How Missions made the Difference:
On the Origins of Formal Schooling in sub-Saharan Africa

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Abstract

British colonial rule has often been praised for its comparatively benign features such as its support for mass education. This paper studies the origins of formal schooling in former African colonies arguing that the role of British colonial policy should not be overstated. British policies were distinct from French policies by freely allowing Christian missionaries to develop mission schools, but active support of their activities in the form of substantial financial contributions emerged rather late and was, on the whole, unimpressive. In fact, the differences in educational legacies *within* British Africa were as large as those between the British and other European metropolitan powers and this can only be understood by the different reception of Christian missionary activities by native Africans.

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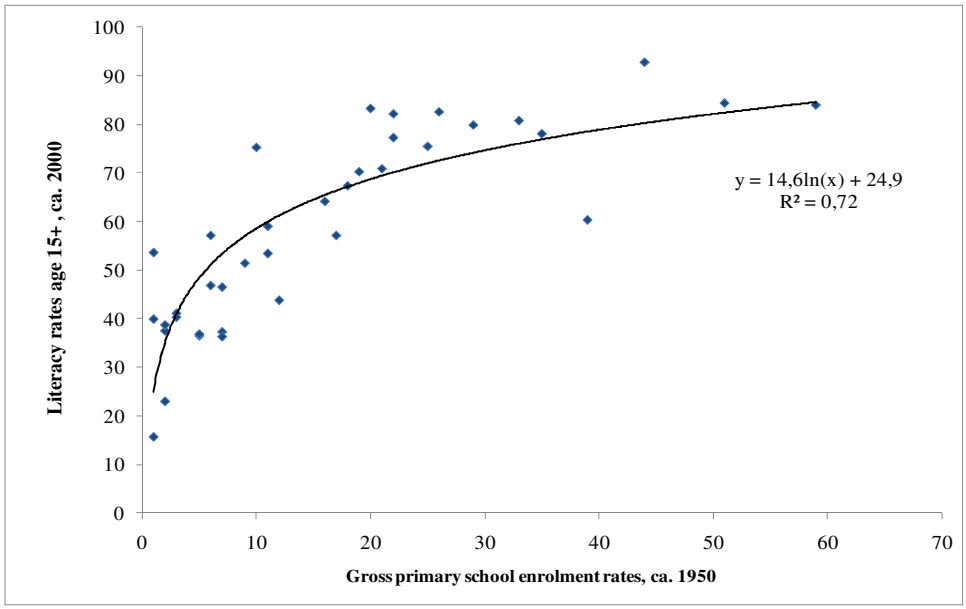
1. Introduction

The identity of the metropolitan state is believed to be a crucial factor in long run growth and development of former European colonies. The consensus view holds that British rule, on average, was more 'developmental', or less 'despotic', than that of other European powers. On a global plane British rule has been found to positively correspond with the quality of present-day government institutions (La Porta et al., 1999), with the post-colonial level of capital investment (Bertocchi and Canova, 2002) and with post-colonial economic growth (Grier, 1999; Bertocchi and Canova, 2002). Some famous scholars have argued that British developmental policies were embedded in the classical virtues of liberal political and economic institutions, which set the spirit of the 'British World Order' apart from other imperial philosophies (North, 1989; Ferguson, 2002).

Education is widely regarded as one of the key aspects of the more benign British legacy. This has not only been shown for the Americas (Mariscal and Sokoloff, 2000; Frankema, 2009), but also for Asia[1] (Booth, 2003) and for sub-Saharan Africa, where school enrolment rates in British colonies were substantially higher than in French, Spanish and Portuguese territories at the eve of independence (Benavot and Riddle, 1988; Brown, 2000). Figure 1 illustrates how important the colonial variation in enrolment rates still is in present-day Africa. Plotting the 1950 primary school enrolment rates of 37 former African colonies against their literacy rates (age 15+) in 2000 reveals a strong positive log-linear relationship ($R^2 = 0.72$).

Figure 1: Scatter plot of primary school enrolment rates in 1950 and literacy rates (age 15+) in 2000 in sub-Saharan Africa



Sources: enrolment rates from UNESCO, *Statistical Yearbook* 1964 (table 9); Literacy rates from UNESCO, *Institute for Statistics*, Data Centre: http://stats.uis.unesco.org/

[1] Booth has focused on the contrasts between British rule in Malaysia and Dutch rule in Indonesia.

Lloyd et al. (2000) argue in line with 'Caldwell's hypothesis' that a fundamental fertility transition has only taken place in five sub-Saharan African countries, not coincidentally former British colonies (i.e. Ghana, Botswana, Zimbabwe, Kenya and South Africa). These countries had established universal primary education by the end of the twentieth century (or earlier), which according to Caldwell (1980) is a precondition for the structural decline in the number of children per women. Bolt and Bezemer (2009) argue in line with Glaeser et al. (2004) that colonial education rather than colonial institutions, is key in explaining long run growth disparities within Africa, although Cogneau (2003) finds no evidence for this relationship.

This study does not question the educational lead of former British African colonies neither its positive long term effects. This paper addresses the question to which extent the positive education record should be attributed to colonial policies in the first place. Our departure point is the empirical observation that school enrolment rates *within* British Africa varied at least as much as those between British and other European ruled territories. Focusing on metropolitan identity ignores this *within-group* inequality.[2] If British 'developmental' policies were successful in boosting primary school enrolment rates in some places, then why not in all? Our argument is that British educational policies were not 'pro-active' prior to the Second World War. They became 'pro-active' in the brief period of colonial rule thereafter, but this was also true for French Africa. With 'pro-active' we mean that educational polices were backed up by the material (financial), administrative and institutional resources necessary to achieve certain delineated educational development objectives. In fact, the differential presence of Christian church missions explains almost all of the variation in British colonial educational outcomes. The really relevant question therefore is: what determined the varying geographical presence and activity of missions in sub-Saharan Africa?

We show in an OLS regression framework that variables representing local conditions explain more of the variation in school enrolment rates around 1950-60 than the identity of the metropolitan power. This does not mean that we cast doubt on the view that British colonies, on average, offered a better climate for missionary work of varying denominations. After all, our dummy variables for metropolitan identity remain highly significant. It only means that the literature tends to neglect the potential importance of 'local receptiveness' to missionary activity in its explanation of human capital distribution across sub-Saharan Africa.

Before we start looking at the origins of 'formal schooling' we need to specify its meaning. African education was not something introduced by Europeans. There were numerous ways in which African communities and societies had organized the transmission and accumulation of knowledge and skills before, during and after European occupation. In fact, the transmission of agricultural knowledge and skills was of invaluable importance to Africans living in fragile ecological

[2] This observation of inequalities in long term development among former British colonies has also been the departure point of Matthew Lange's recent book (2009) *Lineages of Despotism and Development. British Colonialism and State Power.*

environments unfavorable to human survival (Illife, 2007). Most of the knowledge and skills transfer, however, took place in the informal spheres of the extended family, village communities, trading networks or via the institution of apprenticeship.

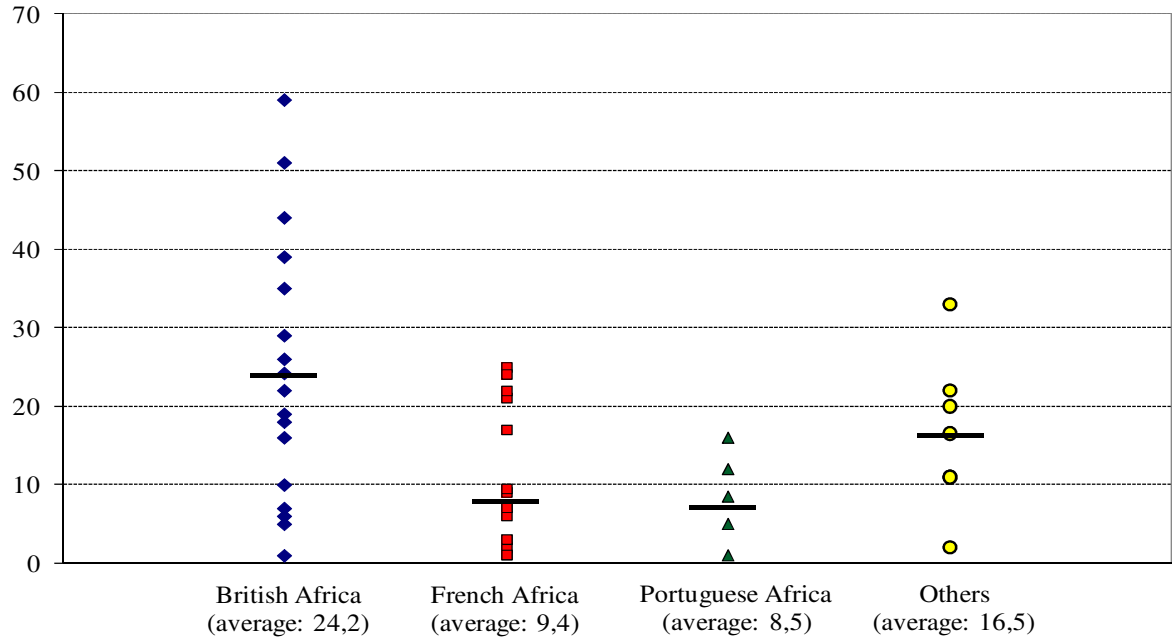
Formal schooling differed in the sense that children (and adults) congregated in a classroom setting at a predetermined weekly schedule in order to engage in pre-described curricular activities, thereby adhering to the organizational principles of European primary education. It also differed because of its non-vocational approach, focusing largely on the acquisition of reading and writing abilities instead of learning on the job. With the primitive resources the schools were initially set up by colonial educational agencies, formal education was not necessarily more rewarding than 'traditional' education. Neither did it mean that the former simply replaced the latter. But formal schooling provided the necessary conditions for the acquisition of, what Mokyr calls, 'propositional knowledge' (2002: pp. 4-5). Propositional knowledge is the knowledge required to understand the mechanisms underlying specific techniques or practices (i.e. 'prescriptive knowledge'). In addition, the expansion of formal schooling initiated the irreversible move towards universal primary schooling in Africa, a trajectory which is yet far from completed (Clemens, 2004).

