicides Rate

Interval	Homicides Rate (per 100 thousand people) around year 2019
(4, 5]	Chile
(5, 10]	Argentina, Bolivia, Ecuador, Panama, Paraguay, Peru, Uruguay
(10, 20]	Costa Rica, Dominican R, Mexico, Puerto Rico
(20, 30]	Brazil, Colombia, Guatemala
(30, 60]	El Salvador, Honduras

Note: Elaborated by author from table 3.3.

3.2. Development of 8 Latin American Countries for 1950-2021

We have analyzed the effects of Freedom and Political Stability in economic development and quality of Life in 8 Iberian American countries:, including Cuba and the 7 most populated countries of Latin America: Brazil and 6 Hispanic American countries (Argentina, Chile, Colombia, Mexico, Peru and Venezuela).

Table 3.11 presents the evolution of real Gross Domestic Product (GDP) per capita from 1950 to 2021 (in Dollars at 2017 prices and Parities) and Population (million) in 2021.

Table 3.11. Real GDP per capita (Dollars at 2017 prices and Parities) in 8 Latin American countries, 1950-2021

	Gross Domestic Product per capita (Dollars at 2017 prices and PPPs)							
	1950	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**	**2021**
Argentina	10407	11602	15238	17205	13590	18525	23521	21527
Brazil	3367	4703	6156	10470	9918	11529	14825	14592
Chile	5904	6675	8178	8865	9891	15416	21225	25449
Colombia	3879	4499	5574	7684	8687	9138	11890	14649
Cuba	6764	6222	5932	5344	5883	4869	7953	8589
Mexico	5680	8226	11160	15696	15181	17943	18037	19086
Peru	3898	5207	6558	7243	5090	6376	9997	12515
Venezuela	15029	19428	21494	20421	16743	19133	15410	10749
Average	6866	8320	10036	11616	10623	12866	15357	15895
World	3977	5234	7053	8507	9698	11108	13868	16997

Source: Data elaborated by Guisan(2023) from Maddison(2000), World Bank(2023) and ECLAC/CEPAL(2023). The last column includes data of Population (million) in year 2021. Average is the non-weighted average of the 8 Latin American countries of this table. Total of last column is a Population in year 2021 of 530.7 million.

Table 3.12 indicates the Population of those countries in year 2021, and the increases of Production per capita for the periods 1950-2000 and 2000-2021

For the period 1950-2000 the countries of table 3.11 with increase of GDP per capita higher than World average (7131(were: Argentina, Brazil, Chile and Mexico, with the highest increase in Mexico (12263, what implies an average annual increase of 245 Dollars at constant prices). The worst evolution corresponded to Cuba, with a lost of 1895 Dollars per inhabitant at constant prices.

For the period 2000-2021, the countries of table 3.1 with increase of PH than World average (5889) where Chile and Peru. Colombia experienced an increase of 5511, a little below the World average, while Argentina, Brazil and Cuba had increases between 3000 and 4000 Dollars per capita. Mexico experienced a lower increase (1143) and Venezuela a strong lost of 8384 Dollars per inhabitant.

Table 3.12. Population, and increase of Ph 1950-2000. 2000-2021

	Pop 2021	Increase of PH 1950-2000	Increase of PH 2000-2021
Argentina	45.8	8118	3002
Brazil	214.3	8162	3063
Chile	19.5	9512	10033
Colombia	51.5	5259	5511
Cuba	11.2	-1895	3720
Mexico	126.7	12263	1143
Peru	33.7	2478	6139
Venezuela	28.0	4104	-8384
8 countries	530.7	6000	3029
World	7890	7131	5889

Source; Elaborated from the sources indicates in table 3.12. Population in thousand people. Increase of Production per inhabitant (PH) in Dollars at 2017 prices and parities)

This group of 8 countries experienced an average increase of PH around 6000 Dollars per capita for the 2nd half of the 20th century (that implies an average annual increase of 120 Dollars at constant prices). For the period 2000-2021 this group of countries experienced an average increase of 5889 what implies an annual increase of 280 Dollars.

Table 3.13 shows the indicator of Manufacturing Production per capita (QMH) in year 2015 and several positive indicators of quality of life (X1, X2, X4, X5, X6) and two negative indicators (X7 and X8), which are listed in Figure 3.1.

Table 3.13 Manufacturing per capita (QMH1) ($ at 2005 prices and PPPs) and other indicators of development and quality of life around year 2019

	QMH 2015	X1 Happy	X2 Voice	X4 Peace	X5 Stability	X6 Free	X7 PM2.5	X8
Argentina	2277	5.93	4.56	5.14	5.08	5.01	13.3	5
Brazil	1036	6.33	4.10	3.93	4.16	5.33	12.7	21
Chile	1853	6.17	6.98	5.42	5.14	7.44	21.0	4
Colombia	1176	6.01	5.08	3.27	3.66	6.51	16.5	26
Cuba	1288	4.68	2.16	5.94	6.20	2.95	20.0	4
Mexico	2609	6.32	4.68	3.45	3.30	6.37	20.9	29
Peru	1294	5.84	4.52	4.92	4.42	6.65	24.8	7
Venezuela	1290	4.93	1.96	4.40	1.80	2.48	99.9	41
Averages								
8 countries	1603	5.78	4.26	4.56	4.22	5.34		
Top World countries	6353	7.07	8.24	6.30	7.50	8.00		
China	2791	5.34	1.72	4.72	4.42	4.80		
World	1798	5.35	5.00	4.80	5.00	5.00		

Source: Data elaborated by Guisan(2021) and (2023) from World Bank, WHR and other statistics indicate in Figure 3.1 Notes: Data of year 2015 for QMH15, and around years 2019-2021 for other indicators. The last 4 rows include non-weighted averages of 8 American countries, of the Top World developed countries, of China and the World. X1 for Cuba was calculated from the Special Report by Moreno, Brady and Ribar(2011). X1 for Venezuela was taken from Gallup (2019). X1 to X6 in decimal scale. X7=Pollution PM2.5 per cubic meter of air, X8=Homicides Rate per 100 thousand inhabitants. Names of variables in Figure 3.1.

Values of indicators in the group of 8 Latin American countries

X1 = Happiness: varies between a minimum of 4.68 in Cuba and 4.93 in Venezuela, to a maximum of 6.17 in Chile, 6.32 in Mexico and 6.33 in Brazil. Several countries are over World average (5.35). The lowest values, below World average, corresponded to Cuba and Venezuela.

X2 = Voice of Citizens: varies between a minimum of 1.96 in Venezuela and 2.16 in Cuba to a maximum of 6.98 in Chile and 5.08 in Colombia. Only these two countries are over the World average (5).

X4 = Peace: varies between a minimum in a group of 3 countries with value between 3 and 4 (Brazil, Colombia and Mexico) to a maximum of 3 countries with values between 5 and 6 (Argentina, Chile, Cuba)

X5 = Political Stability: Varies between a minimum of 1.8 in Venezuela, and values between 3 and 4 (Colombia, Mexico), to a maximum higher than 5 in Argentina, Chile and Cuba.

X6 = Free=Freedom/10: the minimum values, around year 2019, correspond to Venezuela (2.48) and Cuba (2.95) and the maximum values, higher than 6.0, to Chile, Colombia, Mexico and Peru.

X7 = Pollution, measured by PM2.5 (μg/m3), was higher than the maximum limit suggested by the World Health Organization (10). The lowest values correspond to Argentina and Brazil and the highest to Venezuela.

X8 = Homicides rate. The indicator of Venezuela decrease from 41 to 19 for the period 2019-2021.

High values of the indicators of Political Stability and Freedom are usually necessary to foster economic development. Unfortunately, many Latin American countries have had to deal with destabilization forces and, sometimes, with lack of economic and individual Freedom.

The low values of X1 of Cuba and Venezuela, although lower than the average of this group of 8 Latin American countries, seem relatively high for their very low values of the indicator of Freedom and high levels of suffering derived from the lack of Freedom.

This type of suffering affects in very different degrees to several groups of persons: for some people the frustration derived from lack of freedom may be small but for other people it is a deep and intense frustration.

We may notice those differences if we see the percentages of people that Freedom House(2021) mentions answering to the question "Life Satisfaction": 1) "very satisfied", 2) "somewhat satisfied", 3) "not very satisfied" and4) "not at all satisfied".

In Cuba only 13% mention "very satisfied", which is very low in comparison with Mexico (58%), Colombia (49%), United States (46%) and other countries.

Usually dictatorships cause lack of freedom and diminish life satisfaction. Communist and former communist countries often show percentages as low as Cuba (Russian Fed. 10%, Ukraine 11%, Georgia 12%, Romania 7%).

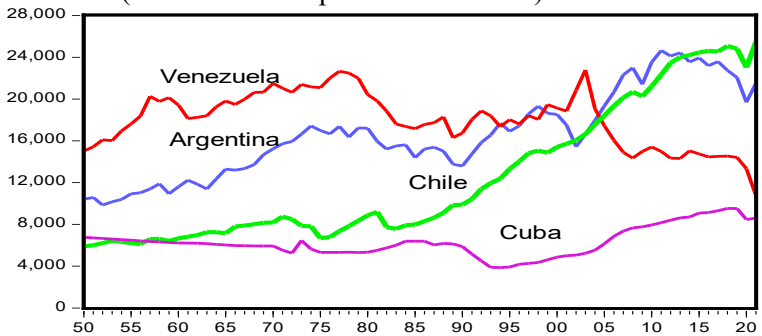
We do not have data of Venezuela, but having into account that several indicators of quality of life, accordingly to Worlddata(2023) are worse than in Cuba, we may suppose that the percentages of people "very satisfied" is not higher than in Cuba.

