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HEALTH EXPENDITURE, POVERTY AND ECONOMIC DEVELOPMENT IN AFRICA, 2000-2005

GUI SAN, Maria-Carmen^{*}

EXPOSITO, Pilar

Abstract: We analyze the evolution of health expenditure and poverty indicators in 38 African countries for the period 2000-2005, and we find little advance towards the Millennium Development Goals (MDGs) in many countries. We point to the main causes of this stagnation and present a synthesis of suggestions addressed to improve economic development which are of uppermost importance to design effective economic policies and foster international cooperation in this regard.

JEL classification: I1, I2, J1, O1, O15, O19, O55

Keywords: Economic Development, Education, Health, Africa 2005

1. Introduction

A few economic researchers have analyzed the problems of developing countries during the last decades and they have demanded more effective international policies in order to eradicate extreme poverty and to improve health expenditure and sanitary assistance although, unfortunately, their interesting studies have not received, in our view, the attention that they deserve. Many international conferences and documents have shown goodwill and concern about the problems of the poorest countries but the question is that many institutions have not achieved a great success to solve the main problems. For that reason, we think that it is worthy to insist upon this question in the name of solidarity and coherence which are principles that should had a greater presence in the advances of Economics science to the service of society. Here we analyze the situation and challenges of health expenditure and

^{*} Maria-Carmen Guisan, Professor of Econometrics, ecggs@usc.es and Pilar Exposito Associate Professor of Econometrics, piliexpo@lugo.usc.es Faculty of Economics, University of Santiago de Compostela, Spain.

poverty eradication in Africa in order to achieve the Millennium Development Goals and to reach a real improvement for their inhabitants particularly in the poorest cases.

In section 2 we present a short revision of the literature in this regard. Section 3 presents a general view of economic development and poverty in African countries for the period 2000-2005, while section 4 analyses the evolution of health expenditure and finally section 5 presents the main conclusions.

2. The Millennium Development Goals (MDGs) and some selected literature on health expenditure and poverty in Africa.

After several decades of slow development in many Sub-Saharan countries and other poor areas of the world, UN(1995) is one of the first documents where we can find that there is a clear recognition of the urgency of improve education and health in those areas. Previously several economic researchers had insisted upon this questions and the OECD have published several interesting reports on development which fortunately had an important role to increase the international awareness about development problems.

We may regret that the new awareness of UN on this regard came a little late, having into account that since 1965 approximately many researchers specialized in Economic Development, since the works by Denison and other pioneers, have alerted about the great important of improving education and investment to achieve a good level of development, eradicate poverty and improve well-being (including health expenditure improvement as one of the most important goals).

After some conferences and reports about the urgency to foster international cooperation in this regard, finally the UN held a Millenium Summit in year 2000, where the MDGs are declared explicitly as UN goals to be reached by year 2015 or before. The eight goals that were particularly promoted in the years following the Millennium Summit include:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria, and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

WHO(2005) presents an analysis of the main objectives with special focus on health and they state that

“In September 2000, the largest-ever gathering of Heads of State ushered in the new millennium by adopting the Millennium Declaration. The Declaration, endorsed by 189 countries, was then translated into a roadmap setting out goals to be reached by 2015. The eight Millennium Development Goals (MDGs) build on agreements made at United Nations conferences in the 1990s and represent commitments to reduce poverty and hunger, and to tackle ill-health, gender inequality, lack of education, lack of access to clean water and environmental degradation.”

Some selected studies or reports of interest in this regard are the following ones, which generally insist upon the convenience to give priority to education, health and sanitary conditions in order to improve socio-economic development in African developing countries and other areas:

Ravallion and Shaouhua (1993) and (1996) analyze the evolution of poverty in the developing world and they find that the incidence of aggregated poverty changed little in South Asia and Sub-Saharan Africa which were the regions with more problems in this regard. They suggest a change in main policies in order to improve development.

Case(2001) analyzed the strong positive relationship between income and health throughout the world, and found the important significant effect of water source and sanitation to improve health and avoid diseases. Besides recommended transfer to the poor and pensions to the elderly in order to allow them to increase health expenditures.

Guisan, Aguayo and Exposito(2001) and Basu(2002) analyze the important impact of moderation in fertility rates to improve economic development and eradicating poverty. These authors find that the main policy to moderate fertility rates and improve development is to increase the educational level of population.