2. Varying perspectives on colonial educational legacies

School enrolment rates in the late colonial era (i.e. the early post-war decades) have been widely employed for the assessment of colonial educational legacies in sub-Saharan Africa (Benavot and Riddle, 1988; Brown, 2000; Lloyd et al., 2000; Bertocchi and Canova, 2002; Cogneau, 2003; Bolt and Bezemer, 2009). Figure 2 shows the primary school enrolment rates of 42 African countries (40 colonies, 2 independent) around 1950, subdivided by metropolitan power (Appendix table 1 for the details). The British African unweighted average of 24,2 appears considerably higher than the French (9,4) or Portuguese (8,5) average. A simple one-way analysis of variation (ANOVA) of the two major colonial powers, Britain and France, verifies the statistical significance of these *between-group* differences with a confidence level of 0.995 (Appendix table 2 for the results).

Conventional explanations focus on colonial policy differences: the British preferred to 'outsource' most of their education to private voluntary agencies, while the French opted for public schools financed by the colonial government. Anticlerical sentiments played a major role in post-revolutionary France and the Dreyfus affair (1898-99) re-enhanced the call for a strict separation between church and state in French territory (Subramanian, 1979). So when the federation of French West Africa was formally established in 1904 the colonial government became legally endowed with the responsibility for education. Such sentiments were absent in British imperial tradition. Hence, the French restricted the activities Christian missions, and non-Catholic denominations in particular, while the British welcomed them (Cowan et al., 1965; Collins, 1970; Brown, 2000; Lloyd et al., 2000).

Figure 2: Gross primary school enrolment rates in colonial Africa subdivided by metropolitan power, ca. 1950



Sources: see Appendix table 1.

Indeed, in the British Gold Coast only 8% of the primary school enrolled went to government schools at the eve of World War II. The other 92% went to mission schools of Anglican, Protestant, Catholic or Islamic denomination. Of this group circa two-thirds of the students attended schools liable to some financial aid of the colonial government and the other third went to 'non-aided schools', which relied exclusively on private school fees and missionary funds (Blue Book of the Gold Coast Colony and Protectorate, 1938). In neighboring Côte d'Ivoire, which was part of the French West African federation, 52% of the students attended government schools, 11% went to missionary schools and 37% went to the so-called *écoles coraniques* (Islamic schools). Although enrolment rates in French West Africa (ca. 3,6%) were just about two-fifths of British West Africa (ca. 9,0%), the average amount of government expenditure per student enrolled in primary education was much higher in the former: an estimated £2,32 as opposed to £0,92.[3] These spending patterns endorse the bigger involvement, yet smaller effectiveness of the French in supplying primary education.

[3] Territories of French West Africa include: Senegal, Ivory Coast, Guinea, Mali (French Sudan), Niger, Mauritania, Dahomey (Benin), Upper Volta (Burkina Faso); Colonies (including Protectorates) in British West Africa: The Gambia, Sierra Leone, Gold Coast (Ghana) and Nigeria. For the conversion of French Francs into British Pounds we constructed an education expenditure Purchasing Power Parity (PPP) based on accounts of teacher salaries. Using the formal exchange rate biases the comparison as the French Franc tended to be greatly undervalued vis à vis the British pound in the 1930s. We estimated the FFR/£ at 84 to 1. The sources for British West Africa: *Blue Book for the Colony of The Gambia 1938*, Government Printing Office; *Blue Book for the Gold Coast Colony* 1938, Accra; *Blue Book of Sierra Leone 1938,* Government Printing Office and *Blue Book*

It is has also been argued that the French neglected the development of primary education because they were more interested in training a confined indigenous elite to be employed as professional administrators (Debeauvais, 1964; Crowder, 1970). To achieve this goal government schools had to adopt the French curriculum and the language of instruction was French (Collins, 1970). Missionaries were also 'encouraged' to teach in French. The British, on the other hand, considered the emphasis on higher education as a potential threat to their supremacy, as it could fertilize the voice of anti-colonial intellectuals (Lugard, 1922). Lewis points out that missions had a natural preference for using the vernacular because they were involved in a global competition for new church members, and were not interested in the creation of overseas 'Frenchmen' (Lewis, 1970: p. 175). This problem did not occur in the British territories, because the British were promoting the use of the vernacular anyway (Cowan et al., 1965; Collins, 1970; Brown, 2000; Lloyd et al., 2000).

Yet, the idea that the French put more emphasis on higher education does not really square with the facts. In 1938 the ratio of secondary to primary students was 0,011 in French West Africa as compared to 0,016 in British West Africa (for sources see footnote 1). In other words, post-primary education was virtually negligible before 1940 in both areas and higher rates of educational spending by French colonial governments had little to do with the maintenance of an expensive system of higher education. We should also be cautious to conflate British policy with Protestant religious philosophy. In many places, but especially in East Africa, Protestant missions had already established the practice of vernacular teaching before the British effectively occupied the area (Oliver, 1962). As a distinguishing feature of Protestantism the ability to read the bible in 'pagan' language was one of the principle conflicts of the Reformation. As European missionaries depended on native African catechists for much of their evangelical work (see next section) the adoption of the vernacular was also more efficient. This does not mean that there was no demand for English-taught education. Mastering the metropolitan language was a precondition for climbing up in the hierarchy of the French as well as British colonial administrations. This was a major reason for local chiefs or village heads to send their children to English-taught schools (Berman, 1975; Windel, 2009).

In a recent study Woodberry and Callego (2010) have shown that current educational performances are significantly better in areas where Protestant and Catholic missions have been competing on equal terms. Competitive pressures led to higher activity of different denominations to win converts. This would explain much of the educational lead of British African countries, because the French, Belgians, Spanish and Portuguese had, to varying degrees, adopted measures to reduce competition from non-Catholic missionaries. This is a powerful argument to endorse the view that British institutions indeed produced better educational outcomes.

Woodberry and Callego do not put much weight on the impact of 'local conditions' other than as a set of 'control variables' in their regression analyses (2010: pp. 314-321). The role of Islam is an

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for the Colony and Protectorate of Nigeria 1938, Lagos. For French West Africa *Annuaire Statistique de l'Afrique Occidentale Francaise*, troisième volume 1936-1938, Paris 1939.

important example of a local African condition which they leave out of the equation. Christian missions attempting to penetrate into Muslim areas were, from time to time, confronted with serious resistance (Debeauvais, 1964; Daun, 2000). In the Islam oriented Northern provinces of British Nigeria, for instance, European missions sparsely took root, while there was rapid expansion in Southern Nigeria. Lugard even prohibited the establishment of Christian missions in the core Muslim areas, as he felt that they would destabilize a system of indirect rule via Muslim chiefs that was functioning quite well (Lugard, 1922: Chapter 12; Sutton, 1965: p. 64). The adverse impact on missionary expansion was even more pronounced in French West Africa, which was largely Islam dominated. In French West Africa Christian missions were much less active than in French territories without Islamic influence. In fact, the enrolment rates of Madagascar (13,6%) and French Cameroon (20,7%) were not only much higher than in French West Africa, but also notably higher than in British West Africa (Benavot and Riddle, 1988: pp. 206-7).

The bottom-line is that most studies explain the *between-group* variation in colonial enrolment rates (or present-day literacy rates) quite well, but shifting the perspective towards the large *within-group* inequality displayed in figure 2 we are left with empty hands. The remainder of the paper will thus focus on the differential impact of local conditions, while controlling for metropolitan identity.

3. Inequality in enrolment rates *within* British Africa, 1830-2000

Figure 2 and appendix table 1 show that in 1950 ross primary school enrolment rates *within* British Africa ranged from a minimum of 1% in British Somaliland to a maximum of 59% in Lesotho (Basutoland), with an average of 24,2%. In order to examine the historical evolution of formal schooling in British Africa we have constructed a new dataset of primary school enrolment rates for the period 1830-2000 (see appendix table 3). The enrolment data prior to 1950 were collected from annual colonial blue books, which provide detailed accounts of the number of children (and adults) enrolled in government and mission schools.

A lack of adequate population data constrains the computation of historical gross enrolment rates for sub-Saharan Africa. Colonial population census data are generally considered as underestimates of the total population for reasons we don't want to discuss at length here (Kuczynski, 1948; Kuczynski, 1949). Making sensible upward adjustments is complicated because we lack the necessary information. What we have done is to check the consistency of pre-war population census data with available postwar population estimates in order to filter 'implausible' rates of population growth (in many cases far too high) and replace these by more plausible assumed rates when extrapolating the population series backwards. This should offer an improvement of the study by Benavot and Riddle who have based themselves on the actual census data as reported by Mitchell (Benavot and Riddle, 1988; Mitchell, 2007).

We do follow Benavot and Riddle in estimating the share of the age group 5-14. The authors state that in less developed countries this share tends to fall in the range of 22 to 27% of the total population (Benavot and Riddle, 1988: p. 199). Given the lack of age distribution data for colonial Africa we have applied a 25% share in all cases. A comparison with the UNESCO school enrolment data for the benchmark year of 1950 provides a reliability check, as these were also based on the age group 5-14.[4] Appendix table 3 suggests that the fit between our historical series (1830-1950) and the existing UNESCO series (1950-2000) is quite acceptable, matching within a couple of percentage points for most countries. Possible explanations for the larger differences in the cases of Uganda, Botswana, Zambia and Zimbabwe are discussed in the notes below the table.