Comparisons of countries in the study by Guisan(2022) in AEID 22-2

1) Comparison of Argentina, Chile, Cuba and Venezuela

Graph 3.5 shows important difference of the evolution of real GDP per capita in 4 countries.

Graph 3.5. Real GDP per capita of Argentina, Chile, Cuba and Venezuela
(Dollars at 2017 prices and Parities)



Source: Elaborated by Guisan(2023) from World Bank statistics

Chile had a low value of Production per head in year 1950 and little increase for the period 1950-1984. The increase has been high for the period 1984-2021, reaching the value of Argentina around year 2002, and the value of Venezuela around year 2005. In year 2021 presents the highest Latin American value as seen in table 1.

Argentina experienced a decrease for the period 1970-1990. After an increase for 1990-2000, there was a new decrease for 2000-2003, a positive evolution for 2003-2012, and a new decrease for 2012-2021.

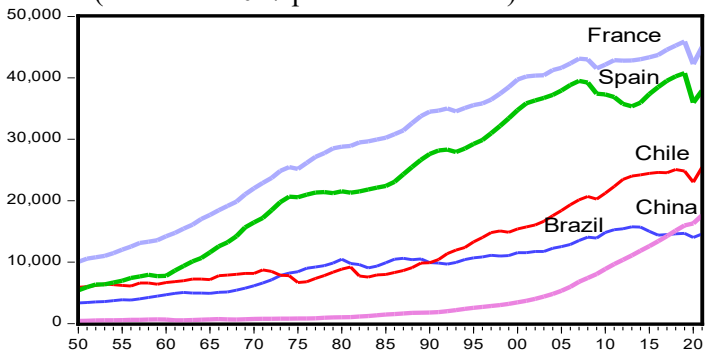
Venezuela had the highest value of Production per head in year 1950. Experienced a decrease for 1980-1990, and increase from 1990 to 2005 and a strong decrease for 2005-2007, stagnation for 2007-2019 and a new decrease in 2020-2021. One of the main problems has been the diminution of the Indicator of Freedom (X6), with its negative consequences on production per head and quality of life. Gallup(2019) indicates that the number of social perception of the bad evolution of development in Venezeula increased from 22% in year 2012 to 91% in year 2016.

Cuba had experienced a decrease of real value of PH for the period 1950-1993, followed by a small increase for 1993-2019. In spite of a level of Education relatively high, development has been difficult due to the low values of the indicators "Voice of Citizens" (X2) and Global Freedom (X6). A positive evolution of those indicators, as well as measures to guarantee foreign investment and to foster international cooperation, should be of great help to improve economic development and quality of life.

2) A comparison of Brazil with Chile, China and 2 European countries

Graph 3.6 present a comparison of Brazil with Chile and with other countries of the World: Spain, France and China.

Graph 3.6. Real GDP per capita of Argentina, Chile, Cuba and Venezuela
(Dollars at 2017 prices and Parities)



Source: Elaborated by Guisan(2023) from WB statistics.

Brazil experienced an important increase for 1965-1980. If that trend would be maintained for the period 1980-2021, the actual value of Brazil would be very close to Chile. The comparison with Chile, China, France and Spain, show that it is possible to foster economic development of Brazil by increasing education and industry, among other factors.

Chile experienced stagnation for 1950-1982, and an important increase for 1982-2021. China, starting from very low values of real GDP per capita, for the period 1950-2000, experienced an important increase for 2000-2021, surpassing Brazil since year 2016. but not yet reaching the value per capita of Chile in year 2021.

QMH had a value, in year 2015, of 1036 in Brazil and 1853 in Chile (Dollars at prices and Parities of 2005), while the corresponding value in the other countries of graph 3.2 were: 2701 in China, 3721 in Spain and 3031 in France.

As seen in Guisan(2021) and (2022) Spain and France present relatively high values of the indicators X1 to X6 and Educational level of Population, higher than the 8 Latin American countries of table 2.

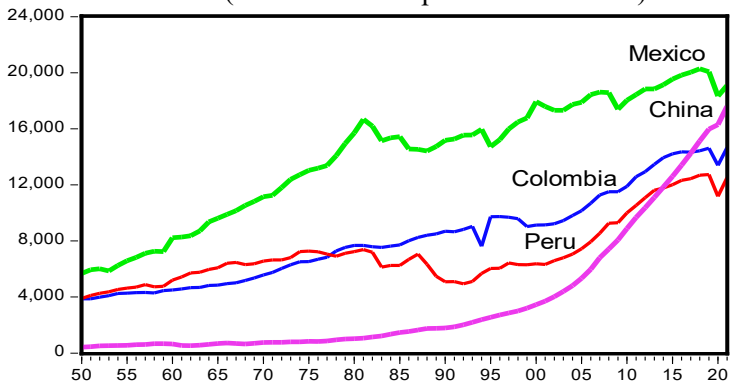
China, in spite of lower level of "Voice of Citizens" than Brazil, and similar level of average schooling, has shown a higher increase of QMH and development, due to economic policies focused on industrialization.

3) A comparison of Mexico, Colombia, Peru and China

Graph 3 shows the evolution of Mexico, Colombia and Peru, in comparison with the evolution of real GDP per capita in China for the period 1950-2021.

Mexico has experienced an increase for the period 1950-1980, stagnation and decrease for 1980-1995, and the recovery of a positive trend for 1995-2019. Colombia has experienced little increase for the second half of the 20th century and a more positive trend for the period 2000-2021.

Graph 3. Real GDP per capita of Argentina, Chile, Cuba and Venezuela (Dollars at 2017 prices and Parities)



Source: Elaborated by Guisan(2023) from WB statistics.

There have been improvements in average Schooling of adult population, and moderation of excessively high Fertility rates in Latin American countries. They are now in conditions to increase savings and investments per capita and to foster Industrial Development with its positive impact on non industrial activities, real wages and employment.

It is also important some improvement of several indicators of quality of government, political stability, peace, and to diminish high values of homicides rate in countries. The main enemy of development and quality of life in Latin America is political instability, lack of freedom and conflicts.

Other studies of Latin American countries for the period 2001-2022

For the period 2001-2010 we have published many article and reports, free downloadable at Ideas.Repec, related with economic development and quality of life in Latin America, in the journals EEDI, RSES and AEID.

Table 3.14 includes links to the Entries 38 and 40 of the international Blog in English https://euroamericanassociation.blogspot.com with interesting articles on Latin America in Englihs since year 2001. Articles published by the Association in Spanish, in EEDI or RSES, are included in the international Blog in Spanish: https://economiaydesarrollointernacional.blogspot.com

Table 3.14. Links to free articles on Latin America in our Blog in English

Journal RSES	**40. Journal Rses on Ecopnomic Development: Lists of Articles in English 2001-2025 and Editorial Board.**	
Journal AEID	**38. Selected Readings on World Development in journal AEID: America, 2001-2020**	

Source: Elaborated by M.C. Guisan at https://euroamericanassociation.blogspot.com

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Chapter 3 of the book EE12: https://www.usc.gal/economt/ebooks.htm

CHAPTER 4
DEVELOPMENT STUDIES OF EUROPE AND EURASIA, 2001-2023
GUISAN, Maria-Carmen

4.1. Investment, Industry and Trade in Europe and Eurasia, 2001-2019

We present the results of some of our studies on economic development of Europe and Eurasia for the period 2001-2019. We include countries of Western, Central and Eastern Europe, and besides some Eurasian countries.

From a geopolitical point of view, Eurasia includes: the South Caucasus (Georgia, Armenia, and Azerbaijan), the five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Russia and Turkey

Study by Guisan(2014) in RSES 14-2, on Investment and Savings

Tables 4.1 to 4.3 shows the evolution of real Investment per capita (IH) and Savings per capita (SH), in 39 European and Eurasian countries.

Table 4.1 includes 16 European countries with IH>4000.

Table 4.1. IH and SH in countries with IH >4000 in year 2010
(Dollars at 2005 PPPs)

Country	IH00	SH00	IH10	SH10
Austria	7716	7716	7657	8746
Belgium	6659	NA	6625	7501
Czech R	4897	4222	5100	4751
Denmark	6661	7296	5533	7384
Finland	5493	7690	5871	6509
France	5845	6430	5736	5178
Germany	6734	6122	5795	7725
Ireland	7715	8037	3973	4407
Italy	5821	5544	5535	4612
Netherlands	7387	9401	6909	8669
Norway	8728	15275	10526	16906
Slovenia	5324	4732	5667	5517
Spain	6531	5777	6194	5072
Sweden	5217	6377	6231	8429
Switzerland	7999	12172	7231	13520
United Kingdom	5251	4376	5008	3880

Source: Guisan(2014), in RSES 14-2, from World Bank statistics

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In table 4.1, the highest values of IH corresponded in year 2010 to Norway (15275) and Switzerland (12172). Both countries had also the highest levels of Savings per capita (SH).

Table 4.2 includes 16 countries, that had, for the period 2000-2010, levels of IH below 4000. It also includes an Eurasian country (Turkey).

Table 4.2. IH and SH in countries with IH < 4000 in year 2010
(Dollars at 2005 PPPs)

Country	IH00	SH00	IH10	SH10
Albania	1197	1149	1986	1029
Belarus	1453	1336	5076	3129
Bulgaria	1234	891	2864	2729
Croatia	2008	1797	3772	3528
Estonia	3095	2542	3308	4022
Greece	4732	2675	3920	1120
Hungary	3671	2719	3121	3463
Latvia	2048	1621	2676	3072
Lithuania	1789	1224	2605	2876
Macedonia N.	1591	1663	2336	2231
Moldova	349	233	660	442
Poland	2936	2231	3636	2931
Portugal	5713	3468	4247	2260
Romania	1368	1094	3424	2872
Slovak R	3308	2799	4717	4054
Turkey	1948	1670	2501	1708

Source: Guisan(2014), in RSES 14-2, from World Bank statistics

Table 4.3 includes 7 Eurasian countries: Russia, 3 Caucasian countries (Armenia, Azerbaijan, Georgia) and 3 Central Asian countries.

