Borders that Divide: Education and Religion in Ghana and Togo since Colonial Times*

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Abstract

When European powers partitioned Africa, individuals of otherwise homogeneous communities were divided and found themselves randomly assigned to one coloniser. This provides for a natural experiment: applying a border discontinuity analysis to Ghana and Togo, we test what impact coloniser's policies really made. Using a new data set of men recruited to the Ghana colonial army 1908-1955, we find literacy and religious beliefs to diverge between British and French mandated part of Togoland as early as in the 1920s. We attribute this to the different policies towards missionary schools. The British administration pursued a "grant-in-aid" policy of missionary schools, whereas the French restricted missionary activities. The divergence is only visible in the Southern part. In the North, as well as at the border between Ghana and Burkina Faso (former French Upper Volta), educational and evangelization efforts were weak on both sides and hence, did not produce any marked differences. Using contemporary survey data we find that border effects originated at colonial times still persist today.

Keywords: Economic History, Africa, Colonization, Education.
JEL classification codes: O12, R12, P52

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1 Motivation

When African countries gained independence British colonies had significantly higher enrolment rates than French colonies (Benavot and Riddle, 1988; Brown, 2000; Grier, 1999). A significant disparity still exists today. In 2000, former British colonies enrolled 70% of their school-age population in primary schools whereas former French colonies achieved a rate of 55% only (Garnier and Schafer, 2006). Additionally, former British colonies prompted a larger number of pupils to complete schooling with fewer repeated years (Mingat and Suchaut, 2000). Many scholars argued that the persistent difference in education is a legacy of the colonial past whereby countries inherited and more or less followed the very distinct education models that their colonizers implanted (Bolt and Bezemer, 2009; Garnier and Schafer, 2006; Gifford and Weiskel, 1971; Grier, 1999; Cogneau, 2003).[1]

However, attributing education outcomes to the identity of colonizers may be grossly misleading. Education is the outcome of supply and demand for schooling. The supply of schooling is essentially determined by the state, even if actual provision was outsourced to private actors such as missionaries. The demand for

[1]The British versus French legacy was also emphasized with respect to financial development (La Porta et al, 1998) and GDP per capita (Bertocchi and Canova, 2002).

schooling, however, is the result of individuals' cost-benefit analysis, the outcome of which is influenced by opportunity costs and returns to education.[2] And Britain picked territories that had intrinsically better conditions in this respect.[3] Selective annexation occurred because the two colonizing powers adopted markedly different approaches to colonization (Wesseling, 1996).[4] British policy makers were reluctant to acquire poverty-stricken colonies that would become a financial burden; though Britain eventually engaged in the competition for 'spheres of influence' and colonies in Africa, the British approach remained primarily commercial; acquisitions were often driven by private companies. In the British case, the flag followed the trade. The French case was the opposite: the initiative to establish an empire reaching from Algeria, to Senegal and the Congo came from the state. It was achieved through military conquest, in the hope that trade would follow. Thus, the British tended to acquire territories with a high potential for trade and commerce, whereas France ended up with a disproportionate share of 'light land', more Islamized and poorer areas.[5] With trade and a more diversified economy, education meant the opportunity to obtain better paid, white-collar jobs (Foster, 1965). Hence, returns to education increased and demand for it expanded more in territories that the British colonized. Moreover, colonial administrations, both British and French, were anxious that Christian missionaries could provoke hostility in Muslim societies and therefore restricted their activities. This put a supply constraint on missionary schooling (Bening, 1990; Skinner, 2010). However, Islam did not penetrate the tropical rainforest and much of the coastal South, which

[2]One can add direct costs such as school fees, which are a policy variable as well.

[3]Recently, Frankema (2011) questioned the colonizer's role on similar grounds. He pointed to the wide variation of educational outcomes within the colonial empires in Africa that cannot be explained by the colonizer's identity alone. Using a set of controls in a cross-country framework such as missionary activities can render British/French colonizer dummies to become insignificant.

[4]See Iyer (2010) on India. Acemoglu et al. (2001) found colonizer dummies to become insignificant after settler mortality is taken into account, pointing to a selection effect as well.

[5]Lord Salisbury, British Prime Minister at the turn of the century, used the phrase 'light land' in a debate in the House of Lords to defend the Anglo-French convention of 1890, in which France had been allocated much bigger tracts of territory in West Africa (Roberts, 1999: 530).

happened to be colonized by Britain.

Existing studies of the educational (and economic) disparity in Africa analyzed the macro level. Cross-country regressions are not suited to establish causation, for the reasons given in Durlauf et al. (2005).[6] For instance, we are not aware of any contribution that was able to model "the potential for trade and commerce" or to disentangle it from British colonization, given the small sample of African countries colonized. Note furthermore that idiosyncratic differences between territories as those discussed above have nothing to do with educational models or institutions 'created by' and specific to one colonizer. One can indeed observe a spatial pattern within countries: education tends to decrease from the coastal (and more urbanized) areas northwards. Thus, it can be plausibly claimed that geography or Islam extension may be much more important than differences in colonial policies.

Border discontinuity is a methodology that can tackle endogeneity allowing the drawing of causal inferences. While the choice of colony was not random, the exact location of the border was. Colonizers drew borders arbitrarily, without accurate knowledge of the terrain, cutting through homogeneous geographic, cultural and ethnic entities (Hargreaves, 1985; Englebert et al., 2002; Cogneau et al., 2010). Thus, the drawing of borders provides a situation of a natural experiment, where, by historical accident, individuals with otherwise identical background found themselves randomly divided into two groups: one group that was subjected to French policies and one group that was ruled by Britain.