Taking the wide margins of error into account it seems fair to draw at least three conclusions. First, the data indicate that primary school enrolment rates increased exponentially after the consolidation of British rule in vast areas on the continent in the late 19th century. This is not surprising because it offered a degree of political and military protection which was hitherto unknown. Second, at that time enrolment rates already varied considerably. In some colonies such as Kenya and Nigeria enrolment rates did not surpass the level of 0,5% around 1900, while in Mauritius the primary school enrolment rate was already around 20%.[5] The colony of Sierra Leone even displayed enrolment rates between 60 and 80% during the second half of the nineteenth century![6] The differences in enrolment rates further increased during the next three to four decades. Computing a coefficient of variation of enrolment rates learns that the cross-colony variation rose rapidly between 1900 and 1929, remained high until 1970, and only slowly decreased thereafter. Third, there is a clear geographical division: educational expansion in British West Africa was far less impressive than in British East and Central Africa (i.e. Kenya, Uganda, Nyasaland, Northern and Southern Rhodesia).

Christian missions were almost exclusively responsible for these diverging educational trajectories. Table 1 shows the total number of students on the roll in mission schools and their estimated percentage share in total enrolment around 1900 and 1938. From the circa 1,05 million scholars that were added to the rolls between 1900 and 1938, ca. 1,01 million came via the missionary channel. This constituted more than 95% of the total rise in primary school enrolment. Mauritius was the only colony in which government schools possessed a substantial market share, around 40 to 50%. Despite the fact that British West Africa outnumbered the population of British East and Central Africa, more than three quarters of the enrolment increase occurred in the latter area (i.e. Uganda, Kenya, Tanzania, Nyasaland, the Rhodesia's and Bechuanaland).

[4] UNESCO switched to actual school age based enrolment rates in the 1960s (*Statistical Yearbook*, various issues).

[5] Note that this relates to the age group 5-14 and that school age (5-10 years) based gross enrolment rates were about 40% higher, so that in practice more than one in four children went to primary school.

[6] The 1900 figure of 38% is far below the standard level in the second half of the nineteenth century and was the immediate, albeit short-lived, result of the devastating Hut Tax War (1898-1900) (Kilson, 1966).

The term 'mission school' may raise the impression of a rather uniform and time-invariant institution, run by male European ordained pastors or priests in isolated stations across the African tropics. But this stereotype image is highly misleading. As missions expanded after the consolidation of metropolitan rule in the late 19th century, the lion's share of their services (religious ceremonies, education, medical care etc.) were performed by native African converts. In his fascinating account *The missionary factor in East Africa*, Oliver estimates that the number of European missionaries in East Africa probably never exceeded a total of 3.500 (Oliver, 1962: pp. 231-245). To illustrate what this number actually implied: in 1938 there were a reported total of 8.456 native teachers in primary schools in Uganda against 285 European teachers. This amounts to ca. 3% of total teachers. Such ratios were fairly common in British Africa. This indicates, however, that the *Africanization* of the mission was an absolute prerequisite for educational expansion on the scale that has actually been witnessed in Africa. The fact that missionary expansion was as much an African as a Western, European or white male undertaking has often been overlooked in the conventional explanations of African educational divergence.

Table 1: The share of mission schools in total enrolment in British Africa, ca. 1900 and 1938

	No. enrolled in mission schools		**Share in total primary enrolment (%)**	
	ca. 1900	**ca. 1938**	**ca. 1900**	**ca. 1938**
Gambia				
Sierra Leone	10.697*	20.372	99,6	92,8
Gold Coast	11.158	62.228	87,2	83,0
Nigeria, Southern	59.002*	266.342	91,1	97
Mauritius	9.635	24.607	50,6	61,6
Uganda	11.954*	267.837	100	98,9
Nyasaland	61.091*	206.202	100	99,9
Kenya	2.432	129.101	100	92,2
Tanganyika		66.753		85,6
N. Rhodesia	*2.400**	122.312	100	99,2
S. Rhodesia		ns		ns
Bechuanaland	2.236	14.239	100	98,4
Totals & weighted averages	**170.638**	**1.179.993**	**93,3**	**95,5**

Sources: Blue Books of the respective colonies. For Bechuanaland South African Yearbook
Notes: *Sierra Leone 1890, Southern Nigeria 1914, Uganda 1905, Nyasaland 1905. The figure for Northern and Southern Rhodesia in 1900 is a guesstimate referring to the combined territories of Rhodesia under the rule of the British South Africa Company. For Tanganyika (German East Africa until 1919) there is no information available around 1900. For Southern Rhodesia the 1938 statistics do not make a distinction between mission schools, government schools and other schools, such as Indian schools, but data for 1950 suggest that missionary education constituted between 95 and 99% of total enrolment.

4. Educational finance in British Africa, 1870-1950

The great transformation in African primary schooling in the first half of the twentieth century was also reflected by major changes in the structure of education finances. These were increasingly brought up by African church members and African tax payers, replacing the funds that initially flowed in from Europe with the first missionaries. We explore the topic of educational finance in some detail here to place the actual contribution of British colonial governments in perspective.

There existed three main sources of educational finance in British Africa. First, there was the colonial government budget, most of which was assigned at the central state level, although increasing parts of it were allocated by native administrations at the local level. Second, there were the missionary funds, most of which were initially collected in the homeland countries of the larger missionary societies (i.e. the UK, France, Italy, The Netherlands, Germany, Switzerland, Sweden and the United States), but increasingly depended on the contributions of African converts. The third source consisted of school fees which were paid by parents who sent their children to school or by communities or villages as a whole.

As our brief comparison of educational expenditure in French and British West Africa already indicated, the distribution of expenses among these three sources varied from place to place. But the extremes are met *within* British Africa. Table 2 presents colonial government educational expenditures per person enrolled between 1870 and 1950. The figures are presented in current and constant British Pounds of 1910 using a price-index of British public services from Feinstein (1972: T132). The data have been retrieved from the annual accounts of government revenue and expenditure as published in the colonial blue books and includes expenses on the education department (central administration), on government schools and the subsidies (often called 'grants-in-aid') to missionary schools.

A quick glance at the data suffices to appreciate the enormous differences in the financial support of colonial governments to education, throughout the period 1870-1950. Until the mid 1920s the colonial governments in East and Central British Africa hardly spent a single penny on education. In Nyasaland, for instance, the government started their financial support in 1913 with £1.000, which was raised to £2.000 in 1921 in the wake of the post-war inflation wave. Only in 1926, after the appearance of two authoritative reports on the state of education in British Africa by the Phelps-Stokes committee (Jones, 1922; Jones, 1925) and ensuing decrees from the colonial office in London to raise education budgets (Windel, 2009) did the Nyasaland government upscale its education budget to £21.500 in 1938. This was still less than two shillings per student per year and comparable to the amount the Gold Coast government already spent in the 1880s. In the Gold Coast the education budget was £3,99 per student in 1929, almost 40 times as much. But even the Gold Coast budget was not very stable: the drop in government revenue caused by the depression had sliced off more than 25% of the amount per student by 1938.

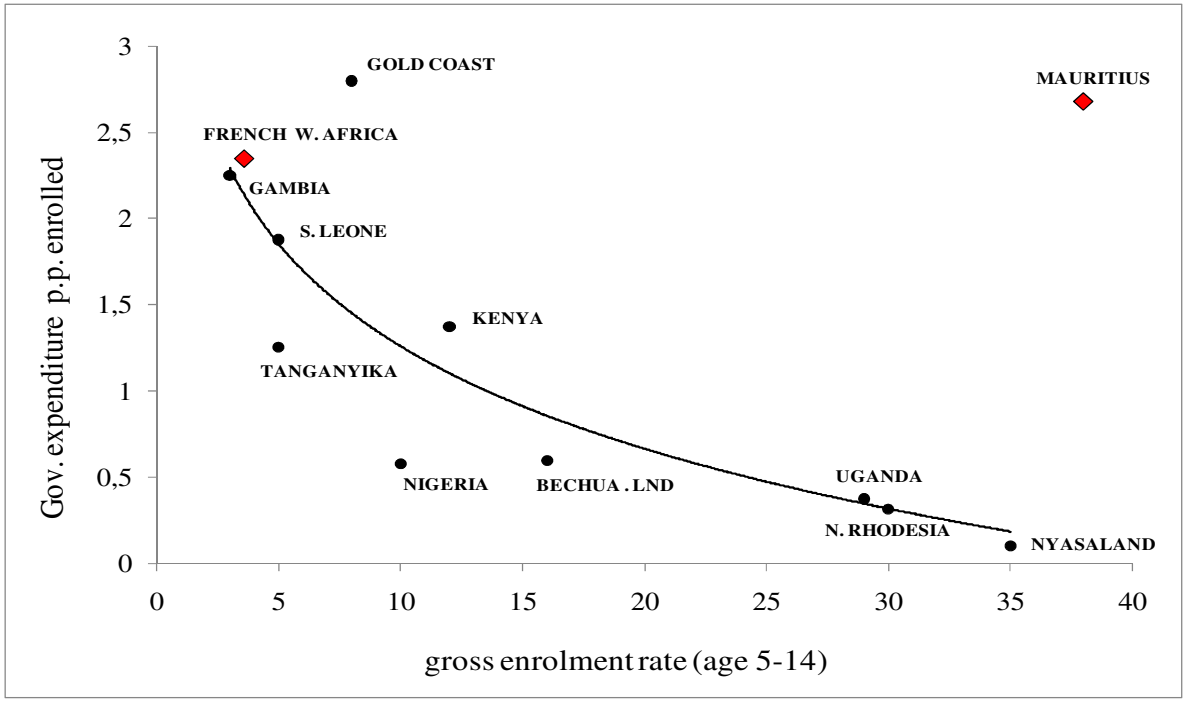
Table 2: Central government expenditure per person enrolled in primary education, in current £ and constant £ of 1910