Table 4.3 IH and SH in Russia and in some Eurasian and Central Asian countries ($ at 2005 prices and PPPs)

	IH00	SH00	IH10	SH10
Armenia	435	92	1635	921
Azerbaijan	523	423	1527	4116
Georgia	632	422	889	450
Kyrgyz R	300	225	570	395
Russian F	1637	3101	3240	3921
Tajikistan	90	NA	443	49
Turkmenistan	1284	NA	4349	3638

Source: Guisan(2014), in RSES 14-2, from World Bank statistics

Study by Guisan(2011) on Foreign Trade Deficit of EU27 for 2000-2009

In this article we analyze the evolution of the Trade deficit of a group of European countries for the period 2000-2009 and its relationship with the financial crisis of year 2008.

Table 4.4. Extra-EU-27 trade of goods, 2000-2009 (Billion Euros)

Year	Exports to China	Imports from China	Balance With China	Exports to the World	Imports from the World	*Balance with the World*
2000	32.920	41.467	-8.547	849.7	992.7	*-143.0*
2001	39.945	45.797	-5.852	884.7	979.1	*-94.4*
2002	40.810	51.000	-10.190	891.9	937.0	*-45.1*
2003	46.911	63.855	-16.944	869.2	935.3	*-66.0*
2004	56.380	86.233	-29.853	953.0	1027.5	*-74.6*
2005	59.127	115.627	-56.500	1052.7	1179.6	*-126.9*
2006	71.716	144.491	-72.775	1160.1	1352.8	*-192.7*
2007	81.060	179.146	-98.086	1240.5	1433.4	*-192.9*
2008	90.358	199.331	-108.973	1309.8	1564.9	*-255.1*
2009	91.250	180.540	-89.290	1094.4	1199.2	-104.8

Source: Elaborated by Guisan(2011), in AEID 11-2, from Eurostat Statistics. It does not include trade with Hong-Kong. which evolved from 20.3 Exports, 33.5 Imports and -13.2 Balance in 2000 to 19.3 Exports, 28.5 Imports and -9.2 Balance in 2009.

Trade deficit of the European Union for the period 2000-2008 reached a maximum of 255.1 Billions of Euros in year 2008. A high percentage of this deficit corresponded to European trade with China (around 43% in year 2008).

Exports to China, at current prices evolved from 32.9 Bn to 91.25 Bn, for the period 2000-2009, wile imports evolved from 41.4 to 189.5 for the same period. European deficit with China evolvd from 8.5 Bn Dollars in year 2000 to 108.9 in year 2008.

The European policy of industrial stagnation o diminution, delocalization and excess of globalization, made a lot of damage to many regions and countries regarding employment, wages and income per capita, and contributed to the economic crisis of year 2008, due to the high degree of foreign debt of some countries.

Study by Guisan(2017) on Manufacturing and Non Manufacturing

Guisan(2017), in RGE, analysed the evolution of real Value-Added per capita in Manufacturing and Non-Manufacturing, for the period 2000-2015. Tables 4.5 and 4.6 show the evolution in European and Eurasian countries.

Table 4.4. QMH and QNMH in 32 European countries and one Eurasian country
Values in Dollars at 2005 prices and Purchasing Power Parities

Country	QMH 00	QMH 10	QMH 15	QNMH 00	QNMH 10	QNMH 15
Albania	335	689	748	4452	6969	7752
Austria	6430	6368	6582	25719	29011	29531
Belarus	1859	3748	3692	3951	8746	9512
Belgium	5751	4265	4199	24515	28543	29138
Bulgaria	1234	1953	2502	5620	9537	10358
Croatia	2114	2581	2750	8456	13548	13808
Czech R	4390	5644	6972	12496	16931	17345
Denmark	4758	3546	4233	26963	28690	28992
Estonia	1879	2484	3013	9174	14077	16887
Finland	7140	4724	4016	20323	26769	27030
France	4384	2964	3031	24841	26676	27328
Germany	6734	7351	8183	23877	26063	28001
Greece	2183	2421	2351	18391	21785	18016
Hungary	3263	3900	4942	10334	13058	14005
Ireland	8358	8277	18915	23788	27711	29743
Italy	5544	4342	4133	22176	22795	21538
Latvia	1195	1554	1797	7338	11395	14585
Lithuania	1789	2951	3892	7628	12582	15994
Moldova	233	391	521	1222	2399	2870
N. Macedonia	1519	1103	1417	5712	8089	8921
Netherlands	5036	4809	4853	28540	32186	32811
Norway	4364	3284	3338	39278	43625	44630
Poland	2231	3123	4079	9512	14229	16095
Portugal	3468	3032	3093	16934	18628	18028
Romania	1094	1747	NA	5744	9174	NA
Slovak R	3181	4234	5131	9542	15929	17517
Slovenia	5127	5260	6149	14591	19788	19306
Spain	4521	3502	3721	20598	23438	22972
Sweden	6087	5403	5235	22899	28368	30635
Switzerland	6260	7141	6799	28518	30442	31445
Turkey	2041	2258	3246	7235	10288	13105
UK	4668	3247	3376	24504	29227	31174
Ukraine	702	904	808	2994	5125	4944

Sources: Elaborated by Guisan(2017), from World Bank statistics. Notes: this table includes 32 European countries and 1 Eurasian country (Turkey). Other Eurasian countries are included in table 4.3. QMH=real Value-Added of Manufacturing per inhabitant, QNMH=real Value-Added of non-Manufacturing per inhabitant.

Table 4.5. QMH and QNMH in 9 Eurasian countries
Values in Dollars at 2005 prices and Purchasing Power Parities

Country	QMH 00	QMH 10	QMH 15	QNMH 00	QNMH 10	QNMH 15
Armenia	435	539	624	1855	4362	5357
Azerbaijan	149	357	423	2341	8556	8894
Georgia	211	592	823	2131	3960	5280
Kazakhstan	973	1310	1389	4433	9606	11387
Kyrgyz R	285	281	276	1216	1727	2074
Russian F	1465	2127	2063	7150	12055	12741
Tajikistan	341	213	267	662	1727	2156
Turkmenistan	403	816	NA	3265	6605	NA
Uzbekistan	147	362	474	1485	2424	3171

Sources: Elaborated by Guisan(2017), from World Bank statistics. Note: QMH=real Value-Added of Manufacturing per inhabitant, QNMH=real Value-Added of non-Manufacturing per inhabitant, Data for Tajikistan and Uzbekistan in year 2015 updated in year 2023. The last data of real Value-Added of Manufacturing for Turkmenistan in WB(2023) is for year 2004.

In table 4.5 only 3 countries (Albania, Moldova and Ukraine) present a value of QMH, in year 2015, below 1000 Dollars per capita, while 24 countries (72%) present a value higher than 3000.

In table 4.5 many countries present a value of QMH, in year 2015, below 1000. The highest value corresponded to Russian Federation with around 2000 Dollars per capita.

Other studies of the period 2007-2021 on European Development

Econometric models of regional development in Europe, 2007-2014

We have published several studies related with regional development in Europe, like the chapter by Guisan and Aguayo(2007), on Education, Research and Development in the European regions, in the book edited by Korres (2007), published by Sprinter Verlag, on Regionalization and Economic Integration.

We have published other studies cited in by Guisan and Aguayo(2022) in the table A2.2, of the book EE9 of this series, like the study by Guisan and Rozas(2013) on real Wages and Employment of 96 European regions in year 2010, and the study by Guisan and Cancelo(2014) on Industry, Productivity and Development in 96 European regions for 2005-2010.

Studies on Women participation in European countries and regions

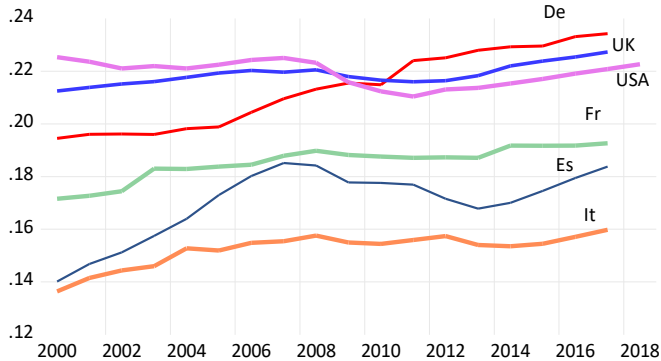
Guisan and Aguayo (2011), in AEID 11-1, present a study on Women Participation, Government Quality and Development in Europe, 2000-2007.

Guisan and Exposito(2011), in RSES 11-1, presented a comparison of regional Employment and Unemployment by gender in Spain in comparison with other European countries.

Guisan and Aguayo (2020), in AEID 20-2, analyzed Employment and Quality of Life of Women in Spain for the period 1970-2020 and present international comparisons.

Graph 4.1. shows the evolution of the ratio between Female Employment and Total Population in 6 European countries and the United States.

Graph 4.1. Ratio Female Employment/Total Population in France (Fr), Germany (De), Italy (It), Spain (Es), United Kingdom (UK and) United States of America (USA) for 2000-2018



Source: Guisan and Aguayo, in AEID 20-2. Data elaborated from OECD statistics.

The study includes econometric models that quantify the positive impact of industry on the increase of employment in Services, general productivity and real average wages. Female employment is highly concentrated on Services, and thus it is favored by Industry, because this sector has a positive impact on the production of Services.

Study by Guisan(2020) on CO2 Emissions in European countries

Guisan(2020) analyzed the evolution of CO2 Emissions of 6 European countries for the period 1970-2015: France, Germany, Italy, Spain, Switzerland and the United Kingdom, showing a diminution of Total Emissions in Europe for a period of 45 years, from 2666 to 2191 million Tm,

while the World experienced a great increase from 15583 million Tm in year 1970 to 36191 million Tm in year 2015.