In this paper, we use this natural experiment to identify the effect of colonizer's policies. We analyze border discontinuities between British administered Gold Coast and neighboring French Togo focusing on three outcomes: religion, literacy and nutritional status. The case of Togoland is particularly interesting as it was first colonized by a third power, Germany (1884-1914), and after defeat

[6]In cross-country regressions the British advantage generally persists after controlling for percentage of Muslims, trade openness and income. See also Frankema (2011).

in WWI split into a French and British administered part. The change in the colonizer as well as in the border facilitates identification. Using a new and unique data set of African recruits to the Ghana colonial army, we will be able to observe border effects before the 'start of the experiment' putting the assumption that comparison and treatment group was indeed identical to a test. This is important as recent research contested the idea that colonial rule 'changed everything', emphasizing instead deeper roots that existed before (Herbst, 2000; Gennaioli and Rainer, 2007; Nunn, 2008). Moreover, we follow the groups 'during the experiment', observing when border effects appeared, or disappeared. Hence, we avoid the compression of history (Austin, 2008). Knowledge about the timing helps to narrow down the possible set of policies that caused the different trajectories.

The paper is structured as follows. Section 2 provides historical background, especially on missionary action and educational policies under colonial rule. Section 3 presents the data, and section 4 sets the econometric methodology. Section 5 presents and discusses the results. Section 6 concludes

2 Background

2.1 Colonization and Borders

European presence in West Africa dates back to the 16th century. Long limited to coastal trading posts and the immediate area surrounding the forts, it was only in the second half of the 19th century that European powers began to extend their control to the interior. The choice of colonies was not random, but was guided by geopolitical considerations and commercial interest. The exact location of the border, however, was - up to some distance - largely random. As Salisbury, British prime minister at that time, famously remarked European policy makers 'engaged in drawing lines upon maps where no white man's foot has ever trod (...) giving away mountains and rivers and lakes to each other, only hindered by the

small impediment that [they] (...) never knew exactly where the mountains and rivers and lakes were' (Salisbury, 1890). Even the concept of territorial states was new - pre-colonial African states based their power on ruling people, not territory (Hargreaves, 1985; Herbst, 2000). Thus, knowledge of the territories and peoples was limited and local circumstances were generally disregarded in the partitioning process.[7] As a consequence, borders cut across economically and socially homogeneous communities, which then became subject to different colonizers and their distinct policies. This forms the basis of our natural experiment.

Togoland came into being in 1884 when Germany declared a protectorate over the coastal zone.[8] Germany also claimed the hinterland and it took a series of negotiations and agreements until all borders were fixed in 1901 (Brownlie, 1979). The Gold Coast-Togoland border, for the most part, was formed of rivers and watersheds (rivers Volta and Daka), though with no regard to local conditions. Ethnic groups split by the frontier include Dagomba, Akposso and Konkomba in the North and Ewe in the South.

The case of Togoland provides an excellent opportunity to study the impact of the colonizer as not only the border, but also the colonizer changed. Within three weeks after the outbreak of WWI British and French forces conquered German Togoland. During 1914-19 occupation British and French authorities administered their zones on a provisional basis. In 1919, the status of Togoland was settled in the Treaty of Versailles: German Togoland was split, 60/40 in favor of France, and the two Togolands were (de jure) put under a League of Nations Mandate. The Milner-Simon agreement of 1919 set the new borders (Figure 1). Tribal or geographic considerations were not paramount.[9] Ethnic groups divided by the

[7]There were, however, instances where African rulers actively shaped the border, see Touval (1966) and Griffiths (1986).

[8]This section draws heavily on the excellent work of Nugent (2002).

[9]Though the Boundary Commission was allowed to make modifications where practical, the final demarcation in 1929 followed the 1919 agreement with the exception of one village (Kuma-Bala) that would have been split otherwise. The treaty also allowed members of border communities to settle across the border. Nugent (2002), however, does not report such changes of residence to have happened. We therefore rule out this source of endogeneity.

new frontier include the Moba, Anufo, Konkomba, Adele, Akposso and Ewe (from north to south). Despite of this, the two mandated parts of Togo were by no means equal. British Togoland did not include the capital Lomé; existing roads were not connected to Gold Coast colony but were directed eastwards to French Togoland. Moreover, the 308 kilometers of railroad built during German rule happened to be in the French part. Surely, one must not overrate the persistence of such economic differences: In the 1930s, roads were eventually built integrating British Togoland into the Gold Coast colony and the railroad did not turn out to be the superior transport infrastructure in the long-run anyway.

[Insert Figure 1]

2.2 Missionaries

Missionary activities ran parallel to European penetration. Early efforts were confined to the coast reaching only a tiny number of Africans (Foster, 1965). From 1850 on, evangelizing movements gained momentum in Western countries, and more and more mission stations were established. Several factors influenced their location including population density, a favorable health environment, good communication and transport conditions, slavery, the absence of Islam, and the community's stance on polygamy (Debrunner, 1967, Johnson, 1967). One may also add pre-existing trade contacts with Europeans and a certain level of development that created the demand for education that came along with missionaries.[10] Normally, the endogeneity of the missions' location would raise serious identification problems. In our study, however, we can rule out geography and customs as contaminating factors, as we can positively assume that conditions were fairly similar on either side of the border.

Mission societies did usually not stop at the border. The Swiss Basel Mission, for example, was active in both British Gold Coast and German Togoland.