	1870	1880	1890	1900	1910	1920	1929	1938	1950
Current £									
Sierra Leone	0.02	0.01	0.11	0.49	0.78	2.03	2.97	1.88	5.39
Gold Coast	0.00	0.11	0.13	0.51	0.90	1.34	3.99	2.80	
Nigeria				0.89	0.76	0.58	0.71	0.58	
Mauritius	2.50	2.10*	1.89	1.69	1.89	3.43	3.62	2.68	
Uganda				0.00	0.05	0.06	0.23	0.38	1.83
Nyasaland				0.00	0.00	0.01	0.10	0.10	
Kenya				0.00	0.80		1.83	1.38	4.16
Tanganyika								1.25	3.64
N. Rhodesia						0.10	0.15	0.31	1.62
European educ.						22.19	33.88	30.21	36.22
African educ.						0	0.06	0.27	0.82
Bechuanaland				0.29*	0.53*	0.44	0.60	0.50*	2.17
Constant 1910£									
Sierra Leone	0.02	0.01	0.12	0.51	0.78	0.98	1.60	0.99	1.45
Gold Coast	0.01	0.11	0.14	0.53	0.90	0.64	2.15	1.47	
Nigeria				0.92	0.76	0.28	0.38	0.30	
Mauritius	2.69	2.22	2.05	1.76	1.89	1.65	1.95	1.41	
Uganda				0.00	0.05	0.03	0.13	0.20	0.49
Nyasaland				0.00	0.00	0.00	0.05	0.06	
Kenya				0.00	0.80		0.98	0.73	1.12
Tanganyika								0.66	0.98
N. Rhodesia						0.05	0.08	0.17	0.44
European educ.						10.68	18.23	15.92	9.73
African educ.						0.00	0.03	0.14	0.22
Bechuanaland				0.30	0.53	0.21	0.32	0.26	0.58

Sources: See sources for countries included listed below Appendix table 4.

In terms of school enrolment rates the performance of Nyasaland and the Gold Coast was reverse: 35% as opposed to 8%. This inverse relationship between government spending per student and gross enrolment rates seems to represent a general pattern in British Africa. Figure 3 shows a scatter plot of gross enrolment rates and government expenditure per person enrolled in 1938, including British Africa and French West Africa. The graph shows a log-linear regression line yielding an R^2 of 0.63. Interestingly, the values for French West Africa fit into this picture quite well. There was only one outlier: Mauritius combined high levels of government spending with high enrolment rates. Did colonial governments invest more in education where missionary activities failed to spread, or was it the other way around, that missions deliberately selected areas where colonial governments were less interventionist? It seems wise not to jump to conclusions before delving a little further in the available sources on educational finance. In the blue books there are some scattered accounts of school expenses which allow us to further explore the cost structure of education in British colonial Africa.

Figure 3: Scatter plot of gross enrolment rates (age 5-14) versus government expenditure per person enrolled (current £), British and French West Africa, 1938



Sources: See bottom of Appendix table 4.
Notes: The regression line excludes French West Africa and Mauritius.

School expenses were mainly made up of teacher salaries, the construction and maintenance of school buildings and the expenses on education materials such as furniture, books, writing materials etcetera. Teacher salaries generally consumed between half to three quarters of the total budget and it is, therefore, important to consider the huge differences that existed in the remuneration of teachers. European teachers could command payments in the order of 50 to 100 times the salary or subsidy paid to a native teaching assistant or village school teacher. This is one of the reasons why the expansion of missionary education was unfeasible without the Africanization of teaching personnel. Relying on large numbers of Europeans would simply have been far too expensive.

But there were also important differences between Catholic and Protestant mission schools. As a result of the celibacy the Roman and Anglo-Catholic missionary societies were able to recruit a large group of young priests who would be willing to head an out-station in the tropics while sharing the poor material living conditions of their community members. Protestant missionaries, who would often bring their wife and children with them, adopted a completely different lifestyle requiring much higher salaries. As Oliver puts it,

"The European parish priest of the Universities mission, living beside his church in a house of mud and thatch without wood in the doorways or glass in the windows, often quite alone and without speaking English for weeks on end, represented indeed the very extreme of missionary assimilation to

the environment. At other Protestant stations missionaries lived in comfortable bungalows set in spacious gardens […] They travelled in motor-cars, albeit old ones. Their wives and families necessitated large domestic staffs and regular visits to Europe." (1962: p. 242)

That Catholic missions employed more Europeans was mainly a financial issue. For instance, of the larger mission societies active in Uganda in the 1920s, the Church Missionary Society (C.M.S., related to the Church of England) serviced a little over half of all primary school students (particularly in the ungraded village schools) with a European teaching staff of about 30 to 40. The Catholic missions servicing the other half, i.e. the White Fathers (French), the Mill Hill (British) and the Verona Fathers (Italian), had about 260 to 290 European teachers in the field. Hence, the ethnic and denominational composition of the teaching staff determined an important part of the cost structure of colonial education. In this respect it important to note that teachers in Islamic schools were forbidden to accept payments in return for teaching the Koran (Abu, 1975). Students would normally bring food for their teachers and work on their fields in compensation. Mission churches and schools depended heavily on community support as well, especially in the rural hinterlands (Oliver, 1962: pp. 52-53).

Regional wage differentials also played a role. Recent research by Frankema and van Waijenburg (2010) has revealed a considerable gap in nominal wages of unskilled urban workers between West Africa and Mauritius on the one hand and the East and Central African colonies on the other hand. Although we failed to obtain evidence on teacher salaries, it seems highly likely that divergent colonial economic developments impacted on the cost structure of education via the height of teacher salaries. From a regional perspective the costs of supplying education via native teachers must have been comparatively low in East and Central Africa.

Finally, the size of classes differed within and between colonies. In particular in the ungraded village schools (or 'bush schools') there was often only one teacher appointed to manage the entire school. In Southern Rhodesia in 1943 54% of all primary schools were run by just one teacher and another 34% by two teachers. In ungraded schools students of varying ages and levels were receiving education together from one single person. The number of students per teacher would basically depend on the size of the community. Hence, in Kenya in 1938 there were 15,1 students per teacher in the European schools as opposed to 38,6 in African schools and 42,7 in Asian schools. In Uganda in 1938 the average class size was 31,0, but the ungraded schools of protestant missions in Buganda, which were entirely run by native teachers, had a reported number of students per teacher of 65.

In view of all these factors the average costs of primary education per student will have been considerably lower in those areas where mission schools took the form of ungraded village schools. These were run at minimal costs, not only regarding the native teacher salaries, but also regarding the material conditions. A report from the sisters of a convent school in Uganda in 1905 says,

"We have not sufficient floor space and many of the classes are given outside. All writing, whether done with pencil or ink, is written on the ground with slates or books spread thereon and, often times, the wind blowing dust and hay over their work. The school building is of budongo with door and window frames only, and not one desk or seat of any description. Whatever school furnishings are used for teaching must be carried to and from the convent daily." (Uganda Blue Book 1905-6, p. 143).

Cost differences alone cannot account for the differences in financial support of colonial governments for education. At the eve of World War II the contribution of the Nyasaland government did probably not exceed 8% of total primary school expenses. In Uganda the contributions to the missionary societies accounted perhaps for 15 to 30% of their total reported costs. In the Gold Coast we found that circa two-thirds of total missionary education expenses were covered by grants-in-aid from the government, while another 30% was covered by school fees. Missionary funds only had to fill smaller financial gaps. In Mauritius the government paid more than 90% of total expenses, handing out as much money to the mission schools as to the fully funded government schools.

The limited share of government expenditure reflects the allocation decisions made by colonial administrations. It tells us that education in British Africa received higher priority since the mid 1920s, but not to such an extent that the tightening budgets of the 1930s left the education budgets untouched. And it tells us that there was absolutely no relationship between the expansion of missionary education and government's financial support for education, or it must have been a negative relationship. Yet, whether the money was coming from government funds, missionary funds or school fees mattered only to a certain extent. In the end native Africans were paying for their own education. Only the donations of European church members, the share of which is very hard to estimate, can be considered as a kind of 'development aid' *avant la lettre*, but the relative contribution must have declined as missionary activities expanded.

The best perspective on the allocation decisions of British colonial governments with respect to education may be obtained, however, by looking at the colonies with a substantial European settler community such as Kenya, Tanzania, Northern and Southern Rhodesia and, albeit to a smaller extent, Nyasaland and Bechuanaland. In these colonies the native population actually subsidized the expensive European schools via native tax schemes (Frankema, 2010; Frankema, 2011). Table 3 presents an overview of the differences in financial and teaching capacity between European and African schools. Although the data is rather scattered, the picture is clear: about 2,5% of the students in primary schools absorbed about one third (32,1%) of total educational expenses. This endorses our argument that the development of education in British Africa had very little to do with 'pro-active' colonial government policies: British governments did not purposefully constrain missionary activities and native educational initiatives as long as they were not perceived as a potential threat to political stability. Yet, actively increasing enrolment rates depended, by and large, on indigenous initiative, while Christian missions provided the required infrastructure.

Table 3: Government expenses and pupil/teacher ratios in European and African schools, ca. 1938

		Government expenses per student (current £)		Average no. of students per teacher	
	year	European	African	European	African
Kenya	1938	18,87	0,42	15,1	38,6
Northern Rhodesia	1938	30,21	0,27		
Southern Rhodesia	1936			21,0	46,3
Tanzania	1938	12,38	1,02		
Nyasaland	1938	20,99	0,22	11,2	
Bechuanaland	1938	34,35	0,98	11,6	58,9

Source: See bottom of Appendix table 4.