The share of 6 European countries on the World total Emissions diminished from 17.1% in year 1970 to 6.0% in year 2015.

4.2. Quality of Life in Europe and Eurasia, 2019-2022

Studies by Guisan(2021), (2022), AEID 21-2 and 22-1, on Quality of Life

Table 4.7 shows the average of several indicators in 3 groups of European and Eurasian countries. The names of the indicators appear in Figure 3.1.

Table 4.7. Average values in each group of Europe and Eurasia, 2019

Indicator	Group 1	Group 2	Group 3
PH19	42189	34786	14414
Tyr19	11.7	13.1	11.5
X1 = Life Satisfaction	6.50	6.16	5.47
X2 = Voice Citizens	6.01	7.19	4.37
X3 = Conflict	3.99	4.15	5.53
X4= Peace	6.01	5.85	4.47
X5 = Political Stability	6.1	6.3	4.17
X6 =Free=Freedom/10	7.1	7.7	5.9
X7=Pollution PM2.5	15.4	10.7	23.3
X8=Homicides Rate	1.3	3.8	4.0

Source: Elaborated by author from tables 4.8 and 4.0 Notes:1) Sources of data in Figure 3.1. 2) Gropus of countries: Group 1: countries of table 4.8. Group 2.:3 Baltic countries. Group 3. Other countries of table 4.9.

Groups 1 and 2 show better results than group 3: higher production per capita, higher average level of life satisfaction, more voice of citizens, more freedom and political stability and less conflicts and pollution.

Table 4.8 shows the values of the indicators of development and quality of life around year 2019 in 35 countries: 33 European countries, 1 Eurasian country (Turkey) and 1 Asian country (geographically), politically and socially linked to Europe (Cyprus).

Table 4.8. Quality of Life in Group 1 of countries of Europe and Eurasia. 2019.

Country	PH19	Tyr19	X1	X2	X4	X5	X6	X7	X8
Albania	13671	10.1	5.12	4.72	5.44	5.2	6.7	18.2	2.70
Austria	55833	12.5	7.27	8.32	6.71	6.8	7.4	12.5	0.66
Belgium	51736	12.1	6.83	7.24	6.26	5.9	7.0	12.9	1.95
Bosnia+Herz.	14897	9.8	5.81	3.04	5.08	4.2	6.3	27.8	1.28
Bulgaria	23192	11.4	5.27	4.86	6.06	6.2	7.1	19.5	1.14
Croatia	28754	11.4	5.88	5.88	6.30	6.4	6.8	17.9	1.04
Cyprus	40227	12.2	6.22	6.76	5.22	6.1	7.3	17.3	1.11
Czech R	40981	12.7	6.97	6.92	6.68	6.9	7.4	16.1	0.61
Denmark	57162	12.6	7.62	8.78	6.86	7.0	7.8	10.0	0.98
Finland	48563	12.8	7.84	8.90	6.49	6.7	7.8	5.9	1.42
France	46018	11.5	6.69	7.50	5.33	5.6	6.6	11.8	1.35
Germany	53809	14.2	7.16	7.72	6.30	6.1	7.6	12.0	1.18
Greece	29723	10.6	5.72	5.88	5.17	5.4	6.2	16.2	0.75
Hungary	32554	12.0	5.99	6.16	6.27	6.5	6.7	15.9	2.07
Iceland	56383	12.8	7.55	8.04	7.25	8.3	7.7	6.5	0.30
Ireland	86710	12.7	7.09	7.96	6.69	6.9	8.2	8.2	0.80
Italy	42663	10.4	6.48	5.80	5.87	5.8	6.5	16.8	0.67
Luxembourg	113940	12.3	7.32	8.68	6.26	7.7	8.1	10.4	0.72
Malta	43703	11.3	6.60	7.08	5.87	7.0	7.2	13.9	0.94
Montenegro	21534	11.6	5.58	4.96	5.38	5.1	5.8	20.8	4.46
N. Macedonia	16600	9.8	5.10	5.28	5.64	5.0	6.6	29.7	NA
Netherlands	56784	12.4	7.46	8.70	6.24	6.7	8.0	12.0	0.55
Norway	64453	12.9	7.39	8.88	6.41	7.3	7.7	7.0	0.51
Poland	33121	12.5	6.17	5.76	6.19	6.1	6.9	20.9	0.67
Portugal	34880	9.3	5.93	7.04	6.83	7.1	7.1	8.2	0.64
Romania	29858	11.1	6.14	4.56	6.17	6.1	6.7	14.6	1.25
Serbia	18292	11.2	6.08	5.06	5.51	4.9	6.5	24.7	1.39
Slovak R	31888	12.7	6.33	6.08	6.11	6.3	7.0	17.6	1.05
Slovenia	38945	12.7	6.64	7.34	6.71	6.6	7.1	16.0	0.48
Spain	40804	10.3	6.49	6.78	5.95	5.6	6.8	9.7	0.63
Sweden	52851	12.5	7.36	8.44	6.35	7.1	7.8	6.2	1.08
Switzerland	68474	13.4	7.57	9.04	6.69	7.6	8.4	10.3	0.54
Turkey	28199	8.1	4.95	4.92	2.89	2.3	5.7	44.3	4.31
UK	46406	13.2	7.06	7.76	5.86	6.1	7.3	10.5	1.20
Group 1	42189	11.7	6.50	6.01	6.01	6.1	7.1	15.4	1.3

Source: Elaborated by Guisan(2021), AEID 21-2, from several sources. See footnote in table 1.1 of this book. Indicators X1 to X6 in decimal scales. Last row is the non-weighted average of countries of table 4.8. Names of indicators in table 4.7

Table 4.9 includes the 15 countries that in the past had belonged to the former USSR: 3 Baltic countries, 3 Eastern European countries (Belarus, Moldova and Ukraine), 3 Caucasian countries (usually geopolitically considered as Eurasian countries or, sometimes, as Far Eastern European countries) and 6 Eurasian countries (Russia and 5 Central Asian Republics)

Table 4.9. Russia, Ukraine, Baltic, Caucasian and other countries, 2019

Country	PH19	TYR19	X1	X2	X4	X5	X6	X7	X8
Group 2: 3 Baltic countries									
Estonia	36437	13.1	6.19	7.68	5.97	6.3	8.0	6.7	3.2
Latvia	30859	13.0	6.03	6.76	5.79	5.9	7.5	13.4	4.2
Lithuania	37063	13.1	6.26	7.12	5.78	6.6	7.6	11.9	4.2
Group 3.1: 3 Eastern European countries and 3 Caucasian countries									
Armenia	13654	11.3	5.28	4.76	4.81	4.2	6.5	32.5	3.0
Azerbaijan	14439	10.6	5.17	4.66	4.17	3.6	6.2	19.9	2.1
Belarus	19283	12.3	5.53	3.54	4.29	5.7	5.3	18.8	3.6
Georgia	14989	13.1	4.89	6.58	4.87	4.0	7.2	22.2	1.0
Moldova	13022	11.7	5.77	4.08	5.23	4.2	6.1	16.3	3.2
Ukraine	12809	11.4	4.88	4.28	3.35	2.2	5.4	20.3	6.3
Group 3.2. 6 Eurasian countries: Russia and 5 Central Asian countries									
Kazakhstan	26352	11.9	6.15	5.32	5.16	4.7	6.4	13.8	4.8
Kyrgyz R	5258	11.1	5.74	3.92	5.00	4.5	5.6	22.7	4.5
Russian Fed	27211	12.2	5.48	5.06	2.52	3.9	5.6	16.2	10.8
Tajikistan	3402	10.7	5.47	3.58	4.76	4.0	5.0	46.2	1.6
Turkmenistan	15538	10.3	5.07	2.68	4.62	4.6	4,6	21.8	4.2
Uzbekistan	7014	11.8	6.18	3.98	4.85	4.4	5.6	28.5	3.0
Group 2	**34786**	**13.1**	**6.16**	**7.19**	**5.85**	**6.27**	**7.7**	**10.7**	**3.8**
Group 3	**14414**	**11.5**	**5.47**	**4.37**	**4.47**	**4.17**	**5.9**	**23.3**	**4.0**

Source: Elaborated by Guisan(2021) (2022), AEID 21-2 and AEID 22-1, from the sources indicated in table 3.1 and footnote of table 1.1 of this book EE12. Indicators X1 to X6 in decimal scales. Last rows are the non weighted averages or group 2 (3 Baltic countries) and group 3 (groups 3.1 and 3.2). Names of indicators in table 4.7.

Comparison of groups 2 and 3

Group 2 (3 Baltic countries) presents higher average values of the positive indicators of development and quality of life than group 3, with higher production per capita, more freedom and satisfaction with life and lower level of the negative indicators X7=Pollution and X8=Homicides Rate.

Population of 3 Baltic countries in year 2020 amounted to 6.0 million people, while the other 12 countries of table 4.7 amounted to 292.2 million people. The most populated countries of table 4.9 were Russia, with

144.1, Ukraine with 44.1, Uzbekistan with 34.2 and Kazakhstan with 18.8 million.

The 15 countries of table 4.9 experienced an important increase of real production per capita for the period 1995-2019, with PH evolving from 9515 to 22944 Dollars per capita (at 2005 prices and purchasing power parities). World average evolved, for the same period, from 9934 to 16897.

The percentage of increase of real Production per capita was very high in the group of 3 Baltic countries (217%, from 10963 Dollars in 1995 to 34786 in 2019) and more moderated in the other 12 countries of table 4.7 (118% from 9153 Dollars in year 1995 to 19984 in year 2019). World average increased, for the same period, by 70%.