[10] We are not aware of any study testing the determinants of the missionaries' choice of location.

The German Bremen Mission exclusively targeted the Ewe ethnic group, on both sides of the Togo-Ghana border (Altena, 2003). Colonizers nevertheless had a profound influence on missionary activities. Gallego and Woodberry (2010) argued that competition among different denominations prompted larger efforts in the scramble for souls. Moreover, Nunn (2010) found Protestant missions more efficient than Catholic ones in conversion. Policies differed in this respect. French colonial authorities held a basic anticlerical position (Debrunner, 1965, Mumford and Orde-Browne, 1937); they generally favored Catholics and French over non-French Protestants. German authorities strongly insisted on separate spheres of influence for missions of different denominations (Debrunner, 1967). The British administration, in contrast, largely pursued an open-door policy (Smith, 1966). All colonizing powers, however, restricted missionary activities in Muslim areas.[11]

Available figures indicate different trajectories of Christianization (Gold Coast, 1931; Gouvernement Français, various years). In 1925, 254,890 or ca. 9% of the population were reported to be Christians in Ghana, whereas only 41,610 Christians, ca. 5% of the population, were reported in French Togoland.[12] After independence, mission societies lost ground: Churches developed into 'African' churches, which were 'self-supporting, self-governing and self-propagating' (Welbourn, 1971). In 1995, the percentage of Christians among the population was 64% and 43% in Ghana and Togo respectively. Nunn (2010) showed for a set of 17 African countries that members of ethnic groups, which were in the proximity and therefore exposed to Christian missions in the past, are more likely to self-declare as Christian today.

[11] The German authorities, for example, did not allow Christian missions in Northern Togo until 1910 (Debrunner, 1967). The British likewise limited missionary activities in Ghana's Northern Territories allowing only the White Father's Mission (Thomas, 1974). Their first mission was established in Navrongo in 1906, but the number of followers remained small; their few mission schools in the Northern Territories can be seen in figure 3.

[12] These are numbers reported by the mission societies and may be unreliable. The proportion of Protestants was relatively stable between 1920 and 1955, representing about 65% and 20% in Ghana and Togo respectively.

2.3 Education

A vast literature argued that colonizers chose very distinct educational policies (e.g. see Garnier and Schafer, 2006, Gifford and Weiskel, 1971, White, 1996).

The British were strongly interested in containing the costs of their colonies and found in mission societies a helpful institution to provide education cheaply. While the missionaries' primary concern was to save the souls of African pagans, providing education was a most powerful way to attract people and to get the message across (Berman, 1974, Foster, 1965).[13] The British government helped financing mission schools through grants-in-aid that were made conditional on reaching certain standards in building, management, staff, teaching and performance in school tests (Gifford and Weiskel, 1971, Welbourn, 1971). A number of schools did not meet those requirements and did not receive grants (unassisted schools).[14] The system was much decentralized giving missions considerable freedom to administer their schools, to religious teaching, but also to adjust teaching contents to local conditions. At the primary level, the medium of instruction was the local vernacular, with English as a subject. Educationists tend to view the use of the vernacular as learning-facilitating.

The approach of the German colonial administration in Togo was very similar to the British system: a heavy reliance on mission schools, subsidized by the government (Lange, 1998). Teaching was in the vernacular. Responding to demand, English was taught as a subject; only at the later period did the government make grants contingent on German lessons (Lawrance, 2000).

The French educational model, in contrast, was very different. The French followed a policy of assimilation. For turning Africans into Frenchmen, education played a key role. Education was free. All schools were required to have a government permission, to employ government-certified teachers, follow a government

[13]The same is true for other activities such as health care (Good, 1991).

[14]The government closed down 'bush schools', which sprung up in the Gold Coast in the 1920s, and were staffed by African teachers without any type of formal qualification (Williams, 1964).

curriculum and to use only French as the language of instruction, from the primary level on (White, 1996). Following the 1905 law on the separation between the State and the Churches, these regulations limited the activities of mission schools, and the state inevitably became the main provider of education. In Togo, it is in 1930 that the French administration decided to strictly enforce the rules; in compensation, the government would pay for two thirds of the private teachers' wages (provided they had the required skills). The only derogation was for "catechism" schools, which were limited to teaching basic rudiments of reading, writing, numeration, hygiene and "morality" in vernacular languages (Gbikpi-Benissan, 2011: pp.44-49). More than two thirds of mission schools closed down because they did not comply; as we shall see, the public sector only partly compensated this fall.

Characteristics of the educational systems are highlighted in Table 1. The missionary contribution to schooling was considerably larger in the Gold Coast. Only at the end of the colonial period and after independence did the missionary impact decrease when the Ghanaian government increased her control on schools (Anim, 1966). Patterns in public spending were similar in Ghana and Togo; education expenditures as a percentage of total government spending were low in the pre-WWII period, but increased steadily, to 11% and 16% in 1955 respectively.[15] Notably different, however, was public spending per school child, which in Ghana was more than twice than that in Togo, partly because Ghana's education expenditures included more of secondary education, which is generally more expensive than primary education, but mostly because teacher salaries were higher. This implies that one should not rule out an impact on literacy from quality of schooling (if costs are correlated with quality). Within the Gold Coast educational system, the costs of primary schooling differed significantly by school type. In 1938-9, one year at a government school costed £7.5 per school child, assisted mission schools operated at about half the costs, whereas unassisted schools had the lowest expen-

[15]For comparison, in the 1970s public spending on education was slightly below 20% in both countries, and in 1995 (1998) the governments of Ghana (Togo) spent 21% (24%) for education (World Bank, 2011).

ditures with about £0.9 per school child. Note that grant-in-aids did not cover the full costs of (assisted) mission schools. Finally, until 1951 school fees were charged in Ghana, whereas in Togo education was free. Overall, the figures indicate that, contrary to the stylized facts about colonial educational systems, costs of providing education were actually higher in the British colony. The Gold Coast was richer and better able to raise revenues by taxing cocoa exports.[16] Despite of this, the government kept education expenditures low by using mission schools, which operated under lower costs and even spent their own mission funds.