5. Why did missionary education spread so unequally across British Africa?

It should be clear by now that the work of white ordained missionaries was a necessary, but by no means sufficient condition for educational development in colonial Africa. It was the *Africanization* of the mission that determined the pace of missionary school expansion. But why did the African reception of missionary practices differ so much? This section provides some preliminary clues based on potentially instructive cases, which will be empirically tested in the next section.

The case of Sierra Leone is interesting because missions developed very successfully in the coastal colony of Sierra Leone during the late eighteenth and nineteenth century, but largely failed to 'conquer' the inland Protectorate areas. The colony (with the capital Freetown) was initially founded as a new home for freed African slaves from North American and Caribbean plantations. The British navy also used the settlement to release African slaves on board of captured ships from illegal traders on the West African coast. The black settler community was partly acquainted with Christianity because of its American roots, and otherwise highly receptive of missionary presence because of its historical and emotional ties with the West. By the 1840s over 9.000 children and adults went to Protestant, Anglican or Catholic mission schools, which constituted around one-fifth of the estimated population. The prestigious Fourah Bay College, founded in 1827, became the first western-style university in the region and gave Freetown the nickname 'Athens of West Africa' (Paracka, 2003).

The expansion of missionary activities further inland was a completely different experience, however. Various tribes living in the protectorate, like the Temne and Mende, did not share their sense of identity with the Creoles in Freetown. They were basically regarded as foreign intruders and their cooperation with the British colonial administration only increased tensions. The introduction of a native hut tax in the protectorate immediately led to a violent revolt (the so-called Hut Tax War 1898-1900), taking the lives of an estimated 1.000 soldiers, traders and missionaries, black and white

(Kilson, 1966). Missionaries were confronted with anti-Creole, anti-European, anti-Christian and anti-colonial sentiments in varying intensities. The presence of Arab Muslim traders in the region offered an alternative religious, political and economic orientation uniting these resentments. The suspicion against Christian missionary intentions appears for instance in the personal memories of Aiah Abu, whose father heavily opposed his attendance of the Evangelical United Brethren school in Kono,

"My father was a very devout Muslim. He actively opposed any European incursion and influence in our area […] His main argument was about the Virgin Mary. How could those Christians talk about her being a virgin, he asked, if she had a baby? […] He felt that if Europeans tried to fool people in the religious realm, they would carry this deceit over into their dealings with people…" (Abu, 1975: pp. 98-99).

Sierra Leone's exceptionally lethal disease environment also posed serious constraints to the work of European missionaries. This region, commonly known as the 'white man's grave', was notorious for the high incidence of tropical diseases such as malaria and yellow fever. Despite possible desires for martyrdom, this has probably not encouraged missionary settlement, although it should be added that the death of missionaries in the pre-quinine era never put a halt to their replacement.

The coastal areas of neighboring Liberia also hosted new settlements of manumitted Afro-American slaves (hence, 'Liberia'). Their relationship with the indigenous tribes varied from respectful to extremely hostile. One of the main controversies concerned the slave trade. Slave trading tribes in the region regularly attacked village settlements of American-Africans destroying their fields, church, school and dispersing their inhabitants. Other tribes in the coastal areas sought refuge with the 'white Africans' in fear of being kidnapped and sold to Spanish slave traders by enemy tribes (Temperley, 2000: pp. 77-80; Levitt, 2005). This contrast between opposition and support of foreign intrusion refers to a general point in the acceptance of European rule and the meddlesomeness of Christian missions in particular: the institution of slavery was a threat to the livelihood of some communities, while it formed the basis of economic prosperity of others (Lovejoy, 2000).

But the role of missions in African economic life was broader than anti-slavery campaigning. Especially in the early period the mission stations were an indispensible link in African-European trade. Missions would set up their own plantations and cultivation programs in order to finance (or reduce the costs) of their undertaking. The transmission of agricultural knowledge was also part of the ambition to improve the living standards of African converts. In some cases missionaries stood at the basis of the introduction of new commercial crops with spectacular consequences. The introduction of cocoa in the Gold Coast by the Basel mission (1854) eventually evolved into one of the biggest export booms in African history (Austin, 2005). The introduction of cotton in Uganda is another classic example (Victor Buxton, 1909). Hence, the reception of missionary activities could also be positively influenced via the response of native Africans to new opportunities for trade and cash crop cultivation.

Especially crops like cocoa, tobacco and cotton were adopted by (smallholder) peasants in various parts of colonial Africa (Boahen 1985). A strong peasant export economy never took root in Sierra Leone, however, despite rather favorable ecological conditions (Frankema, 2010).

In Uganda the situation was clearly different as missionary outposts, school enrolment rates and peasant exports (cotton) all expanded at impressive rates. These developments were not self-evident. Arab slave traders and Christian missions were both trying to expand their influence in the Buganda kingdom. The classical tale of Christian victory is told in two stages (Oliver, 1962; Low, 1971; Obdeijn, 1983). The first stage entails the bloody persecution of European missionaries in 1886 and their subsequent expulsion from the area. The second stage is the 'civil war' between Catholic and Protestant factions in 1892, after the Christian missionaries had regained the upper hand on the Arabs. Order was eventually restored after the intervention of the British East African Company supplying the Protestant faction with heavy military equipment such as snider riffles, muzzle-loaders and a maxim gun (Oliver, 1962: pp. 146-7).

British parliament hesitantly approved the proclamation of the Protectorate of Uganda in 1894, after lobbying by British missionaries, anti-slavery societies and other protagonists of imperial expansion. The British government did not believe it had a real choice, however, since a retreat from the region would mean the re-introduction of the slave trade. That would have destroyed the reputation of the imperial project in East Africa even more than spending money on fighting missionaries (Oliver, 1962). As soon as political order appeared to be secured, Catholic and Protestant missions started to expand their activities, now competing on a level playing field. What exactly determined the rapid reception of Christianity in Uganda is not so easy to grasp, but it seems sure that part of it rested on similar mechanisms that raised the attractiveness of Islam in Sierra Leone. Arab slave traders, the harbingers of Islam, were highly unpopular among considerable parts of the population and European-Christian political domination would keep the Arabs at arm's length.

Unlike Sierra Leone the British administration in Uganda inherited a politically centralized state (Obdeijn, 1983). Several studies have presented evidence of a positive relationship between central state institutions and long term economic performance. Bockstette et al. (2002) argue that there is a direct connection between the strength of pre-colonial and modern state institutions required for the supply of public goods such as infrastructural networks, education and health care. Gennaioli and Rainer (2007: pp. 188-192) add that centralized state institutions offered a better framework for raising the accountability of local chiefs. In their study the Buganda kingdom serves as a key example of central control of local chiefs, helping the British to establish an effective system of indirect rule. It is feasible that missions benefitted from a high degree of pre-colonial state centralization, if their activities would be appreciated.

Kenya offers a counter example. While Protestant and Catholic missionaries literally fought each other for a monopoly position in Uganda (which fits the Gallego and Woodberry story very well), they deliberately circumvented the Kenyan hinterlands, despite the easy access provided through the

coastal missionary stations. Especially the Masai were notorious for their hostility against foreign intruders and the main initial motivation for the British to bring the area under control was to safeguard the construction and operation of the Uganda railway. Contemporary observers believed that Kenya could never be politically and economically developed without the settlement of Europeans (Wolf, 1974: pp. 47-48). The failure of missions to establish a stronghold in the area were basically forecasting the difficulties that the British settlers were about to face.

Only in Nyasaland did missionary education spread even faster than in Uganda. Also in this case there was a direct link between British missionary exploration, initiated by the monumental David Livingstone, and the eventual establishment of British rule in the area. As the reputation of Livingstone grew it became increasingly difficult for the British government to remain on the sideline. The missionary constituency in Scotland was able to lobby successfully for British instead of Portuguese annexation of the Shire highlands (Oliver, 1962: p. 128). This suggests that the positive relationship between British rule and colonial educational development is not driven by one-way causality: tribes, kings and societies that proved amenable to the missionary message were also likely to be more amenable to political cooperation: these areas were relatively easy to appease and control.

Without taking specific local conditions into account it is hard to see why native Africans would ever have accepted the cultural arrogance of European missionaries. Traditional African customs such as the practice of polygamy or ancestor worship, conflicted diametrically with the 'civilization' envisioned by Christian missionaries. African culture was publicly convicted as barbarous and missionaries undertook all efforts to ban pagan rituals and heathen practices (Berman, 1975). The attractiveness of Christianity, or Islam for that matter, cannot be taken for granted unless it created a credible opportunity for political and economic alliances that could enhance the security of African communities. Obviously, the acquisition of the skills, knowledge and religious values which supported the white man's possession of power and prosperity were an integral part of such considerations.

6. A multivariate regression analysis

The discussion of educational development in British Africa has yielded several hypotheses which can be tested in a multivariate regression framework. To perform an ordinary least squares (OLS) regression we have to extend our geographical scope to the entire region of sub-Saharan Africa, raising the number of observations to an acceptable minimum of 42 countries. The independent variable is the primary school enrolment rate in the late colonial period (y), with samples for the years 1938 and 1950. We test the following hypotheses:

1) British rule has been conducive to higher primary school enrolment rates because it offered a comparatively liberal and secure political context for missionary work of all denominations.

2) In addition, European governments tended to decide in favor of annexation when the stakes of their missionary constituencies were higher. Since Anglo-Saxon missions of Anglican, Protestant and Catholic denomination dominated the field and Britain was the strongest military imperial power, the chances that 'receptive' areas would eventually come under British rule were comparatively large.

3) Population density had a positive impact on the spread of mission schools because of potential scale and scope advantages. This was only an advantage, however, if the population at large proved susceptible to the missionary message.