Indicator Tyr19 (Average years of Schooling of adult population): This indicator was higher in group 2 (Baltic countries), with 13.1 years, in comparison with group 3 (other countries of table 4.9) with 11.5 years. The highest values of this indicator in group 3 corresponded to Belarus, Georgia and Russian Federation.

*Indicator X1 (Life satisfaction):*Group 2 higher, with 6.16 points in comparison with group 3 with 5.47. The highest values in group 3 corresponded to Kazatstan with 6.15 point and Uzbekistan with 6.18. Countries with value below 5 in year 2019 were: Armenia, Azerbaijan, Belarus, Moldova, Ukraine, Kyrgyz R, Tajikistan, Turkmenistan and Uzbekistan.

Indicator X2 (Voice of citizens): It is higher in group 2 (7.19) than in group 3 (4.37). The highest values in group 3 correspond to Georgia, Kazakhstan, Russian Federation and

Indicator X4 (Peace): It is higher in group 2 (5.85) than in group 3 (4.47). In group 3, only Moldova and Kazakhstan have a value higher than 5. The lowest values in year 2019 corresponded to Ukraine (3.35) and Russian Federation (2.52).

Indicator X5 (Political stability). The average value of this indicator was higher in group 2 (6.27) than in group e (4.17).

Indicator X6 (Indicator of Freedom in decimal scale): It is higher in group 2 (7.7) than in group 3 (5.9). In group 3 the highest value corresponded to Georgia.

Indicator X7 (Pollution PM 2.5): the indicator was lower in group 2 (10.7) than in group 3 (23.3). The countries of group 3 with the highest levels of this indicator of Pollution were Armenia (32.5) and Tajikistan (46.2).

Indicator X8 (Homicides rate): There was little difference between group 2 (3.8) and group 3 (4.0). The lowest values, below 2 points, corresponded to Georgia (1.0) and Tajikistan (1.6) and the highest value corresponded to Russian Federation (10.8).

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CHAPTER 5
DEVELOPMENT STUDIES OF AFRICA, 2001-2023
GUISAN, Maria-Carmen*

5.1. Studies of 2007-2020: Education, Investment and Production

Studies of the period 2007-2010: Education, Development and Health

Guisan and Exposito(2007), in AEID 7-2, present the estimation of a cross-section econometric model of 39 African countries, relating Education, Development and Health expenditure.

Guisan(2008), in RSES 8-2, analyzes the evolution of Manufacturing and Development in Africa for the period 1999-2006.

Guisan and Exposito(2010), analyze Health expenditure, Education, Quality of Government and Quality of Life in Africa, in RSES 10-1.

Studies of the period 2011-2020: Investment, Health and Production

The study by Guisan(2014) on Investment per capita in 38 African countries

Guisan 2014), in RSES, analyzed the evolution of real Investment per capita (IH) and real Savings per capita (SH) in 38 African countries for the period 2000-2010.

Table 5.1. includes data of IH and SH. We found that average investment per capita in year 2010 of 39 African countries amounted to only 620 Dollars of year 2005, which is very low in comparison with World average (1408).

The highest values, more than 2000, correspond to Algeria, Botswana and Tunisia. The lowest values correspond to countries with IH lower than 250 Dollars: Burkina Faso, Burundi, Central African R., Congo DR, Cote d´Ivoire, Eritrea, Ethiopia, Guinea, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Togo and Zimbabwe.

Education is one of the main factors of economic development and wellbeing because it usually contributes to increase production per capita and investment per capita. For the periods 1990-2000 and 2000-2019 there has been an increase of average years of Schooling in Africa, but many countries have yet low values in comparison with World average.

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Table 5.1. IH and SH in Africa, 2000-2010 ($ at prices and parities of 2005)

Country	IH00	SH00	IH10	SH10
Algeria	1522	NA	3132	2597
Angola	395	632	807	879
Benin	224	118	367	103
Botswana	3131	4011	3531	3293
Burkina Faso	152	45	211	93
Burundi	20	14	45	0
Cameroon	311	275	339	324
Central African R	73	NA	64	34
Chad	202	NA	452	119
Congo DR	8	NA	45	20
Congo R	695	937	782	1694
Cote d´Ivoire	194	141	236	200
Egypt AR	842	758	1047	986
Eritrea	163	27	73	0
Ethiopia	105	84	201	155
Ghana	244	152	394	302
Guinea	202	152	214	105
Kenya	219	180	286	231
Lesotho	502	275	402	161
Madagascar	129	77	176	48
Malawi	99	71	196	35
Mali	214	137	184	94
Mauritaria	303	NA	602	0
Morocco	775	715	1484	1300
Mozambique	157	56	200	92
Namibia	666	979	1363	1971
Niger	62	28	115	30
Nigeria	NA	NA	465	777
Rwanda	115	83	249	107
Senegal	281	196	503	191
Sierra Leone	27	-15	117	97
South Africa	1197	1197	1825	1559
Tanzania	156	112	371	272
Togo	138	8	167	9
Tunisia	1470	1252	2258	1738
Uganda	147	109	271	214
Zambia	175	-10	314	315
Zimbabwe	386	NA	30	0
Average of Africa	413	733	620	578

Source: Elaborated by Guisan(2014) from World Bank Statistics. NA=Not available.

Study by Guisan and Exposito(2016), on Education and Health, 1980-2014

The study by Guisan and Exposito(2016), in AEID), analyses the positive evolution of Life Expectancy in Africa, for the period 1980-2014 and the important role of Education on economic development and health improvements. The following table shows the evolution of Life Expectancy in Sub-Saharan Africa in comparison with World average

Table 5.2. Life Expectancy in Sub-Saharan Africa; 1960-2014

Life Expectancy	1960	1970	1980	1990	2000	2014
World Total	**52**	**59**	**63**	**65**	**68**	**71**
Sub-Saharan Africa Female	42	46	50	52	51	60
Sub-Saharan Africa Male	39	43	47	48	49	57
Sub-Saharan Africa Total	**40**	**44**	**48**	**50**	**50**	**59**

Source: Elaborated by M.C. Guisan from World Bank.

The authors say: *"Life expectancy has increased in the majority of African countries for the period 1980-2014, with an average increase slightly higher than that of World average for that period. Due to the low starting values of year 1960, and to the slow increase of the period 1960-1980, many Sub-Saharan countries presented, in year 2014, low values in comparison with World average: 59 years in Sub-Saharan Africa and 71 as World average. Northern Africa has experienced a very positive evolution reaching World average in year 2014".*

That study present the estimation of some econometric models that measure the positive impact of Education on Development and Life Expectancy of African countries.

We include an analysis of several causes of death, with adjusted rates particularly high in many Sub-Saharan countries, in comparison with the World average of the Age Specific Death Rate (ASDR). Finally we call to support the initiatives for a kind of Marshall Plan for Africa, as those suggested many years ago by Angelopoulos and Lawrence Klein, in the presentation of the book by Angelopoulos(1983).

The study by Guisan(2018) on QMH and QNMH of Africa for 2000-2015

Guisan(2018), in RGE, analysed the evolution of real Value-Added on Manufacturing, in African countries, and in other countries, for the period 2000-2015, and includes an econometric model that show the important positive impact of Manufacturing on Non-manufactuing.

Table 5.3 includes real values of QMH= Manufacturing per capita, and QNMH=Non Manufacturing per capita, for the period 2000-2015.

Table 5.3. QMH and QNMH for 2000-2015 in Africa ($ at 2005 prices and PPPS

Country	QMH 00	QMH 10	QMH 15	QNMH 00	QNMH 10	QNMH 15
Algeria	426	530	NA	5661	7035	NA
Angola	79	333	NA	2554	5216	NA
Benin	94	114	109	1084	1310	1465
Botswana	587	748	775	9196	11715	13596
Burkina Faso	143	68	62	753	1059	1168
Burundi	41	33	31	297	333	328
Cameroon	385	432	421	1447	1626	1880
Central Af R	44	42	32	690	665	467
Chad	79	25	77	799	1204	1256
Congo. DR	26	31	36	230	280	348
Congo. Rep.	91	152	315	2930	3656	3763
Cote d'Ivoire	317	204	NA	1444	1499	NA
Egypt. Arab R	800	832	835	3411	4712	4846
Eritrea	68	49	NA	613	441	NA
Ethiopia	32	37	59	494	896	1273
Ghana	102	88	86	914	1386	1813
Guinea	40	76	70	972	1005	1002
Kenya	154	148	139	1133	1333	1567
Lesotho	167	187	176	1029	1250	1505
Madagascar	103	104	NA	755	765	NA
Malawi	92	95	97	613	696	736
Mali	34	38	NA	823	917	NA
Mauritania	208	88	76	1389	2115	2339
Morocco	507	634	743	2473	3593	4032
Mozambique	61	127	137	445	718	888
Namibia	509	755	594	3407	5053	6223
Niger	40	39	NA	528	614	NA
Nigeria	58	151	242	1398	2002	2134
Rwanda	45	52	63	595	991	1261
Senegal	210	243	NA	1193	1493	NA
Sierra Leone	15	15	13	366	727	790
South Africa	1421	1137	1094	6059	8340	8714
Tanzania	78	129	117	786	1158	1406
Togo	69	72	51	700	824	950
Tunisia	980	1456	1405	4464	7110	7425
Uganda	62	103	112	713	1039	1143
Zambia	113	126	138	916	1275	1412
Zimbabwe	441	70	71	2318	430	575

Source: Elaborated by Guisan(2018), in RGE, from World Bank statistics.

For 2000-2015, Manufacturing per capita was very low in most African countries. World average was close to 2000 and the developed countries usually have a value between 3000 and 6000, and in a few cases even higher, but in Africa in year 2010 only 2 countries, out of 38, had a value of QMH higher than 1000 (Tunisia and South Africa). The other 36 countries of table 5.2 had values lower than 1000 and in 17 countries lower than 100.

