

## **HEALTH EXPENDITURE, EDUCATION, GOVERNMENT EFFECTIVENESS AND QUALITY OF LIFE IN AFRICA AND ASIA**

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### **Abstract**

We analyze the relationships between health expenditure, education and several indicators of human well-being in Africa and Asia. The aim is to suggest some priority measures addressed to increase international cooperation and domestic policies successful to improve health expenditure and quality of life accordingly to the Millennium Development Goals (MDGs). The conclusions show that the main way to improve health expenditure is to increase expenditure on education. The beneficial effects of education on health include both preventive measures addressed to avoid malnutrition, water contamination and other negative circumstances, and curative measures through more quantity and quality of health services. We analyze indicators of quality of life and gender equality indexes.

Keywords: Health Expenditure, Education and Health, Education and Quality of Life, Education and Development, Quality of Government, Africa, Asia and Pacific.

JEL Codes: I1, I2, O1, O5, O53 O55

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### **1. Introduction**

Health expenditure is too much low in many developing countries and it is of uppermost importance to increase the means available for health assistance affordable for all the population of those countries. We notice stagnation in many countries both in health expenditure per capita and economic development, and this study is focused to point to the recommendation of increasing international cooperation addressed to increase the educational level of population, together with other measures, in order to have a real positive impact on development and health expenditure.

The positive impact of education on development, with positive effect on healthy conditions of life and assistance to illness, has also a positive effect on the indicators of quality of life.

Education has also positive effects on the indexes of quality of government, which also contribute to increase real GDP per capita and budgets addressed to health assistance. Since the pioneer studies of Denison(1967), Goldin and Katz(2001), Guisan, Aguayo and Exposito(2001 a,b) to other more recent studies cited in the bibliography, there has been an increasing number of interesting studies which show the beneficial effects of education on health and socio-economic development. It is important to foster economic policies which have into account these findings to get a better quality of life for many people in all countries.

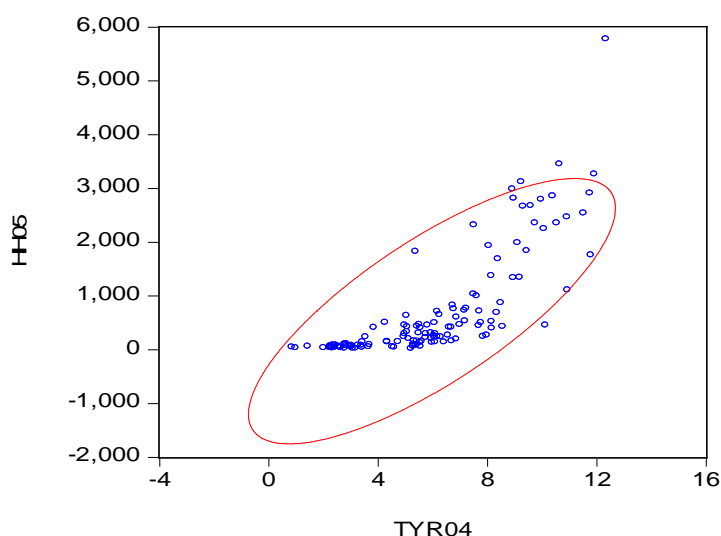
Section 2 presents a general view of the positive relation of education with development and quality of life indicators of 132 countries of the World while sections 3 and 4 analyze selected data of Africa and Asia-Pacific. Finally section 5 presents the main conclusions.

## 2. Impact of Education on Health, Development and Life Satisfaction

Accordingly to the studies cited in the bibliography, among others, there is a highly positive impact of education on economic development, quality of government, and other variables which have a positive impact on health indicators and health expenditure. Generally an increase in health expenditure has a positive effect on health and life satisfaction, particularly in countries with health expenditure per capita below 1000 dollars at 2000 prices. In countries with higher levels of health expenditure per capita there are also other factors related with quality of health services and life style that have also a positive impact on health indicators, as seen in Guisan(2009) and other studies.