[Insert Table 1 about here]

Using government sources we can reconstruct school enrolment rates in the aggregate (Figure 2). The figures need to be interpreted with care. Estimates of the school age population are crude approximations. In Ghana, unassisted schools were not required to report their student intake until 1945 and therefore did not do so systematically. Nevertheless, a few conclusions, relevant for our study, are safe to draw: Enrolment rates were generally low before 1940s, probably less than 20%. Before WWI, Ghana's enrolment rates were roughly on par with German Togoland; during the interwar period enrolment rates in Ghana exceeded the ones in French Togoland. Ghana's education programs started during WWII while Togo took off one decade later. Finally, World Bank figures suggest that Togo overtook Ghana in the 1970s, i.e. when the youngest cohorts that we analyze in this paper were of school age.

[Insert Figure 2]

[16] Compare the similar education budget shares and the higher absolute education spending. Maddison (2001) reported a GDP per capita of $739 and $1,122 for Ghana in 1913 and 1950 respectively, compared to $574 for Togo in 1950.

From 1911 until 1977, Ghana was the world's leading producer of cocoa, making up between 60% and 80% of Ghanaian exports. Revenues were generated by an export tax and later monopsonistic marketing boards paying farmers considerably less than the world market price.

The graph masks pronounced spatial differences.[17] Figure 3 shows the location of primary schools in 1938. In Ghana, schools were concentrated in the south, and only a handful of schools, mostly ran by the government, were located in the north. Togo showed little difference in this respect.[18] Overall, it could well be argued that the geography of schooling was completely independent of the colonizer's identity.

[Insert Figure 3]

There are reasons to expect educational systems from colonial times to have a lasting impact on schooling outcomes. It is usually less costly to add a class, or a teacher, where a school is already built. Building new schools and training teachers also takes time. Hence, even if countries remove the political induced supply constraint, they will not easily catch up with countries that had an early lead on. Demand factors can also reinforce educational outcomes: more educated parents more often send their children to school and more schooling in the neighborhood creates more demand too.

3 Data

3.1 Colonial army recruits data

For the colonial period we use a new and unique data source: attestation papers of men recruited to the Gold Coast Regiment (GCR), the British colonial army in Ghana. The data was collected from military personnel records held by the General Headquarters of the Ghana Armed Forces in Accra, Ghana. The army data

[17] Enrolment rates were also much higher in urban areas (Foster, 1965). Furthermore, marked differences between genders existed. In Ghana the ratio of boys to girls in 1900, 1930 and 1960, for example, was 4.8, 3.2 and 2.0 respectively (Gold Coast, 1901b, 1931b, 1963b). Corresponding figures for Togoland in 1930 and 1955 were 7.6 and 3.4 respectively (Gouvernement Français, 1931, 1955). For a summary of the development of the gender disparity in sub-Saharan Africa, see Garnier and Schafer (2006).

[18] This spatial pattern of a coast/inland gradient can be observed in all of West Africa.

represents the best available 'survey style' records of the colonial time providing a wealth of information on the recruit's background such as age, place of birth, ethnicity, and previous occupation.[19]

We measure literacy by the ability to sign one's name. Every recruit had to take an oath of allegiance and sign a declaration which legally subjected him to military rules and regulations. Here we find recruits' signatures, x marks or thumbnails. Signature literacy is widely used by historians (Rachal, 1987); it measures the outcome of schooling which, in our context of possibly wide differences in quality of schooling, is a good property (Wagner, 1990). The level of signature literacy usually falls below reading skills and above writing skills but runs closely parallel (Rachal, 1987). The army measured the recruit's body height as part of a routine medical examination screening the health status of recruits and we use this as indicator of nutritional status (Moradi, 2009, Steckel, 2008). Finally, the recruits' religion informs us about the missionary impact and the channel from proselytization to literacy.

We retrieved the geographic coordinates of recruits' birth places by matching place names from the GEONet Names Server (National Geospatial-Intelligence Agency, 2007).[20] We identified 77% of the places of the ethnic groups who predominantly settle in Togo. Much of the attrition is due to alternate spellings, which is a regular feature in African geography, duplicate place names that prevent identifying the location, stating place names in local languages and misspellings. British officers also did not follow French and German spellings of place names, which made it particularly difficult to identify small places in the GEONet database.[21] Hence, there is a somewhat higher attrition of foreign rural-born recruits. Assuming less access to schooling, missionary activities and health in rural areas, this selection effect would upward bias our estimates of religion, education and height

[19] A complete manual can be found at $http://www.sussex.ac.uk/Users/am401/data/manual\_GCR.pdf$

[20] The database is the official repository of foreign place name decisions approved by the U.S. Board on Geographic Names.

[21] GEONet provides alternative place names including British and German spellings of places in Togo, but those variants are not available for small and unimportant settlements.

in German and French Togoland (and work against the tested hypothesis).