Christiansen, Demery and Paternostro(2002) reviewed trends in household well-being in Africa during the 1990s taking a broad view of poverty, including both income poverty and other more direct measures of individual welfare. They find a little progress in some countries and social groups but they also find that some groups have been left behind. They found that education and access to land, for those without other income sources, were important conditions to get improvement in their welfare.

Artadi and Sala-i-Martin(2003) state that the dismal growth performance of Africa is the worst economic tragedy of the 20th century. They estimate poverty rates and headcounts for Sub-Saharan countries, analyze the main determinants of economic growth and project the annual growth rates of Africa if these countries would have got better values for the main factors of development. For these authors low levels of education, poor health, adverse geography, closed economies and too many military conflicts are considered as important explanations of the economic tragedy.

Agenor et al (2005) present an interesting monitoring framework to follow the evolution of Sub-Saharan Africa towards achieving the Millennium Development goals. At the heart of their approach they include a macroeconomic model that set links between foreign aid, public investment (disaggregated into education, infrastructure and health) the supply side and poverty. Their model is linked through cross-section regressions to indicators of malnutrition, infant

mortality, life expectancy, and access to safe water. They comment about the Millennium Project Report issued in January of 2005 (See UN(2005)), and mention that this report noted that although several countries are on track to achieve some of the goals many others are failing way short, particularly so in Sub-Saharan Africa. They found that other reports issued by the Commission for Africa, United Nations and the World Bank also provide a bleak picture for the regions.

In our view the main problem of the failure of the scarce programs developed until now is just to forget that education is the main factor to contribute to development, as stated and proved in the studies selected in this section among other ones. The moderation of high fertility rates in Sub-Saharan Africa is one of the main paths to eradicate poverty and improve health expenditure and well-being of people, and the increase of the educational level of population is the most important factor which moderates excessive fertility rates as it is clearly shown in Guisan, Aguayo and Exposito(2001) and other studies cited in the bibliography. United National should in our view foster communication channels among many social agents interested in development, including not only NGOs, Government donors, but also business foundations, universities and particularly researchers specialized in economic development and other fields of interest in this regard.

3. Economic development and poverty in Africa, 2000-2005.

Table 1 presents the evolution of population real Gross Domestic Product per inhabitant of 38 African countries for the period 2000-2005. We may notice that only 3 African countries have reached in year 2000 a value of Gdph above world average of year 2000: Botswana with 9652 dollars at 2000 prices, Tunisia with 7423 and South Africa with 11044. Regarding the rate of growth of Gdph, in annual percentage for the period 2000-2005, only the following 11 countries have got a value above the world average of 3.06: 3.21 in Algeria, 3.79 in Angola, 4.51 in Botswana, 13.09 in Chad, 3.52 in Mali, 6.60 in Mozambique, 3.64 in Nigeria, 8.70 in Sierra Leone, 4.48 in Tanzania, 3.43 in Tunisia and 3.61 in Zambia.

Table1. Population, real Gdp per inhabitatn and rate of growth of Gdph.

Country	Population 2000	Population 2005	Gdph 2000	Gdph 2005	Rate of Gdph
Algeria	30463	32854	5418	6361	3.21
Angola	13841	15941	1795	2170	3.79
Benin	7197	8439	959	1000	0.84
Botswana	1754	1765	7702	9652	4.51
Burkina Faso	11292	13228	998	1093	1.82
Burundi	6486	7548	584	584	0.00
Cameroon	14856	16322	1866	1978	1.17
Central-African R.	3777	4038	1155	1024	-2.41
Chad	8216	9749	840	1616	13.09
Congo D.R.	50052	57549	669	679	0.30
Congo R.	3438	3999	958	931	-0.57
Cote d'Ivoire	16735	18154	1576	1401	-2.35
Egypt	67285	74033	3599	3985	2.04
Eritrea	3557	4401	912	907	-0.11
Ethiopia	64298	71256	781	896	2.75
Ghana	19867	22113	1893	2149	2.54
Guinea	8434	9402	1976	2040	0.64
Kenya	30689	34256	1018	1042	0.47
Lesotho	1788	1795	2122	2472	3.05
Madagascar	16195	18606	825	802	-0.57
Malawi	11512	12884	586	597	0.37
Mali	11647	13518	780	930	3.52
Mauritania	2645	3069	1730	1993	2.83
Morocco	27838	30168	3545	3954	2.18
Mozambique	17911	19792	877	1220	6.60
Namibia	1894	2031	6058	6980	2.83
Niger	11782	13957	703	716	0.37
Nigeria	117608	131530	882	1058	3.64
Rwanda	8025	9038	1039	1193	2.76
Senegal	10343	11658	1435	1615	2.36
Sierra Leone	4509	5525	466	720	8.70
South Africa	44000	45192	9488	11044	3.04
Tanzania	34763	38329	522	653	4.48
Togo	5364	6145	1439	1411	-0.39
Tunisia	9564	10022	6252	7423	3.43