Graph 1 shows the impact of the educational level of population on health expenditure per capita with a sample of 132 countries of the World in year 2005.

Graph 1. Health Expenditure (HH05) and Education (Tyr04) in 132 countries

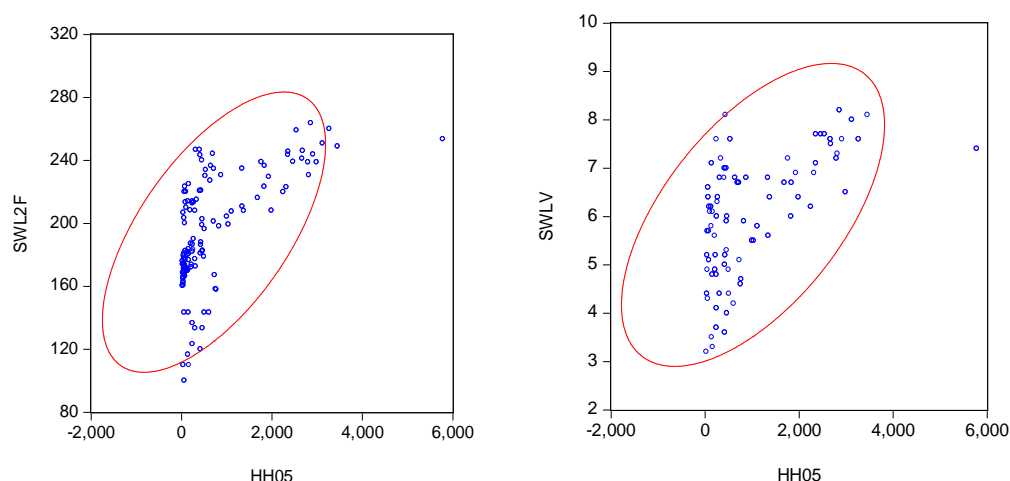


Sources. HH05 is Health Expenditure per head in year 2005, in Dollars at 2000 prices and PPPs, elaborated from WB(2010). Tyr04 is Average Total Years of Schooling in year 2004 based on trends of previous data of Barro and Lee(2000) and our own estimations, including other sources, for non available data.

Developed countries present values of Tyr04 usually between 8 and 12 years of schooling per adult, and health expenditure per capita between 1000 and 4000 Dollars a year, while many developing countries present values of Tyr04 below 6 and health expenditure per capita below 500 Dollars a year. In the case of the USA expenditure in health is very high in comparison with other countries of similar educational and development level and this question is analysed in Guisan(2009) and other studies.

Graphs 2 and 3 show the positive impact that health expenditure per capita usually has on satisfaction with life, (data of 132 countries in graph 2 and 87 in graph 3).

Graphs 2 and 3. Satisfaction with Life and Health Expenditure per capita in year 2005



Sources. HH05 is Health Expenditure per head in year 2005, elaborated from WB(2010). SWL2F is an indicator of Satisfaction with Life (estimation based, with some modifications, on the index of satisfaction with life of Marks et al(2006) published by White(2007), varies from 100 to 263. SWLV is the index of Veenhoven(2009) in the scale 0 to 10.

The lowest level of SWL2F corresponds to Burundi with 100 points and the highest to Denmark with 263 points. African and Asian countries with low levels of health expenditure per capita have generally low levels of satisfaction with life. The correlation of the *index of satisfaction with life* with *health expenditure per capita* is positive, not only with SWL2F, but also with other indexes, as Marks' index and Veenhoven's index:

Correlation of health expenditure per head (HH05) and satisfaction with life indexes.