The GCR data set consists of a complete sample of recruits enlisted between 1908 and 1955. We under sampled 1939-45 enlistment period as more than 60,000 men served in the GCR during WWII. From the original sample of 24,984 recruits enlisted between 1908 and 1955, 22,410 only have year of birth reported. We select recruits who were born between 1890 and 1930, as sample sizes are to small for years before 1890 and after 1930, especially from peripheral regions; this again withdraws 2,826 observations. Then, over a total of 19,584 recruits, the place of birth could be retrieved for 15,193, of whom 11,940 were born in either Togo or Ghana. The left-hand panel of figure 4 shows the geographic location of the recruits' birth places.

[Insert Figure 4]

3.2 Colonial school data

To more fully investigate school supply, particularly the exposure to government and mission schools, we collected information on school location in the years 1902, 1925 and 1938. Education reports and statistical yearbooks recorded the number of schools by locality; their geographic coordinates were retrieved from the GEONet data base (Kolonialamt, 1903; Gold Coast, 1926b, 1939b; Gouvernement Français, 1925, 1938). The sources are always clear on the location of government schools, but information on mission schools are less detailed and partly incomplete. For the Gold Coast, we only have information on mission schools that were on the assisted list or withdrawn from the list the same year. Hence, we only have a sub-sample of mission schools omitting approximately an equal number of non-assisted mission schools, which presumably were of low quality. Besides, a few mission schools had to be located either at mission stations (Bremen mission in German Togoland, and Ewe Presbyterian Church in Gold Coast) or at the district main town (Catholic and Evangelic mission in French Togo): see table 5 footnote. In total, we have 127

government and 1,039 mission schools in 400 localities.[22]

3.3 Present-day survey data

For the post-independence period we use the nationally representative household members samples and males samples from the Demographic and Health Surveys (DHS) for the year 1998.[23] Togo did not implement a more recent survey than 1998 and although both countries implemented a DHS in 1988, geographical coordinates of primary sample units (survey clusters) are not available in the Ghana survey. The 1998 surveys provide comparable figures on educational level, (self-declared) ability to read, and religion. Sample designs are regionally stratified and two-stage. The right-hand panel of figure 4 shows the geographic location of survey clusters.

4 Methods

4.1 Colonial period divergence

The Ghana-Togo border presents the peculiarity of having been determined long after the beginning of the colonial period, when German Togoland was divided into two parts after World War I. This makes a quasi-ideal natural experiment, where two groups of people under German rule until 1914 were then assigned to either British or French rule. We implement two difference-in-difference strategies, in levels and in trends, on the cohorts of soldiers born in border areas.

4.1.1 Difference-in-difference in levels

For drawing a causal inference about the impact of British and French policies in education, we can first think of a simple difference-in-difference strategy: compare the British Togoland area with the French Togo area before and after the partition.

[22] Data and manual can be downloaded at $http://www.sussex.ac.uk/Users/am401/data.html$

[23] Available at $http://www.measuredhs.com$

As primary schooling only concerns children after 6 years of age, 1914 can be taken as the cutoff birth year: military recruits born after 1914 were only exposed to either British or French educational policies after 1920, whereas recruits born before 1914 could have started their school curriculum under German rule.

We restrict the comparison to recruits born close enough to the borders. We include all recruits from the French or British part whose place of birth lies less than 50 km and 100 km from the border respectively. This dissymmetrical bandwidth is guided by sample size issues, especially to preserve a large enough number of recruits born in 1914 Gold Coast. Furthermore, as the Southern border of German Togoland follows a straight latitudinal line at 6°20' (6.3 degrees of latitude), we also exclude from our main estimation sample any recruit born below this line. We define two sub-samples: born in South, i.e. between 6.3 and less than 9.3 degrees of latitude; born in North, between 9.3 and less than 11.3. This latter breakdown is in particular meant to take into account the already documented North-South divide in evangelization efforts.

In fact, the British Togoland strip is narrow enough so that nearly 90% of our recruits were born no further than 50 km from the eastern border; likewise, out of the 439 recruits born above the 6.3 parallel in the French Togo area, the 50 km bandwidth restriction selects nearly three quarters of them. Finally, the Gold Coast recruits play a very minor role, as they mainly contribute to the identification of some control variables' coefficients like latitude. They are however useful for interpretation.

We estimate a standard difference-in-difference (DiD) regression:

$$Y = \sum_{j=0}^{2} \delta_j^{pre} B_j.1\{T \leq T_0\} + \sum_{j=0}^{2} \delta_j^{post} B_j.1\{T \geq T_0\} + X.\theta + u \qquad (1)$$

where Y is the outcome under study (literacy, religion, height). j indexes the areas of birth: 0 =1914 Gold Coast, 1 =British Togoland and 2 =French Togo. B is a dummy for that area of birth, T is the year of birth, and $T_0 = 1914$. X can be a

set of control variables. With those notations, the parameter of interest (double difference) is $(\delta_2^{post} - \delta_2^{pre}) - (\delta_1^{post} - \delta_1^{pre})$.