Uganda	24309	28816	1249	1363	1.75
Zambia	10702	11668	774	930	3.67
Zimbabwe	12595	13010	2499	1832	-6.21
Total Africa	747231	831800	2118	2333	1.93
World	60061854	6437784	7329	8541	3.06

Fuente: World Bank(2006) and own elaboration. Gross Domestic Product per inhabitant in dollars at 2000 prices and Purchasing Power Parities. Population in thousand people. The last column corresponds to the annual exponential rate of growth of Gdph, in percentage for the period 2000-2005.

We may compare the rates of growth of real Gdp (rgdp), Population (rpop), and real Gdp per inhabitant (rph) of Africa (af) and the World (wld), expressed in percentage per year, and find:

$$\text{Africa: } rph(af) = rgdp(af) - rpop(af) = 4.07 - 2.14 = 1.93 \quad (1)$$

$$\text{World: } rph(wld) = rgdp(wld) - rpop(wld) = 4.26 - 1.20 = 3.06 \quad (2)$$

$$\text{Difference: } rph(af) - rph(wld) = 1.93 - 3.06 = -1.13 \quad (3)$$

The lower performance of Africa in comparison with world average has been due partly to a lower increase in real Gdp (4.0 in Africa and 4.26 in the world, with Africa 0.19 points below world average) and mainly due to a higher increase of population in Africa (2.14 above world average of 1.20 with a difference of 0.94 points), and thus lower increase of real Gdp accounts for 17% of the difference and higher increase of Population accounts for 83% of the difference between the rates of growth of Gdph in Africa and the world.

Table 2 presents a comparison of the evolution of Africa and the World for 1990-2005. We may notice that real gdp per inhabitant has grown in Africa at an average rate of only 1.00% during the 20th century and at 1.93% for 2000-2005. This increase is moderate, having into account the low levels of Gdp per inhabitant in year 2000. The percentage is already too low for the development of African countries, and clearly below the world average of 3.06. In order to achieve the Millennium Development Goals (MDGs) it is of

uppermost importance to foster better economic policies both at internal level and at international cooperation level.

Table 2. Annual rates of growth of Gdp, Population and Gdph

	Period 1900-1999			Period 2000-2005		
	rgdp	rpop	rph	rgdp	rpop	rph
Africa	3.12	2.12	1.00	4.07	2.14	1.93
World	2.96	1.40	1.56	4.26	1.20	3.06
Difference	0.16	0.72	-0.56	-0.19	0.94	-1.13

Source: Own elaboration based on data from Maddison(2001) and World Bank(2006). The table includes exponential rates of annual growth in percentage: rgdp (rate of Gross Domestic Product), rpop (rate of Population), and rph (Rate of Gdp per inhabitant).

Table 3 shows the fertility rates of Africa in comparison with other areas. While Northern Africa and Middle East countries show an important moderation for the period 1980-2004, Sub-Saharan Africa already had in year 2004 excessively high fertility rates, above twice the world average and clearly above all the other areas.

Tabla 3. Fertility rates, 1970-2004

Region	1970	1980	2004
East Asia & Pacific	5.4	3.0	2.1
Europe & Central Asia	2.5	2.2	1.6
Latin America & Caribbean	5.3	4.2	2.4
Middle East & North Africa	6.7	6.2	3.1
South Asia	6.0	5.2	3.1
Sub-Saharan Africa	6.8	6.7	5.4
High-income	2.5	1.9	1.7
World	4.8	3.7	2.6

Note: Fertility rates are the average number of children born per woman during her life. Source: World Bank(2006).