	HH05	SWL2	SWL2F	SWLV
HH05	1.0000	0.6142	0.6485	0.5949
SWL2	0.6142	1.0000	0.9497	0.9475
SWL2F	0.6485	0.9497	1.0000	0.9121
SWLV	0.5949	0.9475	0.9121	1.0000

Notes: HH05 is health expenditure per capita in 2005 (Dollars at 2000 prices and Purchasing Power Parities). SWL2 index of Marks et al(2006). SWL2F estimation based on SWL2F and other indicators. SWLV satisfaction with life index of Veenhoven(2009) (average of the period 2002-2008).

Several main positive effects of education on development is analyzed in Guisan, Aguayo and Exposito (2001), Guisan and Neira(2006), Guisan (2009), Guisan and Exposito(2010) and other studies. Accordingly to Guisan(2009) the main effects of education to increase life satisfaction in less developed countries are provided through the positive impact of education on investment and production per capita, voice of citizens, government efficiency and health improvement and health expenditure per capita).

### 3. Health Expenditure, education and quality of life in Africa

Tables 1 and 2 present selected data related with development in Africa.

Tabla 1. Health Expenditure per capita, GDP per capita and educational level, Africa

Country	Health Expenditure pc 2000	Health Expenditure Pc 2005	GDP pc 2000	GDP pc 2005	Years of Schooling 2004
South Africa	769	1001	9488	11044	5.90
Botswana	416	714	7702	9652	5.36
Tunisia	350	458	6252	7423	6.25
Namibia	424	511	6058	6980	4.02
Algeria	190	225	5418	6361	5.68
Egypt	194	241	3599	3985	5.35
Morocco	167	207	3545	3954	5.21
Lesotho	123	154	2122	2472	4.02
Angola	45	45	1795	2170	2.50
Ghana	102	156	1893	2149	3.97
Guinea	95	115	1976	2040	2.86
Mauritania	43	57	1730	1993	3.32
Cameroon	82	96	1866	1978	3.82
Zimbabwe	195	164	2499	1832	4.09
Chad	56	71	840	1616	2.79
Senegal	63	87	1435	1615	3.44
Togo	66	84	1439	1411	3.16
Cote d'Ivoire	74	55	1576	1401	3.57
Uganda	82	87	1249	1363	2.31
Mozambique	48	66	877	1220	2.85
Rwanda	45	91	1039	1193	2.93
Burkina Faso	52	73	998	1093	2.56
Nigeria	38	70	882	1058	3.20
Kenya	44	46	1018	1042	3.96
Central African R.	46	44	1155	1024	3.57
Benin	45	47	959	1000	2.97
Congo R.	17	22	958	931	3.20
Mali	37	51	780	930	2.41
Zambia	43	65	774	930	3.13
Eritrea	41	33	912	907	3.31
Ethiopia	45	37	781	896	2.53
Madagascar	17	30	825	802	3.07
Sierra Leone	18	41	466	720	2.72
Niger	31	41	703	716	1.76
Congo D.R.	25	41	669	679	2.56
Tanzania	23	25	522	653	3.46
Malawi	50	64	586	597	2.52
Burundi	18	64	584	584	2.50

Note: Health (public and private) and GDP per capita (pc) in years 2000 and 2005, expressed in dollars at 2000 prices and purchasing power parities (PPPs). Countries in descending order of Gross Domestic Product per capita (GDP pc). Sources: Elaborated from WB(2010). Average years of schooling in year 2004 of population 25+ age, own estimations based on Barro and Lee(2000) and other sources for non available data.