With these DiD estimates, birth cohort size is an important issue. Figure 5 shows large variations across time in the number of soldiers recruited. In particular the two World Wars generated peaks (right-hand graphs), and unsurprisingly the WWII peak is more pronounced in the two British territories. Many recruits of WWII are born in the 1910s, the average age at entry being 24 year-old (left-hand graphs). As a result early years (1914-1924) represent a disproportionate share of the post-1914 group compared to late years (post-1925). To correct for this we reweigh recruits according to year of birth, assuming a 2% demographic growth rate in each of the six areas defined by the German Togoland partition and the North-South disaggregation.[24] Finally, our simplest DiD estimates are computed without controls, on each of the two sub-samples North and South separately. Robustness checks will test the influence of the demographic reweighing, introduce geographical controls (latitude and altitude, interacted with the pre-post treatment dummies), and further tighten the comparison by introducing the distance to the British Togoland / French Togo border.[25]

[Insert Figure 5 about here]

4.1.2 Difference-in-difference in trends

As usual with DiD estimates, causal inference strongly relies on a common trend assumption, i.e. that pre-post evolutions of recruits from the British Togoland area make a valid counterfactual for the recruits from the French Togo area. The

[24] Hence, if $s = 0, 1$ indexes the North-South divide, the birth year cohort T in area (j, s) has a weight proportional to $N_{j,s} 1.02^{(T-1890)}$, where $N_{j,s}$ is the size of the 1890 cohort in area (j, s).

[25] In order to estimate a full-fledge locally linear regression discontinuity design, distance to the border is interacted with all the variables of the base model: the area dummies B, the pre-post treatment dummies and their mutual interactions. That way, the modified $(\delta_2^{post} - \delta_2^{pre}) - (\delta_1^{post} - \delta_1^{pre})$ estimate stands for the double difference "at the border", i.e. at distance to the border equal to zero. See also next section and equation (3) for a simple presentation of a locally linear border regression discontinuity estimator.

equality of pre-1914 levels ($\delta_1^{pre} = \delta_2^{pre}$) already provides a test for the similarity of long-term pre-trends. However, our data allow us to go further. Instead of looking at *levels*, we test for a differential break in the *trends* of outcomes at the cutoff birth year 1914. We call this alternative model by the acronym DiD-T, and estimate the following linear probability regression:

$$Y = \sum_{j=0}^{2} \alpha_j B_j + \sum_{j=0}^{2} \beta_j^{pre} B_j.(T - T_0).1\{T \leq T_0\} + \sum_{j=0}^{2} \beta_j^{post} B_j.(T - T_0)1\{T \geq T_0\} + v \tag{2}$$

where, as above j indexes the area of birth and B is a dummy for it; T is the year of birth, and $T_0 = 1914$ is the kink-point year chosen for the trend break tests. Errors v are clustered by areas j interacted with birth year T, that is at the level of the treatment variables. We also reweigh the data as described above, however with less consequences as year of birth is now an active variable in the model.[26]

Ideally we wish to find first $\alpha_1 = \alpha_2$, i.e. that the two groups born in German Togoland do not differ in level in $T_0 = 1914$. Second, $\beta_1^{pre} = \beta_2^{pre}$, indicating that the same two groups were located on the same trend under German rule. Third, $\beta_1^{post} = \beta_0^{post}$, as British Togoland merged with Gold Coast should also exhibit the same trend, being exposed to the same policy treatment, although transitory catching-up dynamics could also be involved. We provide statistical tests for these three assumptions (and check that they indeed hold for all our estimates). Conversely, the statistical significance of the double difference in trends $(\beta_2^{post} - \beta_2^{pre}) - (\beta_1^{post} - \beta_1^{pre})$ will formally identify a break due to differential policies. Finally, the post-1914 difference in trends $(\beta_2^{post} - \beta_1^{post})$ will be our parameter of interest, as it is directly comparable to the double difference in levels from the first estimator when starting points (1914) are close (i.e. when $\alpha_1 = \alpha_2$ holds).

[26] When introducing geographical controls (latitude and altitude dummies), we interact them with the spline function in the year of birth. Last, we again compute a border regression discontinuity estimate, by interacting the distance to the eastern border with both the area dummies B and the spline function in the year of birth, i.e. with all the variables in equation (2). That way, the β parameters we obtain estimate differences in trends at the border cutoff point (zero distance) and at the cutoff year ($T = T_0 = 1914$).

4.1.3 Selective recruitment bias

For both types of estimates (DiD and DiD-T), the main threat of bias comes from the variation of GCR recruitment across time and space, more specifically differential evolutions of the selectivity of recruitment from each of the three areas. These evolutions could stem from recruitment policy, or, as GCR recruitment was voluntary, from differential self-selection of applicants linked to the outside options they have in the French vs. British labor markets.

We first argue that those markets were rather integrated during colonial times. The economy of the Gold Coast depended on the inflow of labor migrants and cross-border movement of labor was unrestricted (Cordell and Gregory, 1982). Cocoa farms and mines in Ghana's forest region attracted large numbers of unskilled workers from Ghana's North and French West Africa, in particular Burkina Faso (Rouch, 1957); Togolanders from both sides of the border migrated to the more dynamic areas in the West (Ward, 1950).

The GCR as an employer did not discriminate against non-British Africans: roughly 30% of servicemen were born outside of Ghana. Language was not a job requirement. English and Hausa were the linguae francae - languages not even spoken by British Gold Coasters (Killingray, 1982). Furthermore, due to the status of a League of Nations mandate, Togolese men were exempted from military service on the French side. Despite of this, the army did not take everyone. Physical fitness was a requirement. British officers also believed to find men of exceptional soldierly qualities in certain ethnic groups (the so-called 'martial races') and could have preferred them as long as enough men put themselves forward.