The effects of the low education levels of many African countries are analyzed in Guisan and Exposito(2003) and other studies. Unfortunately we could not get enough information to show the evolution of the educational level of adult population in Africa for

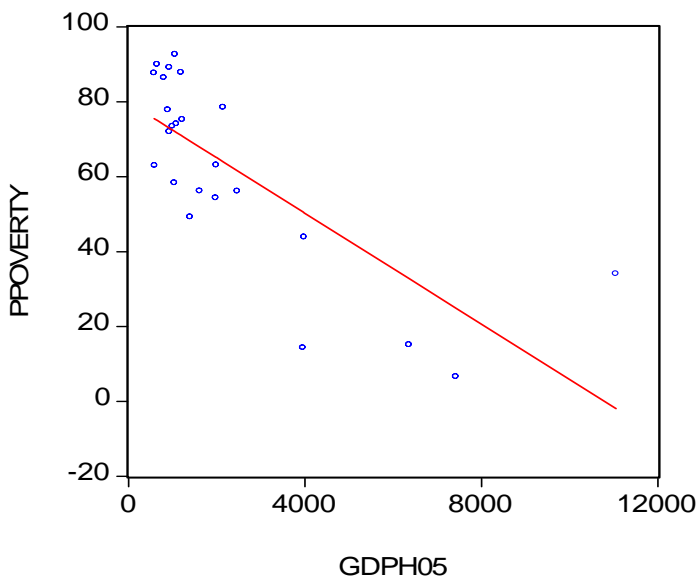
the period 2000-2005, but we may estimate that there have been little progress because only when average years of education is too low countries show so high average fertility rates as it is the case of Sub-Saharan Africa. Poverty indicators are very much related with income per inhabitant. Table 4 and graph 1 show the data.

Table 4. Poverty count in 24 African countries, total population, Gdp per capita and million people below 2 \$ of income per day, 2000-2005

	% 2000	% 2005	% Mean	Pop 2005	Gdph 2005	People below 2 \$
Algeria	15.10	..	15.10	32.854	6361	5.0
Benin	..	73.40	73.40	8.439	1000	6.2
Burkina Faso	76.39	71.77	74.08	13.228	1093	9.8
Burundi	87.60	..	87.60	7.548	584	6.6
Cameroon	54.32	..	54.32	16.322	1978	8.9
Cote d'Ivoire	49.62	48.83	49.22	18.154	1401	8.9
Egypt, A.R.	43.89	..	43.89	74.033	3985	32.5
Ethiopia	77.80	..	77.80	71.256	896	55.4
Ghana	78.5	..	78.5	22.113	2149	17.4
Kenya	58.34	..	58.34	34.256	1042	20.0
Lesotho	56.10	..	56.10	1.795	2472	1.0
Madagascar	87.66	85.10	86.38	18.606	802	16.1
Malawi	62.94	62.94	62.94	12.884	597	8.1
Mali	72.00	..	72.00	13.518	930	9.7
Mauritania	63.08	..	63.08	3.069	1993	1.9
Morocco	14.33	..	14.33	30.168	3954	4.3
Mozambique	76.26	74.14	75.20	19.792	1220	14.9
Nigeria	92.83	92.38	92.60	131.53	1058	121.8
Rwanda	87.77	..	87.77	9.038	1193	7.9
Senegal	56.17	..	56.17	11.658	1615	6.5
South Africa	34.07	..	34.07	45.192	11044	15.4
Tanzania	89.93	..	89.93	38.329	653	34.5
Tunisia	6.64	..	6.64	10.022	7423	0.7
Zambia	91.09	87.19	89.14	11.668	930	10.4
Total 24 countries	64.68	655.4	2598	423.9

Note: Own elaboration from WB(2006). Columns 1 to 3 show the percentage of poverty count (people below 2\$ of income per day). Column 4 and 5 corresponds to data of population (million) and Gdph per inhabitant of table 1 for year 2005, and the last column is the result of applying the percentage of column 3 to column 4.