Table 2. GDP per capita, Government Quality and Satisfaction with Life, Africa

Country	GDP pc 2005	Gov. Quality 1	Gov. Quality 2	SWL2F
South Africa	11044	6.48	6.44	204
Botswana	9652	5.98	6.40	201
Tunisia	7423	2.56	5.92	199
Namibia	6980	6.16	5.34	196
Algeria	6361	2.98	3.96	174
Egypt	3985	2.52	4.12	182
Morocco	3954	3.76	4.86	187
Lesotho	2472	5.24	4.16	143
Angola	2170	2.78	2.68	163
Ghana	2149	6.00	4.92	184
Guinea	2040	2.54	2.06	170
Mauritania	1993	3.50	3.64	181
Cameroon	1978	3.12	3.26	172
Zimbabwe	1832	1.92	2.04	110
Chad	1616	2.14	2.10	173
Senegal	1615	4.96	4.32	182
Togo	1411	2.68	2.04	166
Cote d'Ivoire	1401	2.48	2.26	172
Uganda	1363	4.06	4.20	176
Mozambique	1220	4.88	4.18	177
Rwanda	1193	2.52	4.26	171
Burkina Faso	1093	4.38	3.32	174
Nigeria	1058	3.92	3.14	167
Kenya	1042	4.88	3.82	174
Central African R.	1024	3.14	2.24	162
Benin	1000	5.64	3.86	180
Congo R.	931	2.78	2.32	160
Mali	930	5.52	3.90	171
Zambia	930	4.48	3.82	168
Eritrea	907	0.70	2.40	169
Ethiopia	896	2.62	4.10	168
Madagascar	802	4.92	4.40	174
Sierra Leone	720	4.34	2.84	161
Niger	716	4.24	3.30	166
Congo D.R.	679	2.08	1.64	110
Tanzania	653	4.70	4.16	176
Malawi	597	4.48	3.82	178
Burundi	584	3.40	2.32	100

Source: GDP pc explained in table 1. Government Quality Indexes of 2007 based on Kaufman et al(2008), converted to scale 0 to 10: 1) Voice of citizens, 2) Government Effectiveness. Satisfaction with Life Indexes: SWL2F: satisfaction with life index (see footnote of graph 1).

In tables 1 and 2 we may notice that countries with the highest levels of education usually get the best indicators of Government Quality, economic development, health expenditure per capita and SWL2F (index of satisfaction with life).

Health expenditure per capita (public and private) in Africa is very low in many countries and below 200 Dollars in 31 of them. The highest values of health expenditure per capita correspond to South Africa, Botswana, Namibia and Tunisia. Those countries show also the highest values in Table 2.

#### 4. Health expenditure, education and quality of life in Asia-Pacific

Tables 3 and 4 present data for Asia-Pacific countries, in descending order of Gross Domestic Product per capita in year 2005.

Table 3. Health Expenditure per capita GDP per capita and educational level, Asia-Pacific

Country	Health Expenditure pc 2000	Health Expenditure pc 2005	GDP pc 2000	xGDP pc 2005	Years of Schooling 2004
Hong Kong, China	1459	*	26045	30896	9.63
Australia	2288	2468	25417	28306	10.91
Japan	1993	2250	26220	27568	10.07
Singapore	855	878	23744	26764	8.49
Israel	2052	1841	23858	22960	9.44
Kuwait	512	451	16505	20695	7.69
New Zealand	1530	1766	19615	20135	11.79
Korea, Rep.	760	1113	16179	19560	10.93
Saudi Arabia	408	418	12374	13175	3.84
Malaysia	295	401	8927	9699	8.17
Thailand	213	272	6279	7649	6.56
Iran	338	472	5826	7137	5.50
China	200	264	3928	5878	6.06
Lebanon	514	461	4390	5425	5.81
Jordan	364	432	3954	4585	8.55
Philippines	137	273	4027	4401	7.97
Sri Lanka	131	164	3626	4087	6.70
Indonesia	76	67	3028	3437	5.55
Syrian A.R.	165	143	3243	3437	6.41
India	121	132	2422	3118	5.53
Vietnam	107	164	2014	2739	5.32
Papua New Guinea	84	107	2325	2505	2.77
Cambodia	204	148	1859	2321	3.42
Pakistan	54	60	1926	2149	2.55
Mongolia	113	78	1610	2013	5.33
Lao PDR	39	83	1570	1952	3.40
Myanmar	27	38	1238	1800	2.64
Bangladesh	47	56	1479	1786	2.61
Nepal	65	82	1323	1368	2.44
Yemen, R.	36	40	788	920	2.00

Source: See table 1. Notes: Health Expenditure in Hong-Kong China, provisional estimation for year 2000. The table does not include Russian Federation nor other countries related with Eurasia.