Overall, our sample of recruits is not a random draw or representative of the male population.[27] For our purpose, however, selection effects are less important than one might initially think, thanks to our econometric strategy. First, as the border divided ethnic groups, any preference for a certain ethnic group applies to their members on both sides of the border; one such 'martial race', for exam-

[27] See Moradi (2008) for a detailled description of selection effects in the GCR.

ple, was seen in the Konkomba who were separated by the border. Second, any time invariant difference in selection across borders will be canceled out by double differences in levels or in trends.

Still, the changing composition of the GCR sample over time remains a concern. We indeed find that among recruits from the Togoland border area, the average share of literate or skilled individuals exhibits large shifts after 1938 or after 1946. At the same time, less recruits were coming from the French Togo side during WWII, while more Ewe recruits from the southeast were recruited from both sides after WWII. As a first strategy to control for variations in recruitment, we include a set of dummies for the year of entry into the GCR as an additional control in the estimations of equations (1) and (2). This way we account for the fact that the GCR could have recruited more or less literate individuals during some periods, whatever their geographical origin.

This strategy, however, does not rule out time-varying differential selective recruitment according to geographic origin. Men of higher socioeconomic background found military service and wages not attractive compared to other employment opportunities. We believe that this general reluctance applied to each area of origin. However, during WWII individuals with skilled occupations could have been coerced into the GCR more successfully within the Gold Coast territory than outside of it. Besides, improved job offers in post-war French Togo could have induced skilled individuals to stay in the country rather than to apply to the GCR abroad. In order to deal with these possibilities, our second strategy consists in dropping recruits having declared a skilled occupation, while still controlling for date of entry. This way we only compare recruits who entered the GCR the same year and who were originally working as farmers or in another unskilled/semiskilled occupation. We acknowledge that this strategy is not ideal, as it relies on the uncertain assumption of a constant (across time and space) correlation between literacy and skilled occupations. Therefore, these unskilled-restricted estimates should be better seen as robustness checks than as unambiguous improvements.

4.2 Present-day border discontinuities

In order to maximize comparability with colonial data estimates, we apply the same sample selection rules to present-day survey data. At the Ghana/Togo border, we apply the same dissymmetrical bandwidth: on the Togo side, only individuals dwelling no further than 50 km from the border; on the Ghana side, only individuals dwelling no further than 100 km from the same border.[28] We additionally drop localities located below the 6.3 degrees of latitude line, in particular the capital city Lomé.

We first test for the significance of difference in means across borders. Then, following the methodology for regression discontinuity designs set by Hahn, Todd and Van Der Klauw (2001) and Lee and Lemieux (2008), we identify border discontinuities using locally linear regressions:

$$Y = \gamma B + \alpha_0 + \beta_0.D + [\beta_1 - \beta_0].B.D + X\theta + \epsilon \tag{3}$$

for Y is the outcome of interest, $B = 0, 1$, is here the border side (or country) of residence, and D is the distance to the border, positively signed for the border side $B = 1$ and negatively signed for $B = 0$, so that: $B = 1\{D \geq 0\}$. X is a set of geographical controls (latitude and altitude). Errors ϵ are clustered by survey PSUs.[29]

For border discontinuities to reflect the causal impact of national policies (even locally), it is required that border localities are not sorted by "types" between the two areas or countries. The randomness of distance to the border stems from the historical hazards of boundaries alignment during the colonial period, that

[28] As a robustness check, we tighten this bandwidth and divide both minimum distances by 2, i.e. keep only the [-50km; +25 km] interval.

[29] Alternatively to this locally linear regression, we also use a cubic polynomial in distance that accounts for a smooth variation of outcome across the border:

$$Y = \gamma' B + a_0 + a_1 D + a_2 D^2 + a_3 D^3 + X\theta' + \epsilon' \tag{4}$$

we argued above. We test for discontinuities in predetermined geographical and anthropological variables like altitude, latitude and Ewe ethnic group at the Togo border. We find no discontinuities of that kind.

Another important condition is that people do not "manipulate" their distance to the border through migration. It is typically an issue for embodied outcomes that we study here, like human capital. International migration is obviously the worst case. This kind of bias should have little weight, as post-independence migrations flows are very limited between Ghana and Togo. However, even internal migration flows are a source of bias, because one country capital city can be more attractive than others. As surveys do not collect the precise place of birth, there is little that can be done to correct for migrations in our border discontinuity estimates. Still, as recommended by Lee and Lemieux (2008), we can test for the continuity of population density at the cutoff point (distance to border equal to zero). We regress the relative sample weights of 5 kilometers range bins on a quartic of distance to the border, and find no discontinuity. In the South, we also restrict our estimation to the Ewe ethnic group whose "homeland" was divided by the border. We also check that our results do not change when excluding urban areas on both sides.

5 Results

5.1 Colonial origins of border discontinuities

We first make the case for the divergence in literacy and religion after the 1919 partition, using military data. We then relate this divergence to the school supply channel.

Table 2 displays DiD estimates at the borders of British Togoland and French Togo, the analyzed outcomes being successively (in columns) literacy, Christian religion and height. The top panel looks at recruits born in the Northern border

area, the middle panel at recruits born in South; the bottom panel then restricts the Southern sample to unskilled or semiskilled recruits.