5.2. Studies of 2021-2022: Education and Quality of Life in Africa

Guisan(2021) present a comparison of several indicators of development and quality of life in year 2019 from the sources indicated in Figure 3.1:

PH = GDP per capita (at constant prices and purchasing power parities)

Tyr (average years of Schooling of population 25+).

Positive Indicators of Quality, in decimal scale: X1=Satisfaction with Life, X2=Voice of Citizens, X4=Peace, X5=Political Stability, X6=Indicator of Freedom.

Negative indicators of Quality of life: X7=PM2.5 (Pollution in microns per cubic meter of air), X8=Homicides Rate per 100 thousand inhabitants.

Figure 5.1 includes countries by geographical are. Table 5.4 presents data of countries of Northern, Western and Southern areas and table 5.5 of Central and Eastern areas.

Figure 5.1. Areas of Africa

Northern: Algeria, Egypt, Libya, Morocco, Tunisia

Western: Benin, Burkina Faso, Cabo Verde, Cote d´Ivoire, Gambia, Guinea, Guinea Bissau, Ghana, Liberia, Mali, Mauritania Niger, Nigeria, Senegal, Sierra Leone, Togo

Central: Angola, Cameroon, Chad, Central African R, Congo R, Congo DR, Equatorial Guinea, Gabon, St Tome&Prince

Eastern: Comoros, Eritrea, Yibuti, Ethiopia, Kenia, Madagascar,Malawi, Mozambique, Rwanda, Seycheles, Somalia, Suan, Sudan South, Tanzania, Uganda, Zambia, Zimbabwe,

Southern: Botswana, Lesoto, Namibia, Eswatini (Suaziland), South Africa.

Source: Elaborated from United Nations information and map. Note: Sudan in the NE: here it is included in Eastern Africa.

Tables 5.3 and 5.4 show the values of several indicators by country, in 5 areas of Africa and table 5.5 includes a comparison of non-weighted average of the indicator in each geographical area.

Table 5.3. Development and Quality of Life in Africa, 2019:North, West, South

Country	PH	TYR	X1	X2	X4	X5	X6	X7	X8
Northern Africa									
Algeria	11511	8.0	4.89	3.94	4.22	2.9	4.6	38.9	1.36
Egypt. AR	11763	7.4	4.28	3.90	4.01	2.8	4.9	87.0	2.51
Libya	15174	7.6	5.41	0.98	2.09	0.0	0.2	54.3	2.50
Morocco	7537	5.6	4.92	4.94	4.96	4.3	5.9	32.6	1.24
Tunisia	10756	7.2	4.60	4.60	4.73	3.3	5.4	37.7	3.05
Average 1	11348	7.2	4.82	3.67	4.00	2.66	4.2	50.1	2.10
Western Africa									
Country	PH	TYR	X1	X2	X4	X5	X6	X7	X8
Benin	3287	3.8	5.05	4.48	4.77	4.2	6.1	39.0	6.18
Burkina Faso	2178	1.6	4.83	3.66	3.68	2.4	5.8	42.9	0.37
Cabo Verde	7172	6.3	5.50	5.50	5.75	6.7	6.7	34.8	11.5
Cote d'Ivoire	5213	5.3	5.31	4.04	4.69	2.9	6.2	25.9	11.6
Gambia	2223	3.9	5.05	3.66	5.37	5.4	5.8	34.0	9.13
Ghana	5411	7.3	5.09	4.70	5.71	5.3	6.0	34.7	1.68
Guinea	2567	2.8	4.98	3.22	4.83	3.3	5.4	26.1	8.82
Guinea-Bissau	1939	3.6	4.98	2.14	4.72	3.9	4.6	29.8	9.55
Liberia	1428	4.8	4.63	2.18	5.00	4.3	4.8	18.0	3.23
Mali	2322	2.4	4.72	2.70	2.97	0.6	5.6	38.5	10.9
Mauritania	5197	4.7	4.23	3.46	4.28	3.9	5.5	47.4	9.94
Niger	1225	2.1	5.07	3.76	3.53	2.2	5.5	94.1	4.44
Nigeria	5135	6.7	4.76	2.94	3.22	1.2	5.4	71.8	9.85
Senegal	3361	3.2	5.13	5.02	5.34	5.1	6.0	40.7	7.38
Sierra Leone	1720	3.7	3.85	2.96	5.47	4.9	5.2	21.6	1.71
Togo	1599	5.0	4.11	3.62	4.40	3.2	5.7	35.7	9.00
Average 2	3249	4.2	4.83	3.63	4.61	3.7	5.6	39.7	7.2
Southern Africa									
Country	PH	TYR	X1	X2	X4	X5	X6	X7	X8
Botswana	17777	9.6	3.47	5.52	5.62	7.2	6.5	23.1	15.0
Eswatini	8622	6.9	4.31	3.46	5.11	4.5	5.1	17.2	11.0
Lesotho	2695	6.5	3.51	3.18	4.50	4.2	4.8	28.0	41.2
Namibia	9728	7.0	4.57	5.10	5.18	6.1	5.9	25.4	17.1
South Africa	12482	10.2	4.96	5.60	4.14	4.5	5.6	25.1	33.9
Average 3	10261	8.0	4.16	4.57	4.91	5.3	5.6	23.8	23.6

Source: Guisan(2021) and (2022), elaborated from World Bank indicators and other sources indicated in the bibliography and in the footnote of table 1.1 of this book.

Table 5.4. Development and Quality of Life in Africa, 2019: Center and South

Country	PH	TYR	X1	X2	X4	X5	X6	X7	X8
Central Africa									
Angola	6670	5.2	3.79	2.64	4.96	4.3	5.3	32.4	4.85
Cameroon	3642	6.3	5.14	3.24	3.25	1.9	5.3	72.8	4.17
Central Afr. R	945	4.3	3.48	1.62	2.17	0.7	4.6	56.8	19.76
Chad	1580	2.5	4.36	2.08	3.78	2.3	5.0	66.0	9.04
Congo. DR	1098	6.8	4.42	1.62	2.01	1.8	4.8	45.0	13.55
Congo. Rep.	3872	6.5	5.35	2.14	4.27	3.2	4.8	46.6	9.32
Eq Guinea	18503	5.9	5.35	2.06	4.72	4.7	4.7	53.2	2.31
Gabon	14950	8.7	4.85	3.18	4.82	4.9	5.6	44.4	8.04
Sao Tome&P	4005	6.4	6.35	3.72	5.50	6.0	6.0	28.5	3.36
Average 4	6141	5.8	4.7	2.48	3.94	3.3	5.1	49.5	8.27
Eastern Africa									
Country	PH	TYR	X1	X2	X4	X5	X6	X7	X8
Burundi	752	3.3	3.78	2.48	3.91	1.8	3.9	38.9	6.02
Comoros	3059	5.1	4.29	1.82	NA	4.7	5.0	20.6	7.70
Djibouti	5535	4.1	4.37	3.64	4.64	4.3	5.5	45.6	6.48
Ethiopia	2221	2.9	4.28	3.90	3.47	2.4	4.9	39.0	7.56
Kenya	4330	6.6	4.61	4.30	4.37	2.8	5.3	28.6	4.87
Madagascar	1619	6.1	4.21	3.00	5.09	4.4	5.9	22.5	7.69
Malawi	1086	4.7	3.60	3.42	5.23	4.4	5.3	23.6	1.73
Mauritius	22870	9.5	6.05	6.74	6.02	6.6	7.1	14.5	1.82
Mozambique	1282	3.5	4.79	3.56	4.69	3.5	5.1	21.3	3.40
Rwanda	2228	4.4	3.42	5.68	4.93	5.1	5.7	43.2	2.52
Seychelles	27521	10	6.31	6.02	6.23	6.4	6.1	20.2	12.7
Sudan	4186	3.8	4.07	2.02	2.66	1.6	3.2	55.4	5.16
Tanzania	2660	6.1	3.62	3.46	5.27	4.3	5.9	29.1	6.95
Uganda	2187	6.2	4.64	3.84	4.45	3.6	5.4	50.5	11.5
Zambia	3470	7.2	4.07	3.46	5.09	4.8	4.9	27.4	5.30
Zimbabwe	2800	8.5	3.15	2.50	3.77	3.1	3.3	22.3	6.67
Average 5	5488	5.7	4.33	3.74	4.65	4.0	5.2	31.4	6.13

Source: Guisan(2021) and (2022), elaborated from World Bank indicators and other sources indicated in the bibliography and in the footnote of table 1.1 of this book.

The low average years of schooling of many African countries, for the periods 1950-2000 and 2000-2019 is one of the main factors explaining the low capacity to increase real production per capita, real savings per capita and real investment per capita. International cooperation should have a priority in this regard.

Policies addressed to increase Education and the positive indicators of development should be very useful to diminish many sources of suffering (poverty, lack of political stability, lack of freedom, etc.).

Table 5.5. Averages values of Indicators in 5 African Areas, 2019

Indicator	1. Northern	2. Western	3. Southern	4. Central	5. Eastern
Ph	11348	3249	10261	6141	5488
Tyr	7.2	4.2	8.0	5.8	5.7
X1=Happy	4.82	4.83	4.16	4.79	4.33
X2= Voice	3.67	3.63	4.57	2.48	3.74
X4=Peace	4.00	4.61	4.91	3.94	4.65
X5=Stability	2.7	3.7	5.3	3.3	4.0
X6= Free	4.2	5.6	5.6	5.1	5.2
X7= PM2.5	50.1	39.7	23.8	49.5	31.4
X8=Homic. R	2.10	7.2	23.6	8.3	6.1

Source: Elaborated by author from tables 5.3 and 5.4.