In table 3 countries of Asia-Pacific appear in descending order of real Gross Domestic Product per capita of year 2005 (in Dollars at 2000 prices and PPPs). Countries with health expenditure per capita over 1000 Dollars are: Australia, Japan, Israel, New Zealand and Korea Republic, and between 400 and 900: Singapore, Kuwait, Saudi Arabia, Malaysia, Iran, Lebanon, and Jordan. Other countries of table 3 have very low values.

Table 4. Development, Government Quality and Satisfaction with Life, Asia-Pacific

Country	PH05 \$2000	Government Quality 1	Government Quality 2	SWL2F
Hong Kong, China	30896	6.18	8.60	220
Australia	28306	7.68	8.92	239
Japan	27568	6.86	7.64	220
Singapore	26764	4.14	9.82	231
Israel	22960	6.56	7.36	237
Kuwait	20695	4.08	5.40	240
New Zealand	20135	7.98	8.80	239
Korea, Rep.	19560	6.32	7.52	208
Saudi Arabia	13175	1.82	4.64	243
Malaysia	9699	3.90	7.14	247
Thailand	7649	3.78	5.32	190
<u>Iran</u>	7137	1.96	3.44	183
China	5878	1.60	5.30	183
Lebanon	5425	4.10	3.78	182
Jordan	4585	3.72	5.54	188
Philippines	4401	4.66	4.98	213
Sri Lanka	4087	4.22	4.42	181
Indonesia	3437	4.66	4.18	220
Syrian Arab R.	3437	1.46	3.24	170
India	3118	5.76	5.06	182
Vietnam	2739	1.78	4.18	177
Papua New Guinea	2505	5.24	3.52	210
Cambodia	2321	3.26	3.36	171
Pakistan	2149	2.90	3.76	143
Mongolia	2013	5.26	3.60	223
Lao PDR	1952	1.68	3.38	171
Myanmar	1800	0.68	1.66	165
Bangladesh	1786	3.74	3.38	175
Nepal	1368	3.22	3.38	177
Yemen, Rep.	920	2.88	2.96	207

Source: See notes of table 2.

In tables 3 and 4 we notice that countries with the highest educational level of population usually have the best indicators of economic development, health expenditure,

quality of government and quality of life (including not only SWL2F but also other indicators like IDG included in the Annex which measures some features of quality of life for women).

## 5. Quality of life and women indicators in Africa and Asia

Among other indexes related with quality of life are those related with equality of opportunities for women in education, work, income and social activities. At World level the most outstanding countries, like Scandinavian countries, Switzerland and other ones, are usually in top positions in several indexes, but in less developed countries there are some outstanding differences between rankings in different indexes.

Accordingly to data from UN(2009), the best positions of African countries in the Gender Development Index (GDI) in year 2007 and in GEM (Gender Empowerment Measure) correspond to the following countries:

Women indicator	Top ranking positions in Africa	Top ranking positions in Asia-Pacific
GDI ranking	Libya, Mauritius, Tunisia, Algeria, Equatorial Guinea, Botswana, Morocco	Australia, Japan, New Zealand, Israel, Singapore, Hong-Kong China, Korea R., Brunei Darussalma, Kuwait, Qatar, Bahrein, United Arab Emirates
GEM ranking	South Africa, Namibia, Uganda, Lesotho, Botswana	Australia, New Zealand, Singapore, Israel, United Arab Emirates, Bahrein, Japan

Source: Elaborated from UN(2009). Asia-Pacific does not include Central Asian countries related with former USSR and Eurasia.