Graph 1. % of Poor People and Gdp per inhabitant, Africa 2005



We find a clear negative relationship between the percentage of poorest people and real Gross Domestic Product per inhabitant, although other factors influence the evolution of the percentage of poor people, because some countries show values lower or higher than expected accordingly to the general relationship.

3. Health Expenditure in Africa, 2000-2005

Table 4 shows the percentages of public and private expenditure on health in year 2000 and the values of total health expenditure per inhabitant in the years 2000 and 2005 (HE00 and HE05), expressed in dollars at prices and purchasing power parities (PPPs) of year 2000. Data have been elaborated from WB(2006) and own calculations.

Having into account the figures corresponding to OECD countries, as seen in Guisan and Arranz(2001) and other studies, where annual

health expenditure per inhabitant is usually between 1000 and 3000 dollars we may notice that the figures for Africa are unfortunately very low, with many countries below the African average which is around 120 dollars per inhabitant and year, and almost all, with the only exception of South Africa, below the world average which is around 600 dollars per capita.

Table 3. Health Expenditure in Africa, 2000-2005

	Health expenditure as Percentage of income per capita			Health expenditure per capita (dollars)	
	Public	Private	Total	2000	2005
Algeria	2.57	0.93	3.50	190	223
Angola	2.06	0.44	2.50	45	54
Benin	2.09	2.61	4.70	45	47
Botswana	3.09	2.31	5.40	416	521
Burkina Faso	2.20	3.00	5.20	52	57
Burundi	0.55	2.55	3.10	18	18
Cameroon	1.23	3.17	4.40	82	87
Central African R.	1.64	2.36	4.00	46	41
Chad	2.81	3.89	6.70	56	108
Congo, Dem. Rep.	0.20	3.50	3.70	25	25
Congo, Rep.	1.20	0.60	1.80	17	17
Cote d'Ivoire	0.93	3.77	4.70	74	66
Egypt, Arab Rep.	2.30	3.13	5.43	195	216
Eritrea	3.01	1.49	4.50	41	41
Ethiopia	3.11	2.59	5.70	45	51
Ghana	1.91	3.49	5.40	102	116
Guinea	0.65	4.15	4.80	95	98
Kenya	2.00	2.30	4.30	44	45
Lesotho	4.79	1.01	5.80	123	143
Madagascar	1.11	0.99	2.10	17	17
Malawi	2.60	6.00	8.60	50	51
Mali	2.33	2.37	4.70	37	44
Mauritania	1.58	0.92	2.50	43	50
Morocco	1.44	3.26	4.70	167	186
Mozambique	3.73	1.77	5.50	48	67
Namibia	4.82	2.18	7.00	424	489
Niger	2.31	2.09	4.40	31	32

Nigeria	1.44	2.86	4.30	38	45
Rwanda	1.49	2.81	4.30	45	51
Senegal	1.60	2.80	4.40	63	71
Sierra Leone	2.11	1.69	3.80	18	27
South Africa	3.43	4.67	8.10	769	895
Tanzania	2.12	2.28	4.40	23	29
Togo	1.33	3.27	4.60	66	65
Tunisia	2.86	2.74	5.60	350	416
Uganda	1.77	4.83	6.60	82	90
Zambia	2.78	2.72	5.50	43	51
Zimbabwe	3.77	4.03	7.80	195	143

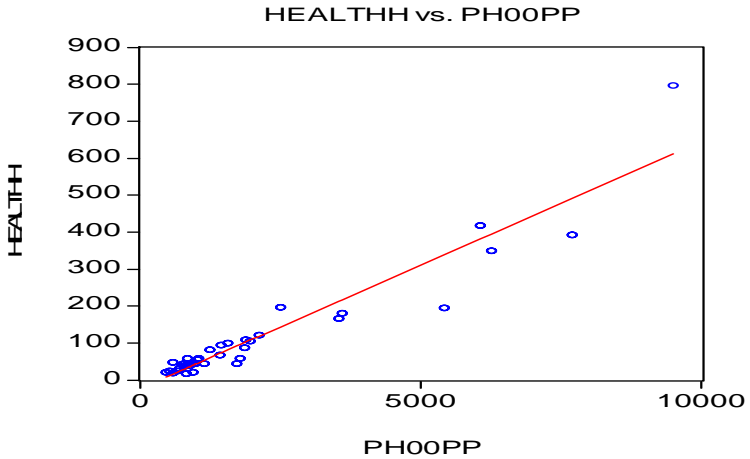
Note: Columns (1) and (2) from WB(2006), columns (3) to (5) elaborated by Guisan and Exposito.