4) The incidence of tropical diseases had a negative impact on missionary expansion, because it raised the mortality rates of European missionaries and induced missionaries to avoid these regions.

5) Missionary activities had a larger chance of success in areas where Islam was less influential. Islam offered the major alternative religious-political orientation to Christianity in Africa.

6) Pre-colonial state centralization facilitated the spread of missionary activities once European control had been established, but may also have facilitated the organization of resistance against it.

7) Similarly, high levels of ethnic fractionalization may have spurred the spread of missionary activities as they signaled a context of potentially fierce political-religious competition and probably also a smaller basis for organizing concerted resistance against missionary infiltration.

8) The adoption of commercial crops such as cotton, cocoa and tobacco by native peasants has positively affected the reception of missionary work (and vice versa). That is, in so far the missionaries were regarded as transmitters of knowledge regarding the cultivation of these crops, as suppliers of seed material and/or as intermediaries in trade with Europe.

9) The expected impact of the prevalence of slave trading and/or indigenous slavery on the reception of missionary activities is ambiguous. It requires a sharp distinction between those groups of people who benefitted and those who resented the institution of slavery. In regions severely affected by the Atlantic slave trade European missionaries may have been perceived with greater suspicion than in areas affected by Arab slave traders.

The regression model is specified as follows,

$$y = \alpha + \beta_1 x_1' + \beta_2 x_2' + \beta_3 x_3' + \beta_4 x_4' \varepsilon$$

where y refers to the enrolment rate, α is a constant and ε is an error term. The vectors x_1, x_2, x_3 and x_4 represent variables related to, respectively, 1) the impact of metropolitan institutions, 2) the effect of local political conditions on the reception of missions, 3) the effect of economic conditions on the reception of missions and 4) other variables related to local demographic and geographic conditions. The *primary school enrolment rates* of 1938 are from this study (Appendix table 1 and 3), completed with data for other colonies from comparable sources, i.e. colonial statistical abstracts, using similar calculation methods. The enrolment rates of 1950 are from UNESCO (1964).

The explanatory variables of vector x_1 consist of dummy variables for the *identity of the metropolitan power*. Variables of vector x_2 consist of a dummy variable for pre-colonial *influence of Islam*, an index number for the extent of *pre-colonial state centralization* and an index number capturing the extent of *ethnic-linguistic fractionalization*. The economic variables of vector x_3 include a dummy variable for the occurrence of a rapid specialization in peasant cultivation of cotton, tobacco or cocoa in colony x prior to World War I and three separate measures of slave trade prevalence: a normalized measure of Atlantic slave exports, a normalized measure of Arab slave exports and a measure for the extent of indigenous slavery. Vector x_4 includes the *density of population* in 1938 and an index number reflecting the *risk of malaria* around 1966. Details of sources and variable definitions can be found in Appendix table 4. Table 4 presents the estimation results.

Table 4: Results of OLS regression on primary school enrolment rates in sub-Saharan Africa in 1938 and 1950

	Dependent variable: primary school enrolment rate											
	(1)		(2)		(3)		(4)		(5)		(6)	
	1938	1950	1938	1950	1938	1950	1938	1950	1938	1950	1938	1950
British rule	8.61***	9.52**			9.25***	11.18***	9.91***	11.72***	9.50***	11.56***	9.78***	11.52***
	3.16	*4.26*			*2.55*	*2.72*	*2.59*	*2.88*	*2.65*	*2.97*	*2.51*	*2.65*
French rule			-7.72**	-10.28**								
			3.22	*4.21*								
Portuguese rule	-5.04	-6.49	-11.99**	-14.78**	-11.59***	-17.31***	-10.68**	-16.06***	-10.81**	-16.10***	-11.38**	-17.17***
	5.10	*6.88*	*5.08*	*6.65*	*4.22*	*4.49*	*4.34*	*4.83*	*4.37*	*4.90*	*4.23*	*4.46*
Population density 1938 (ln)	3.66	3.37	3.17	2.38	3.73	3.91	3.97*	3.90	3.64	3.78	4.15*	4.18*
	2.97	*4.00*	*3.09*	*4.04*	*2.37*	*2.53*	*2.41*	*2.69*	*2.46*	*2.76*	*2.35*	*2.47*
Malaria incidence 1966	-14.86***	-14.44**	-16.58***	-16.18**	-13.90***	-14.4***	-11.87***	-9.38**	-10.19**	-8.74*	-15.78***	-15.63***
	4.78	*6.44*	*4.73*	*6.27*	*4.71*	*5.02*	*3.95*	*4.39*	*4.47*	*5.02*	*4.39*	*4.62*
Precolonial influence Islam					-11.18***	-19.73***	-11.08***	-18.81***	-10.43***	-18.56***	-11.97***	-20.22***
					2.56	*2.73*	*2.49*	*2.77*	*2.63*	*2.95*	*2.46*	*2.60*
Precolonial state central.					4.99	3.17			3.89	1.48		
					4.62	*4.91*			*4.76*	*5.34*		
Ethnic linguistic fraction.					9.99*	15.30***					9.31*	14.86***
					5.13	*5.46*					*5.10*	*5.38*
Adjusted R-squared	0.40	0.27	0.38	0.28	0.63	0.72	0.61	0.67	0.60	0.66	0.63	0.72
N	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*

Sources: see Appendix table 4.

Notes: Standard errors in rows below coefficients. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 4 (continued)

	(7)		(8)		(9)		(10)		(11)		(12)	
	1938	1950	1938	1950	1938	1950	1938	1950	1938	1950	1938	1950
British rule	8.30***	9.54***	8.63***	10.06***	8.48***	10.13***	8.57***	9.83***	8.46***	9.73***		
	2.73	*2.76*	*2.55*	*2.64*	*2.62*	*2.71*	*2.63*	*2.71*	*2.59*	*2.64*		
Portuguese rule	-11.97**	-19.45***	-11.56***	-17.41***	-11.27**	-17.54***	-11.63***	-17.65***	-12.08***	-18.46***		
	4.58	*4.63*	*4.13*	*4.28*	*4.27*	*4.43*	*4.22*	*4.35*	*4.26*	*4.34*		
Population density 1938 (ln)	4.15	4.26*	3.93*	3.91	4.05*	3.86	4.00	4.18*	3.98*	4.01*	4.10	3.84
	2.46	*2.49*	*2.29*	*2.38*	*2.35*	*2.44*	*2.39*	*2.46*	*2.32*	*2.36*	*2.90*	*3.38*
Malaria incidence 1966	-15.80***	-16.23***	-16.67***	-16.74***	-16.17***	-16.96***	-16.71***	-16.91***	-16.03***	-15.44***	-19.16***	-19.46***
	4.82	*4.87*	*4.32*	*4.47*	*4.60*	*4.78*	*4.39*	*4.54*	*4.48*	*4.57*	*5.42*	*6.32*
Precolonial influence Islam	-11.23***	-19.55***	-11.67***	-19.85***	-11.56***	-19.90***	-11.84***	-20.52***	-11.06***	-18.60***	-7.56**	-14.25***
	2.98	*3.01*	*2.41*	*2.50*	*2.47*	*2.56*	*2.75*	*2.84*	*2.64*	*2.70*	*2.90*	*3.38*
Ethnic linguistic fraction.	10.61*	15.18**	9.68*	15.33***	10.56*	14.93**	9.77*	15.69***	9.95*	15.88***	8.74	13.82*
	5.81	*5.88*	*4.98*	*5.17*	*5.66*	*5.87*	*5.10*	*5.27*	*5.05*	*5.15*	*6.39*	*7.45*
Peasant cash crop adoption	4.06	4.29	4.16*	5.23*	4.33*	5.15*	4.09	4.95*	4.04	4.99*	6.94**	8.58**
	2.78	*2.80*	*2.51*	*2.62*	*2.60*	*2.71*	*2.62*	*2.70*	*2.56*	*2.61*	*3.13*	*3.64*
Atlantic slave exports	-6.06	14.56			-9.70	4.39						
	29.67	*29.97*			*28.05*	*29.11*						
Arab slave exports	4.48	19.35					3.31	12.99				
	25.83	*26.09*					*24.64*	*25.44*				
Indigenous slavery	-2.26	-5.50							-2.32	-4.73		
	4.09	*4.13*							*3.85*	*3.93*		
Adjusted R-squared	0.62	0.73	0.65	0.74	0.64	0.73	0.64	0.74	0.64	0.75	0.41	0.46
N	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*

Columns 1 and 2 show the results of our baseline regression including the effects of metropolitan identity, population density and malaria incidence, but excluding all the variables related to local political and economic conditions. British rule appears to have been a significantly positive factor, raising enrolment rates in the late colonial era with circa 8 to 11 percentage points. French rule lowered the enrolment rate with comparable magnitudes. Given the high mutual correlation between the dummies for British and French rule (see correlation matrix in Appendix table 5), it is impossible to include both variables together (standard errors take the same value). Portuguese rule appears to have lowered the enrolment rate even more, between 10 and 19 percentage points. Note that the coefficients in the 1950 sample are substantially higher in all specifications, pointing out that, unlike the French and the British, the Portuguese did not boost their investments in colonial education immediately after World War II (**ref.**).

The explanatory power of the baseline model is not very impressive, with adjusted R-squares between 0.27 and 0.40. A substantial part is also due to the inclusion of the population density and malaria variables. Both carry the expected sign and the negative effect of malaria incidence is highly significant and robust to various specifications. If we leave the population density and malaria variables out of the equation the adjusted R-squared drops to levels between 0.17 and 0.21.