X1: Average Satisfaction with life is low in all the areas, below 5. The African countries with the highest values (higher than 5) around year 2019, were:

In Northern Africa: Lybia

In Western Africa: Benin, Cabo Verde, Côte d´Ivoire, Gambia, Ghana, Niger and Senegal

In Southern Africa: The highest value of table 5.3 corresponded to South Africa (4.96), slightly below 5.

In Central Africa: Cameroon, Congo R, Equatorial Guiean and St Tomé and Prince.

In Eastern Africa: Mauritius and Seychelles.

X2; Voice of citizens is low in all the areas. The highest areas is Southern.

X4: Peace. The indicator is below 5 in all the areas. The highest value corresponds to Southern area and the lower to Central and Northern areas.

X5: Political stability is higher than 5 only in Southern area.

X6: The indicator of Freedom is below 5 in the Northern area, and slighty higher than 5 in the other areas.

X7: Very high levels of Pollution in Northern and Central areas.

X8: Very high level of Homicides Rate in the Southern area, high in Western, Central and Easter and the lowest rate in the Northern area.

The countries with higher values of TYR (average years of schooling of population age 25+) were:

1) In Northern Africa: Algeria, Egypt, Libya and Tunisia.
2) In Western Africa: Ghana.
3) In Southern Africa: Botswana, Namibia and South Africa.
4) In Central Africa: Gabon.
5) In Eastern Africa: Mauritius, Seychelles Zambia and Zimbabwe

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CHAPTER 6
DEVELOPMENT STUDIES OF ASIA AND OCEANIA, 2001-2023

GUISAN, Maria-Carmen*

6.1. Studies of 2004-2020: Investment and Development

Studies of the period 2004-2012

Guisan(2004), in AEID 4.3, presents a study on Human Capital, Trade and Development in India, China, Japan and other Asian counrries for 1960-2002, including the estimation of econometric models and causality tests.

Guisan and Exposito (2004) published an article in the IUP Journal of Applied Economics, in India,

Guisan and Exposito (2005), in journal IJAEQS 2-3, present an study of Industry and Foreign Trade in India and China, in comparison with the OECD, for 1960-2002.

Guisan and Exposito (2006, in RSES 6-2, analyzed production by sector in China, India and OECD counrries for 1985-2004

Guisan, Cancelo and Exposito (2007) published a study of economic development of China, India and neighbor countries for 1990-2005.

Guisan and Exposito (2009) estimate and econometric model of economic development of Philippines for 1950-2007.

Guisan and Exposito (2010), in RSES 10-1, analyze Health Expenditure, Education, Government Effectiveness and Quality of Life in Asia.

Guisan and Exposito (2012), in AEID 12-1, present a study of Investment, Poverty and Development in Asia-Pacific for 2000-2010.

Studies of the period 2014-2020

Study by Guisan, Aguayo and Exposito (2014): Investment and Savings

In the study by Guisan, Aguayo and Exposito (2014), in RSES, there is a comparison of Investment per capita (IH) and Savings per capita (SH) in Asian countries for the period 2000-2010.

Table 6.1 shows the real values of those variables in a group of 21 Asian countries. Table 6.2 shows data of several Pacific countries: including Oceania (Australia, New Zealand) and several Eastern Asian countries.

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Table 6.1. IH and SH in 21 Asian countries ($ at 2005 prices and parities)

Country	IH00	SH00	IH10	SH10
Bangladesh	207	243	363	572
China	932	986	3257	3608
Hong-Kong China	8042	9531	8580	12514
India	412	430	1068	1036
Iran, IR	2530	2990	NA	NA
Israel	4828	3908	4052	4757
Jordan	799	835	791	471
Kuwait	3696	16802	NA	NA
Lao PDR	407	247	596	448
Lebanon	1666	NA	4125	1511
Malaysia	2773	3698	2830	4349
Mongolia	588	467	1477	982
Myanmar	70	NA	396	671
Nepal	217	199	373	368
Pakistan	328	386	370	525
Saudi Arabia	3746	5718	4483	5327
Sri Lanka	859	675	1266	1128
Syria	633	820	892	797
Thailand	1318	1719	1990	2370
Vietnam	479	495	1118	916
Yemen R	392	702	276	216
Average 1	1663	2676	2016	2240
Average of Asia-Pacific	1093	2625	2115	2315

Source: Elaborated by Guisan, Aguayo and Exposito(2014) from World Bank statistics..

Table 6.2. IH and SH in 8 Pacific countries ($ at 2005 prices and parities)

Country	IH00	SH00	IH10	SH10
Australia	6942	5785	9638	8361
Indonesia	597	679	1260	1240
Japan	7153	8012	6183	7263
Korea R	5422	5771	7879	8554
New Zealand	4835	3736	4912	4437
Papua-NG	432	628	395	450
Philippines	554	976	731	968
Singapore	12310	17533	12386	23848
Average 2	3704	5299	4428	4468
Average of Asia-Pacific	1093	2625	2115	2315

Source: Elaborated by Guisan, Aguayo and Exposito(2014) from World Bank statistics.
Note: Data of SH10 in New Zealand, updated 2023.

Average investment per capita of Asia-Pacific in year 2010 is very close to World average, although there are important differences between countries.

The most outstanding countries and territories, with the highest values in tables 6.1 and 6.2, are Singapore, with 12386 in year 2010 followed by Australia with 9638, Hong-Kong China with 8580, Korea R. with 7879, Japan with 6183.

There is a second group of countries, with values of IH10 between 3000 and 6000: China, Israel, Lebanon, New Zealand and Saudi Arabia, and a third group of countries with values close to World average.

There is a fourth group with very low values of IH10, below 1000: Bangladesh, Jordan, Lao PDR, Myanmar 396, Nepal 373, Pakistan, Papua-New Guinea, Philippines, Syria and Yemen.

Guisan, Aguayo and Exposito(2014) estimated an econometric model of 30 countries of Asia-Pacific relating QMH (real value-added of Manufacturing per inhabitant) with is lagged value and real value of IH (investment per inhabitant)

Study by Guisan(2017), on Manufacturing and Non-Manufacturing

Guisan(2017), in RGE, analyzes the impact of QMH (real Value-Added of Manufacturing per capita) on QNMH (real value-Added of Non-Manufacturing per capita). Data are expressed in Dollars per inhabitant at 2005 prices and Purchasing Power Parities (PPPs).

Table 6.3 shows the evolution for the period 2000-2015 in 30 countries or territories of Asia and Oceania.

We may distinguish the following groups of countries in year 2015_

Group 1, with QMH >5000: Japan, Korea R, Singapore.

Group 2, with QMH between 3000 and 4000: Israel, Malaysia.

Group 3, with QMH between 2000 and 3000: Australia, China, New Zealand, Saudi Arabia, Thailand.

Group 4, with QMH between 1000 and 2000: Indonesia, Iran, Kuwait, Lebanon.

Group 5, with QMH between 500 and 1000: China Hong-Kong, India, Jordan, Philippines, Sri Lanka, Vietnam.

Group 5, with QMH<500: Bangladesh, Cambodia, Lao PDR, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Yemen. Also Syrian in 2010.

Table 6.3. QMH and QNMH for the period 2000-2015 ($ at 2005 PPPs)

	QMH 00	QMH 10	QMH 15	QNMH 00	QNMH 10	QNMH 15
Australia	3760	2753	2290	25166	31658	34209
Bangladesh	135	268	358	766	1220	1551
Cambodia	172	315	448	837	1653	2119
China	852	2181	2806	1812	4635	6869
China-Hong Kong	1489	834	609	28296	40879	45731
India	258	430	533	1460	2643	3490
Indonesia	760	931	1089	1954	2949	3675
Iran. Islamic	997	1368	1330	6670	9158	8338
Israel	4154	4702	3706	18837	21321	24805
Japan	6009	5503	5728	22604	25070	26633
Jordan	581	980	847	3051	4177	3776
Korea. Rep.	5072	8378	9139	12417	18648	21290
Kuwait	1008	1498	1539	32595	48436	44354
Lao PDR	87	183	304	1365	2105	2821
Lebanon	1083	1136	1016	7245	11485	9138
Malaysia	3184	3171	3651	7087	10043	11990
Mongolia	162	253	411	1867	3367	4944
Myanmar	41	122	173	541	1627	2195
Nepal	81	75	84	824	1000	1162
New Zealand	3736	2958	2961	18239	21691	23956
Pakistan	290	338	364	1641	2073	2278
Papua NG	157	177	51	1806	2040	2523
Philippines	633	748	858	2004	2813	3517
Saudi Arabia	1972	2037	2620	17744	18337	20093
Singapore	10445	10393	10628	26859	41573	47760
Sri Lanka	522	820	933	2546	3735	4970
Syrian Arab R	261	332	NA	3464	4409	NA
Thailand	1948	2609	2621	3781	5064	6007
Vietnam	271	489	635	1326	2386	2999
Yemen R	124	143	91	1940	2237	1307

Source: Elaborated by Guisan(2017) from World Bank statistics. Note: Data of QMH15 and QNMH15 updated, from World Bank, in year 2023 for: China, Israel, New Zealand and Papua New Guinea.

De econometric models estimated in that study show the positive impact of QMH on QNMH. Countries with low levels of QMH only get high values of QNMH in special circumstances (oil production, harbour activities, tourism and other ones).

6.2. Development of India and China, 1950-2020

Guisan(2021), in AEID 21-1, present several comparisons of economic development, life expectancy, employment and productivity among India, China and OECD countries.

Table 6.4 shows a comparison of production by sector, in year 2017.

Table 6.4. Real Value-Added, per capita and by sector and Population,2017 (Value-Adde per capita $ at 2011 prices and PPPs, Population in millions)

Country	Agriculture	Industry	Services	Total	Population
India	1018	1727	3772	6516	1340
China	1154	6184	7916	15254	1390
Japan	463	11339	27105	38907	127
Spain	956	6878	26291	34126	46.6
UK	263	7065	32900	40229	59.7
Mexico	608	5530	11817	17956	125

Source: Elaborated by author from WB statistics.