Regarding Women's quality of life there are other interesting social indicators which deserve attention as those included in UN(2009) and in OECD(2010). Table A1 in the Annex shows data of the evolution of GDI ranking for 1998-2007.

## 6. Conclusions

The analysis of the relation of health expenditure per capita with socio-economic development in Africa and Asia-Pacific shows that many countries of Africa and several of Asia have very low values of health expenditure due to the limitations of their low levels of socio-economic development. Although direct transfers to health services from international cooperation may help to alleviate their situation, it is important to notice that generally the most important help comes through the increase of the educational level of population, which should receive more attention in the Millennium Development Goals. More education usually implies better levels of socio-economic development, and more means for health conditions and health assistance. Besides it is important to foster international cooperation to improve investment and industrial development in many low income countries in order to increase their income per capita. Health assistance is an important factor for satisfaction with life indicators.



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<sup>1</sup> <http://www.usc.es/economet/aaa.htm>

<sup>2</sup> <http://www.happyplanetindex.org/public-data/files/happy-planet-index-first-global.pdf>

<sup>3</sup> <http://worlddatabaseofhappiness.eur.nl/trendnat/framepage.htm>

<sup>4</sup> <http://hdr.undp.org/en/statistics/data/>

**Annex.**

Tabla A1. Ranking of countries in descending order of Gender Development Index, 1998-2007

<b>África:</b> 65 to 54 Libia Jamahiriya Árabe 85 to 109 South Africa 86 to 84 Tunisia 88 to 101 Cape Verde 91 to 88 Algeria 93 to 118 Swazilandia 98 to 108 Namibia 99 to ND Egypt 101 to 105 Botswana 103 to 111 Morocco 104 to 132 Lesotho 105 to 126 Ghana 106 to ND Zimbabwe 109 to 102 Equatorial Guinea 111 to 129 Cameroon 112 to 121 Kenya 113 to 117 Comoros 114 to 115 Congo, R. 116 to 120 Madagascar 118 to 127 Sudan 120 to ND Togo 122 to 67 Mauritius 124 to 133 Nigeria 125 to 150 Congo, DR 126 to 136 Zambia 127 to 125 Tanzania, R.U. 128 to 140 Senegal 129 to 137 Côte d'Ivoire 130 to 131 Uganda 131 to 138 Eritrea 132 to 135 Benin 133 to 122 Yemen 134 to 141 Gambia 135 to 139 Rwanda 136 to 134 Malawi 137 to 153 Malí 138 to 151 Central African R. 139 to 145 Mozambique	<b>África:</b> 140 to 148 Guinea-Bissau 141 to 144 Ethiopia 142 to 147 Burkina Faso 143 to 155 Níger <hr/> <b>Asia-Pacific</b> 3 to 1 Australia 9 to 14 Japan 17 to 18 New Zealand 22 to 26 Israel 24 to ND Singapore 26 to 22 Hong Kong (China) 30 to 25 Korea, Rep. de 31 to 29 Brunei Darussalam 34 to 34 Kuwait 41 to 35 Qatar 42 to 33 Bahrain 44 to 38 United Arab Emirates 57 to 58 Malaysia 59 to 90 Fiji 62 to 72 Thailand 64 to 86 Philippines 68 to 83 Sri Lanka 72 to 77 Maldives 76 to 60 Saudi Arabia 79 to 75 China 82 to 56 Oman 84 to 76 Iran, R.I. 89 to 94 Vietnam 90 to 93 Indonesia 95 to 98 Syria A.R. 102 to ND Myanmar 107 to ND Iraq 108 to 114 India 115 to 124 Pakistan 117 to 112 Lao, PDR 119 to 119 Nepal 121 to 123 Bangladesh ND to 154 Afghanistan
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Source: UNDP(2000) y (2009). Notes: a) Ranking in descending order of Gender Development Indicator (GDI), years 1998 to 2007. b) Data of Asia-Pacific in this table do not include Russian Federation nor other Western and Central Asia countries related with Eurasia.