The explanatory power of the model increases enormously when adding the dummy for pre-colonial Islamic influence. This variable is highly significant, highly robust and predicts a decline in enrolment rates fluctuating between 10 and 21%. It is again noteworthy that for the 1950 sample the coefficients point to a much stronger negative impact than for 1938. The measure of pre-colonial state centralization yields the expected positive sign, but is all together insignificant. The extent of ethnic heterogeneity does appear to be significantly positively related to late-colonial enrolment rates. This indeed suggests that missions were comparatively successful in areas with larger potential for internal (tribal) conflict and probably also a smaller basis for organizing concerted resistance against missionary infiltration. Although the fractionalization index is not as robust as the malaria or Islam variables, the suggested impact on enrolment rates is considerable: largely heterogeneous colonies such as Tanganyika (British after 1919), Belgian Congo and French Côte d'Ivoire are predicted a circa 13 percentage points advantage (0.87 * 15.0) relative to completely homogenous societies (with a fractionalization score of 0).

Column 6 shows that a model including all the significant variables of the vectors x_1, x_2 and x_4 does a pretty good job in explaining the distribution of enrolment rates among 42 sub-Saharan countries in 1938, and even better so in 1950, with an adjusted and unadjusted R^2 of respectively 0.72 and 0.76. Columns 7 to 11 then present impact of local economic conditions on the predictive value of the model. In general it appears that the imputed economic variables do not make much of a difference. The peasant cash crop adoption variable is consistently positive, as expected, and stays close to a significance level of 10%. The slavery variables appear wholly insignificant. Only the measure of indigenous slavery consistently yields the expected negative sign. This outcome does not

necessarily mean that there was no relationship between the different practices of slavery and slave trade and the reception of formal education. It may very well be the case that the aggregate level of our variables is insufficiently refined for a sound empirical test of this relationship.

Finally, column 12 shows the estimates of a model excluding the dummy variables for metropolitan identity. The explanatory power decreases with circa 20 percentage points, which underlines the conclusion that it mattered indeed whether areas were to be occupied by Britain, France, Portugal or another European power (Belgium, Spain or Germany). At the same time, however, the comparison of column 1 and 2 with column 12 reveals that a focus on local conditions before or during colonization, such as the incidence of malaria, the presence of Islam, the ethnic composition of the population or the receptiveness of peasants to commercial agriculture, explains a much larger part of the cross-colony variation in primary school enrolment rates than the different policies designed by different metropolitan powers.

7. Conclusion

That former British African countries, on average, still benefit from a comparatively benign colonial educational legacy seems indisputably supported by quantitative and qualitative evidence. The historical determinants of this advantage are subject to discussion, however. We have argued here that the varying role of metropolitan policies should not be overemphasized. Local conditions have played a much bigger role than hitherto acknowledged.

Imagine the counterfactual scenario that the British would have colonized what have actually been the French ruled territories, and vice versa: would we then still feel the urge to explain the 'developmental' features of British rule in sub-Saharan Africa? We doubt it. Indeed, British policies were more liberal with respect to missionary activities, but the limits to freedom were clear: not in the Muslim areas where their presence could possibly undermine the system of indirect rule by loyal local chiefs. Indeed, the French favored a separation between state and church in education and this seems to explain their reluctance to missionary fieldwork in French West Africa. But enrolment rates in Madagascar and French Cameroun were boosted by rapidly expanding mission schools. Enrolment rates in these French areas substantially exceeded enrolment rates in British West Africa.

When we try to frame a set of variables capturing the impact of metropolitan policy characteristics and local African conditions into an OLS regression analysis, we gain some mileage in explaining both, between- and within-group variation in primary school enrolment rates in the late colonial period. Yet, the role of local conditions, such as the pre-colonial presence of Muslim traders, the incidence of malaria, population density, ethno-linguistic fractionalization and peasant cash crop adoption explain a much larger portion of the variation than the metropolitan identity dummies. The results of our regression analysis (and any other regression analysis for that matter) are obviously

constrained, because the very nature of quantitative data and the even more limited historical data do not allow us to link all of our hypotheses to fully representative and quantifiable variables. Nevertheless, the regressions results are supported by an important historical narrative.

The spread of primary education depended crucially on missionary activities, and these, in turn, depended crucially on the willingness of native Africans to do more than just passively accept the infiltration of foreign missionaries in their homeland. It is one thing to accept Christianity, but a wholly different thing to actively engage in spreading the word. The *Africanization* of the mission, without which mission schools would have remained a marginal phenomenon, was driven by the receptiveness of native Africans to the Christian message and, not unimportant, to the people who introduced the message.

It's a historical fact that the comparative openness of local Africans to missionary activity was, in broad lines, known to the metropolitan powers when they divided the African continent in separate spheres of influence during the 1880s. Although this is hard to prove statistically, there is much anecdotal support for the idea that the British were more likely to decide in favor of formal occupation when Protestant or Anglican missionaries, such as David Livingstone of the London Missionary Society, had built up their stakes in certain areas and not in others. Protestant missions also actively lobbied for the establishment of British, instead of continental European, rule in the more 'fertile' areas. We did not push this idea very far in this study, so it remains a bit speculative, but it turns the supposed causality between British rule and colonial educational outcomes around.

Appendix table 1: Unadjusted primary school enrolment rates (age 5-14) in Africa subdivided by the identity of the metropolitan ruler, ca. 1950

British Africa	PSE	French Africa	PSE	Portuguese Africa	PSE	Other	PSE
Botswana (Bechuanaland)	22	Benin (Dahomey)	2	Angola	1	Equatorial Guinea (Spanish)	20
Gambia	5	Burkina Faso (Haute Volta)	2	Guinea Bissau	5	Congo, D.R. (Belgian)	33
Ghana (Gold Coast)	19	Cameroon (French Cameroun)	25	Mozambique	12	Rwanda-Burundi (Belgian)	11
Kenya	26	Central Afr. Rep. (Oubanghi-Chari)	7	São Tomé and Príncipe	16	Ethiopia & Eritrea (independent)	2
Malawi (Nyasaland)	39	Chad	1			Liberia (independent)	11
Mauritius	51	Congo, Rep. (Moyen-Congo)	24			Namibia (South West Africa)	22
Nigeria	16	Côte d'Ivoire	6				
Sierra Leone	7	Gabon	21				
Sudan	6	Guinea	3				
Tanzania (Tanganyikia)	10	Madagascar	22				
Uganda	18	Mali (Sudan Français)	3				
Zambia (Northern Rhodesia)	35	Mauritania	1				
Zimbabwe (Southern Rhodesia)	44	Niger	1				
Lesotho (Basutoland)	59	Senegal	7				
Somalia (British Somaliland)	1	Togo	17				
Swaziland	29	Djibouti (Côte Française des Somalis)	9				
British Africa average	**24,2**	**French Africa average**	**9,4**	**Portuguese Africa average**	**8,5**	**Average of others**	**16,5**

Source: UNESCO, *Statistical Yearbook* 1964, table 9

Appendix table 2: Analysis of Variation (ANOVA) of primary school enrolment rates in 16 French and 16 British African colonies, 1950

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1.741	1	1.741	9,02	0,0054	4,17
Within Groups	5.790	30	193			
Total	7.531	31				

Source: see Appendix table 1.

Appendix table 3: Unadjusted and gross primary school enrolment rates in British Africa, 1830-2000

		age group	1830	1850	1870	1880	1890	1900	1910	1920	1929	1938	1950	1950	1960	1970	1980	1990	2000
Gambia	Col. & Prot.	(5-14)										3	5	5					
Gambia		(8-13)												8	12	25	53	64	
Sierra Leone	Colony	(5-14)	22	60	77	57	64	38											
Sierra Leone	Col. & Prot.	(5-14)						2	3	3	3	5	7	7					
Sierra Leone		(5-11)												10	23	34	52	50	
Gold Coast	Colony	(5-14)			2	3	5												
Gold Coast	Col. & Prot.	(5-14)					3	3	6	8	7	8	18	19	38				
Ghana		(6-11)												32	63	62	79	75	
Nigeria	Col. & South Pr.	(5-14)					0	0	3*										
Nigeria	All areas	(5-14)							1*	2	6	8	13	16					
Nigeria		(6-12)												23	36	44	109	91	
Mauritius	Colony	(5-14)	3	6*	10	14*	17	20	22	27	32	38	48	51					
Mauritius		(5-10)												85	98	108	108	109	
Uganda	Protectorate	(5-14)						2*	3	10	26	27	23	18					
Uganda		(6-12)												30	49	61	50	74	
Nyasaland	Protectorate	(5-14)						9*	21	25	25	35	40	39					
Malawi		(5-12)												49	41	40	63	68	
Kenya	Col. & Prot.	(5-14)						0*	0	1*	8	12	24	26					
Kenya		(5-11)												37	47	64	115		
Tanganyika	Territory	(5-14)										5	10	10					
Tanzania		(7-13)												14	25	33	93	70	
Rhodesia	BSAC territory	(5-14)						1	4										
N. Rhodesia	Protectorate	(5-14)								19*	28	23	28*	35					
Zambia		(7-13)												50	48	87	90	99	
S. Rhodesia	Dominion	(5-14)							4	14	23	21	37	44					
Zimbabwe		(7-13)												63	60	70	85	116	
Bechuanaland	Protectorate	(5-14)						4*	4	7	10	16	17	22					
Botswana		(6-12)												31	42	65	92	117	

Sources: Sources used to construct the decadal estimates up to 1950 are listed below Appendix table 4. The post 1950 series are taken from UNESCO, *Statistical Yearbook* 1964 (table 9); *Statistical Yearbook* 1979-80 (table 3.2); UNESCO, *Statistical Yearbook* 1990 (table 3.2) and UNESCO, *Statistical Yearbook* 1999 (table II.8).