It is a great challenge to improve the health conditions of African people, but not too much may be done if there is not a quick and important change regarding education in those countries. Both domestic policies and international cooperation to improve education are an urgent need.

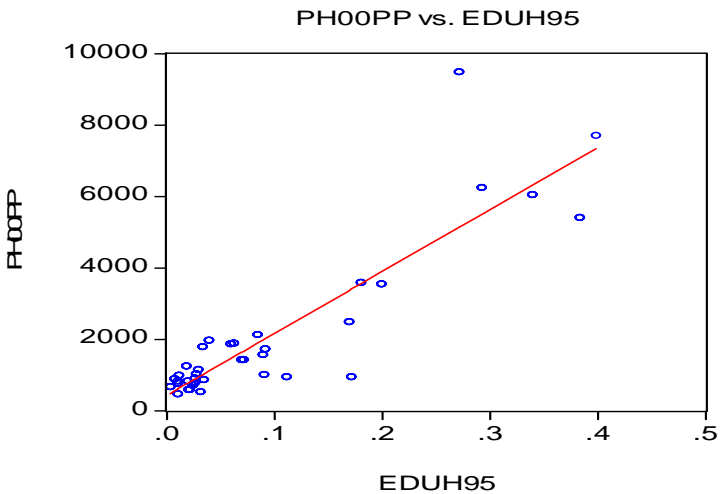
Health expenditure depends mainly on the increase of income per inhabitant and income per inhabitant is very positively related with the educational level of population, as seen in Guisan, Aguayo and Exposito(2001) and other studies. Education contributes to moderate the excessively high fertility rates and to increase productivity per worker and production per inhabitant.

Graph 2 shows the relationship between Health Expenditure per inhabitant and real Gross Domestic Product per inhabitant of 38 African countries in year 2000, and graph 3 shows the positive relationship between Gross Domestic Product per inhabitant in year 2000 and the average educational expenditure of the period 1990-1999 in each country. We may notice that the higher the educational expenditure the higher the degree of economic development and the level of expenditure on health per inhabitant.

Graph 2. Health Expenditure and Gross Domestic Product per capita of 38 African countries in year 2000 (dollars at Purchasing Power Parities)



Graph 3. Gross Domestic Product per inhabitant in year 2000 and past expenditure on Education per inhabitant in Africa



Other indicators of the low levels of health expenditure in Africa are the low number of hospital beds, the low number of doctors and sanitary staff per one thousand inhabitants and other indicators which show the poor conditions of many African countries in this important service to the community.

While in developed countries the number of hospital beds per one thousand inhabitants reaches values between 4 and 8, in African countries the average is around 1.4 for the countries where there is available data for this variable. Regarding the number of doctors per one thousand inhabitants while developed countries reach values around 3 or more, many African countries have only 0.3, which imply that they should multiply by 10 the number of doctors to have a similar degree of health services than in developed countries.

All the indicators of poverty and health are clearly related with the level of income per head, and thus international cooperation to development in Africa should be in great part addressed to increase the average level of education of population because it has generally the most important impact on development and well-being, and to improve sanitation and health.

5. Conclusions

The Millennium Development Goals are addressed to improve education and health expenditure, to eradicate poverty and to get better living conditions for the people of the poorest countries, but for the moment it is necessary to stand out that efforts to improve education were not enough strong and change things in this regard, increasing support to education and health should be in our view the highest priority for international cooperation.

We have seen in this study that the poorest countries of Africa have shown little progress during the period 2000-2005, and that new initiatives must be developed to help those countries to improve their socio-economic development. Not only the low levels of health expenditure are in little progress but there are also other indicators of bad living conditions, as undernourishment indices and poverty

counts which point to the urgency of getting a more efficient organization for international cooperation.

International cooperation contributing to pay teachers, health doctors, nurses and other personnel addressed to those goals is of uppermost importance and the United Nations and other institutions should foster measures in this regard, given more chance to positive initiatives from donors, development researchers and society.

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