Fortunately there was an important increase of production per capita in Agriculture in India and China, what was an important contribution to eradication of undernutrition and poverty, as seen in Guisan and Exposito(2020) and other studies. China has experienced an important increase in production per capita in Industry, and India a moderate increase. Development of Services in both countries depends, at a great extent, on the evolution of Industry. Table 6.5 shows the evolution of Life Expectancy for 1960-2019

Table 6.5. Life Expectancy in India, China, and 2 OECD countries

Year	India	China	Japan	Spain
1960	42.27	43.73	67.97	66.68
1970	47.74	59.09	71.95	72.03
1980	53.81	66.84	76.09	75.40
1990	57.87	69.15	78.84	78.99
2000	62.51	71.40	81.08	79.34
2019	69.66	76.91	84.36	82.40
Increase 1960-2019	27.39	33.18	16.39	15.72

Source: Elaborated by Guisan(2021), Aeid 21-1 ,from WB(2021)

Table 6.6 presents a comparison of the rates of Employment per thousand population, for the period 1950-2019

Table 6.6. Rates od Empoyment by 1000 thousand people, 1950-2019

	Farm			Non-Farm			Total		
	India	China	OECD	India	China	OECD	India	China	OECD
1950	324	326	95	126	97	322	450	424	416
1960	317	383	76	138	132	346	455	516	421
1970	298	362	46	145	143	372	443	505	418
1980	287	371	32	154	167	398	441	538	430
1990	273	310	23	156	264	433	430	574	456
2000	235	272	17	163	307	445	398	579	463
2010	182	213	24	172	366	411	354	579	435
2019	146	142	22	197	419	440	343	561	462

Source: Elaborated from World Bank statistics, by Guisan(2001), (2005) and (2021). Note: Year 2000 in India: average of old and new estimations from WB (260 and 211 for Farm), (444 and 354 for total), (184 and 143 for rates of Non-Farm Employment).

Farm production and employment: Fortunately there was an important increase of production per capita in Agriculture in India and China, what was an important contribution to eradication of undernutrition and poverty, as seen in Guisan and Exposito(2020) and other studies. Graph 6.1 shows the evolution of Farm and Non-Farm Employment in India.

Graph 6.1: Farm and Non-Farm Employment in India, 1991-2020 (million workers)

Source: Elaborated by M.C. Guisan(2021), Aeid 21-1.

Non farm production and employment: China has experienced an important increase in production per capita in Industry, and India a moderate increase. Development of Services in both countries depends, at a great extent, on the evolution of Industry.

6.3. Studies of 2021 and 2022: Quality of life in Asia and Pacific

Table 6.7 shows indicators of development and quality of life in countries of Asia and Oceania around year 2019

Table 6.7. Development, Education and Quality of Life in Asia and Oceania, 2019

Country	ph19	tyr19	X1	X2	X4	X5	X6	x7	X8
Afghanistan	2065	3.9	2.52	1.96	0.92	0	0.0	56.9	6.35
Australia	49456	12.7	7.18	8.24	6.33	6.8	7.8	8.6	0.94
Bahrain	45060	9.5	6.65	5.86	4.70	3.7	6.2	70.8	0.52
Bangladesh	4754	6.2	5.03	3.42	4.83	3.1	5.3	60.9	2.50
Cambodia	4389	5.0	4.83	4.16	4.98	4.8	5.7	25.6	1.84
China	16092	8.1	5.34	6.30	4.72	4.5	4.8	52.7	0.62
China. H-K	59586	12.3	5.48	8.32	6.23	4.6	NA	33.5	0.38
India	6717	6.5	3.82	5.78	3.62	3.5	5.4	90.9	3.22
Indonesia	11812	8.2	5.35	5.74	5.54	4.0	6.4	16.5	0.50
Iran. IR.	12389	10.3	4.85	3.02	3.41	1.6	4.2	39.0	2.47
Iraq	10815	7.3	4.72	2.34	1.86	0	NA	64.6	9.85
Israel	40074	13.0	7.16	7.20	3.42	3.4	6.8	21.4	1.36
Japan	41477	12.8	5.94	8.20	6.57	7.1	7.0	11.7	0.28
Jordan	10071	10.5	4.39	5.22	5.21	4.5	6.0	33.0	1.55
Korea. R	42719	12.2	5.85	7.84	5.31	6.1	7.5	25.0	0.70
Kuwait	49854	7.3	6.11	4.68	5.78	5.4	5.8	60.8	1.80
Lao PDR	7887	5.3	5.03	3.46	5.48	6.0	4.9	25.1	7.01
Lebanon	14552	8.7	4.58	2.66	3.01	1.7	4.7	30.6	3.99
Malaysia	28364	10.4	5.38	7.08	6.21	5.3	6.8	16.0	2.11
Maldives	19531	7.0	5.20	4.78	4.79	5.1	4.7	22.0	0.75
Mongolia	12317	10.3	5.68	4.32	5.54	6.3	6.4	40.1	5.66
Myanmar	5083	5.0	4.43	3.00	3.86	2.3	NA	35.6	2.27
Nepal	3436	5.0	5.27	3.12	4.92	7.8	8.1	99.7	2.16
New Zealand	42878	12.8	7.28	8.18	6.87	4.1	5.0	6.0	0.99
Oman	27299	9.7	6.85	5.28	5.05	6.2	5.7	41.1	0.66
Pakistan	4690	5.2	4.93	3.90	2.83	0.5	4.9	58.3	4.41
Papua N.G	4350	4.7	NA	3.30	4.63	3.6	5.5	12.3	7.85
Philippines	8915	9.4	5.88	5.12	3.96	3.2	6.1	18.1	11.0
Qatar	90044	9.7	7.98	6.82	6.50	6.4	6.8	91.2	0.38
Samoa	6517	10.8	NA	6.04	5.00	7.3	6.8	11.6	3.15
Saudi Arabia	46962	10.2	6.49	5.30	4.06	3.8	5.5	88.0	1.50
Singapore	97989	11.6	6.38	9.68	6.63	8.0	8.4	19.1	0.32
Sri Lanka	13070	10.6	NA	4.86	4.79	4.6	5.3	11.1	2.55
Thailand	18451	7.9	5.99	5.60	4.49	4.0	6.3	26.3	3.24
Timor-Leste	3553	4.8	NA	3.40	5.32	5.5	4.6	19.3	3.95
Tonga	6378	11.2	NA	5.32	5.00	6.4	7.0	10.8	0.95
UAE	67119	12.1	6.56	7.66	5.38	5.1	6.1	40.9	0.89
Vietnam	8041	8.3	5.41	5.40	5.41	1.2	NA	29.6	1.52
W.Bank&Gaza	6245	9.2	4.52	3.72	3.48	0	0.0	26.0	NA
Average	24385	8.9	5.56	5.29	4.79	4.3	5.7	37.2	2.69

Source: Elaborated by Guisan(2021a,b) from World Bank WDI and WGI and other statistics. The last row includes the non-weighted average Definitions of variable in Figure 3.1 of chapter 3 of this book and in the next paragraph.

An overview of the indicators of table 6.7

PH: Production per capita in year 2019 was very high in 12 countries (ph>40000), high or middle (between 10000 and 40000) in 11 countries, low (between 5000 and 10000) in 8 countries and very low (below 5000 Dollars) in 7 countries.

Tyr: The highest average number of years of schooling, with 12 or more, corresponded to 17 countries, and the lowest number, with less than 6 corresponded to 8 countries.

X1: Satisfaction with life, with levels higher than 5 in 24 countries and below 5, or without data, in 15 countries. We may distinguish the following groups accordingly to this indicator: 1) X1>6: Australia, Bahrein, Israel, Kuwait, New Zealand, Oman, Qatar, Saudi Arabia, Singapore, United Arab Emirates (UAE). 2) X1 between 5 and 6: Bangladesh, China, China Hong-Kong, Indonesia, Japan, Korea R, Lao PDR, Malaysia, Maldives, Mongolia, Nepal, Philippines, Thailand, Vietnam. 3) X1<5: a) Between 4 and 5 (Cambodia, Iran, Iraq, Jordan, Lebanon, Myanmar, Pakistan, West Bank&Gaza). b) Between 3 and 4 (India). c) Below 3 (Afghanistan). 4) Not available (NA): Papua-New Guinea, Samoa, Sri Lanka, Timor Leste, Tonga,

X2: Voice of citizens. Higher than 5 in 22 countries and lower in 16 countries.

X4: Peace. The most peaceful countries, with X4>5 where 16 while 22 showed lower values.

X5= Politica stability: 10 countries had X5>6 but 15 had values below 4.

X6= Indicator of Freedom in decimal scale: 15 countries presented values higher than 6 but 9 had vales below 4.

X7 = Pollution PM2.5. The average was high and we may classified in several groups accordingly, from good quality (low values of X7) to bad quality (high values of X7): 1) 2 countries with X7<10 (Australia and Nepal). 2) 13 countries with X7 between 10 and 25 (Indonesia, Israel, Japan, Korea R, Malaysia, Maldives, Papua-NG, Philippines, Samoa, Singapore, Sri Lanka, Timor-Leste, Tonga. 3) 11 countries, or territories, with X7 between 25 and 50 (Cambodia, China Hong-Kong, Iran, Jordan, Lao PDR, Mongolia, Oman, Thailand, UAE, Vietnam, West Bank&Gaza).5) 11 countries with X7>50 (Afghanistan, Bahrein, Bangladesh, China, India, Irak, Kuwait, New Zealand, Pakistan, Qatar, Saudi Arabia)

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