Notes: * Nigeria 1914, Mauritius 1860 and 1883, Uganda 1905 and 1945, Nyasaland 1903, Kenya 1902, Northern Rhodesia 1924 and 1948, Bechuanaland 1905. The presence of Islamic schools in the Gold Coast and Sierra Leone were not included in the reports and therefore the estimates of these two countries should be taken as lower bound estimates. Possible explanations for the larger gaps between our data and the UNESCO data: for Uganda the positive gap is probably caused by UNESCO excluding the rapidly diminishing but still substantial number of ungraded village schools. For Zambia, Zimbabwe and Bechuanaland the negative gap is probably caused by different assumptions for estimating total population, as we made strong upward adjustments of early population census data in view of long run demographic trends.

Appendix table 4: Sources and definitions of variables employed in the regression analysis

Independent variables	
Primary school enrolment rate 1938	New data computed for this paper. Part of the data presented in appendix table 2. Detailed list of sources below this table.
Primary school enrolment rate 1950	Unadjusted school enrolment rates. age group 5-14 (UNESCO. *Statistical Yearbook* 1964. Table 9)
Explanatory variables	
British rule	Dummy variable set at 1 if Britain was the colonial power during most of the period 1900-1960
French rule	Dummy variable set at 1 if France was the colonial power during most of the period 1900-1960
Portuguese rule	Dummy variable set at 1 if Portugal was the colonial power during most of the period 1900-1960
Population density 1938 (ln)	Natural logarithm of population density in 1938. Surface and population data taken from colonial statistical abstracts (see below). Population data for 1938 were checked and if necessary adjusted on the basis of extrapolated population series from Maddison (2009).
Malaria incidence 1966	Index number reflecting the prevalence of malaria in 1966, computed as the product of the faction of land area prone to malaria and the fraction of falciparum malaria cases. Data taken from Gallup et al. (1999).
Precolonial influence Islam	Dummy variable set at 1 if area was frequented by Arab or Muslim traders. Information obtained from historical accounts in Curtin et al. (1990).
Precolonial state central.	Index number reflecting the extent of pre-colonial political centralization, computed as the share of the Non-European population living under centralized state institutions. For Mauritius and São Tomé, both uninhabited before colonization, we imputed the highest possible value (1) as they have always been under central rule. Data from Gennaioli and Rainer (2007).
Ethnic linguistic fraction.	Average of five different indices reflecting the extent of ethnic linguistic fractionalization taken from Easterly and Levine (1997).
Peasant cash crop adoption	Dummy variable set at 1 if native peasants adopted and further developed the cultivation techniques of cotton. tobacco or cocoa prior to World War I. Based on time-series of crop production before World War I from Mitchell (2007).
Atlantic slave exports	Total number of slaves exported to the America's normalized by the surface of the area according to the formula ln (exports / area) from Nunn (2008).
Arab slave exports	Total number of slaves exported to the Red Sea, Indian Ocean and Trans-Saharan areas normalized by the surface of the area using the formula ln (exports / area) from Nunn (2008).

Indigenous slavery	Fraction of the population in present-day borders that was acquainted with indigenous slavery in the pre-colonial and early colonial times. Data taken from Bolt and Bezemer (2009).

Sources used for constructing the decadal series of primary school enrolment rates up to 1950 and for the 1938 estimates of enrolment rates in non-British colonies. Please note that many of the titles of annual statistical reports underwent some minor changes over the years, these will only be mentioned if these may raise confusion about the exact sources we consulted. Population data also taken from these sources and if deemed necessary corrected with the time series from Maddison, *Historical Statistics*: http://www.ggdc.net/maddison/ (version of March 2009).

British Africa

Basutoland: *Official Yearbook of the Union and of Basutoland, Bechuanaland Protectorate and Swaziland* (1938 & 1952-53).
Bechuanaland: *Blue Book of the Bechuanaland Protectorate* (1904-05, 1912-13, 1920-21 & 1928-29); *Official Yearbook of the Union and of Basutoland, Bechuanaland Protectorate and Swaziland* (1938 & 1952-53).
Gambia: *Blue Book for the Colony of The Gambia* (1938).
Gold Coast: *Blue Book for the Gold Coast Colony* (1870, 1881, 1891, 1901, 1912, 1920, 1928-29 & 1938); *Gold Coast Digest of Statistics* (1954/55 & 1955/56).
Kenya: *Blue Book of the British East Africa Protectorate* (1903, 1906-07, 1910-11 & 1915-16); changed into *Blue Book for the Colony and Protectorate of Kenya* (1926, 1929, 1938); *Colony and Protectorate of Kenya Statistical Abstract* (1958).
Mauritius: *Blue Book for the Colony of Mauritius* (1830, 1850, 1870, 1883, 1890, 1900, 1910, 1920, 1929 & 1938); *Colony of Mauritius Yearbook of Statistics* (1959).
Nigeria: *Blue Book for the Colony and Protectorate of Nigeria* (1914, 1920, 1929 & 1938); *Federation of Nigeria Annual Abstract of Statistics* (1961).
Northern Rhodesia: *Blue Book of Northern Rhodesia* (1924, 1929, 1938 &1948); *Official Year Book of the Colony of Southern Rhodesia* (1930).
Nyasaland: *Blue Book of Nyasaland Protectorate* (1905-06, 1910-11, 1920, 1929 & 1938). B.R. Mitchell (2007) *International Historical Statistics. Africa, Asia and Oceania 1750-2005*, 5th edition, Table I 1.
Sierra Leone: *Blue Book of Sierra Leone* (1830, 1870, 1880, 1890, 1900, 1910, 1920, 1929 & 1938); *Länderberichte Afrikanische Entwicklungsländer: Elfenbeinküste, Obervolta, Sierra Leone*, Volume 5 (1962).
(British) Somaliland: *Blue Book of the Somaliland Protectorate* (1910, 1925, 1938).
Southern Rhodesia: *Official Year Book of the Colony of Southern Rhodesia* (1930, 1938 & 1952).
Sudan: B.R. Mitchell (2007) *International Historical Statistics. Africa, Asia and Oceania 1750-2005*, 5th edition, Table I 1.
Swaziland: *Official Yearbook of the Union and of Basutoland, Bechuanaland Protectorate and Swaziland* (1938).
Tanganyika: *Blue Book of the Tanganyika Territory* (1921, 1929, & 1938); *The East African Quarterly Economic and Statistical Bulletin* (1956 & 1961).
Uganda: *Blue Book of the Uganda Protectorate* (1905-06, 1910-11, 1920, 1929 &1938); Uganda Protectorate Statistical Abstract (1956).

French Africa

French West Africa (Côte d'Ivoire, Dahomey, Guinea, Mali (Soudan Français), Mauritania, Niger, Senegal, Upper Volta and French Togo): *Annuaire Statistique de l'Afrique Occidentale Française et du Territoire du Togo place sous le mandate de la France*, Volume 3 (1936-1937-1938) and Volume 5 (1950-1954); *Annuaire Statistique de l'Union Française,* Volume 1 (1949-1954).
French Equatorial Africa (Chad, Gabon, Moyen-Congo, Oubangi-Chari (CAR)): *Annuaire Statistique de l'Afrique Equatoriale Française*, Volume 1 (1936-1950); *Annuaire Statistique de l'Union Française,* Volume 1 (1949-1954).
French Cameroon, Madagascar and French Somaliland (Djibouti): *Annuaire Statistique de l'Union Française Outre-Mer,* Volume 1 (1939-1946), Chapter D (Enseignement); *Annuaire Statistique de l'Union Française,* Volume 1 (1949-1954).

Portuguese Africa

Angola, Guinea Bissau, Mozambique and São Tomé & Príncipe: *Anuário Estatístico do Ultramar 1950-51.*

Others

Equatorial Guinea (Spanish), Congo (Belgian), Rwanda-Burundi (Belgian), Ethiopia, including Eritrea (independent), Liberia (independent) and Namibia (South West Africa): B.R. Mitchell (2007) *International Historical Statistics. Africa, Asia and Oceania 1750-2005*, 5th edition, Table I 1; A. Benavot and P. Riddle (1988). "The expansion of primary education, 1870-1940: trends and issues" *Sociology of Education* 61(3): 191-210.

Appendix table 5: Correlation matrix (pairwise) corresponding with OLS regression in table 4

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Primary school enrolment 1938	1.00													
(2) Primary school enrolment 1950	0.91	1.00												
(3) British rule	0.51	0.45	1.00											
(4) French rule	-0.36	-0.36	-0.62	1.00										
(5) Portuguese rule	-0.16	-0.17	-0.25	-0.25	1.00									
(6) Population density 1938 (ln)	0.34	0.27	0.20	-0.32	0.13	1.00								
(7) Malaria incidence 1966	-0.52	-0.42	-0.22	0.17	-0.09	-0.31	1.00							
(8) Precolonial influence Islam	-0.38	-0.52	0.16	0.16	-0.34	-0.04	0.17	1.00						
(9) Precolonial state centralization	0.51	0.45	0.23	-0.34	0.14	0.32	-0.56	-0.33	1.00					
(10) Ethnic linguistic fractionalization	-0.20	-0.13	-0.08	0.11	-0.04	-0.18	0.53	0.24	-0.41	1.00				
(11) Peasant cash crop adoption	0.28	0.28	0.26	-0.28	-0.03	0.09	0.02	-0.03	0.18	-0.03	1.00			
(12) Atlantic slave exports	-0.31	-0.24	-0.19	0.27	0.13	-0.06	0.52	0.17	-0.33	0.60	0.11	1.00		
(13) Arab slave exports	-0.13	-0.18	0.21	-0.09	-0.13	-0.16	0.11	0.45	0.12	0.03	0.19	-0.03	1.00	
(14) Indigenous slavery	-0.35	-0.40	-0.06	0.19	-0.31	-0.12	0.38	0.48	-0.13	0.32	-0.09	0.33	0.27	1.00

Sources: See Appendix table 4.

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