The table suggests that the German Togoland partition had no effect on Northern populations. For recruits born after 1914, the share of literate individuals increases by around 10 percentage points everywhere while the share of Christians remains negligible; height gains/losses are insignificant. This first result indicates that both colonial state and missionary actions hardly reached these remote and Islamized areas before WWII. In the South, in contrast, these actions left an imprint already before WWI: on the Gold Coast side the literacy rate had reached 20 percent and more than half of the population declared as Christian. Both parts of German Togoland were lagging behind, with only 5 percent of literate and 30 percent of Christians. The post-1914 numbers show some catch-up of the British Togoland part, while the French part makes only slow progress in literacy and also ends up much less evangelized. Hence, the DiD estimates point to a large divergence in both literacy and Christian religion, by more than 20 percentage points, when comparing the 1890-1913 and 1914-1930 cohorts born on each side of the partition border. In contrast, no significant divergence in height is identified. Those findings are confirmed when using the sub-sample of unskilled recruits, whose literacy and christianity levels remain broadly stable on the French Togo side while they increase by more than 25 percentage points in the two other areas.

[Insert Table 2 about here]

Table 3 displays DiD-T estimates, for the same three outcomes (in columns) and the same three populations (in rows). It provides results in line with those of table 2. The statistical tests for the pre-treatment comparability of the two areas are convincing: British Togoland and French Togo recruits born around the kink-point year 1914 displayed close levels of outcomes ($\alpha_1 = \alpha_2$), and were located on common pre-treatment trends (1890-1914) for these outcomes ($\beta_1^{pre} = \beta_2^{pre}$). Like with the DiD estimates, the Northern areas show no significant break in

those trends after the partition. Again, it is in the South that we find significant differential trend breaks, if only for literacy. For this latter outcome, all DiD-T estimates point to a high pace of divergence after 1914, reaching around 3 percentage points per year over 15 years; controlling for year of entry into the regiment hardly changes the coefficient. While very large, this order of magnitude is broadly consistent with the 20-25 percentage points double difference estimate, as this latter number is an average between early cohorts born just after 1914 and late cohorts born at the end of the 1920s. Of course, there is no doubt that a 3 points per year divergence could not be sustained in the longer run, as literacy rates are bounded between 0 and 100% and decreasing returns are at play. Sample sizes however preclude identifying more complex dynamics.[30] Like with DiD estimates, these results mainly reflect that French Togo achieved little progress in literacy before WWII, as post-1914 trends are never statistically different from zero. In contrast, the British Togoland part caught up with the original Gold Coast area; it always records a positive rate of increase, even higher than Gold Coast proper, although usually not significantly so according to the third row of tests ($\beta_1^{post} = \beta_0^{post}$).

[Insert Table 3 about here]

Compared to literacy, the divergence in evangelization is not as robust in the middle panel unrestricted sample, in particular the year of entry control strongly bites on the coefficient. Still, with the unskilled-restricted DiD-T a very significant differential trend is recovered, reaching 4 percentage points per year, consistently again with table 2 where the average differential change between the two periods reached 45 points.

Lastly, table 3 confirms that height stature evolutions were not affected by the Togoland partition. As ordinary least square estimates could be biased due

[30] Logit or probit rather than linear probability models were tried and delivered the same magnitude.

to minimum height requirements at entry (Komlos 2004), we tried estimating truncated regressions with a variety of height minima from 60 to 65 inches and found this result to be robust.

Table 4 tests for the robustness of both DiD and DiD-T estimates for literacy and religion in the southern part of the Togoland border. The two first columns check for the sensitivity of these estimates to the demographic reweighing of the data. When keeping with the raw data, i.e. implementing no reweighing at all, the literacy divergence continues to hold whereas in the case of Christian religion the DiD-T turns very small (-0.25 pp per year). Columns (3) and (4) apply the same check to the unskilled-restricted estimates with year of entry controls, i.e. at our attempt to address bias linked to differential selection into the GCR; here again, while the literacy estimates are little affected, the unweighed raw DiD-T estimate for Christian religion looses size and significance. The second part of table 4 adds latitude and altitude controls to our basic reweighed estimates. It additionally restricts estimation to the 'Extreme South' (column 6): (i) by including French Togo recruits born below the 6.3 latitude line, i.e. between the 6.1 and the 6.3 parallels, in particular around the capital city Lomé; (ii) while selecting out recruits born above the 7.3 latitude line. The sensitivity of the unskilled + year of entry estimates to geographical controls is explored in column (7). Last, column (8) displays the result of border regression discontinuity estimates described in section 4 above. In all cases, both the DiD and the DiD-T estimates for literacy show very great stability in magnitude and significance, with even a bit of increase in magnitude in the case of DiD-T. Conversely, for Christian religion only the DiD estimates are robust while all the DiD-T turn small and insignificant when introducing geographical controls.

[Insert Table 4 about here]

In sum, in the North the partition of German Togoland did not induce any significant break in terms of literacy or evangelization, because the colonial state

reach and the missionary activism were minimal. In the South, in contrast, the partition of German Togoland induced a large and significant divergence in literacy between the British and the French parts; all DiD and DiD-T estimates are very consistent in this respect.

On the religion dimension, the robustness of level diff-in-diffs (DiD) suggests that the partition also translated into a lower number of evangelized people on the French side compared to the British side. However, trend breaks estimates (DiD-T) fail to identify a divergence process similar to that of literacy. One could attribute this failure to the limitations of our sample. Indeed DiD-T is more demanding than DiD in terms of sample sizes in each birth year cohort. Another interpretation is more substantive, having to do with the evolutions of the supply of schools, which patterns and influence we examine now.

Table 5 provides an overview of the school data that we collected for the years 1902, 1925 and 1938. Three main features are revealed: First, mission schools constituted the bulk of school supply in all areas, especially in British Togoland where only one government school was settled before WWII. Second, the number of mission schools grew significantly between 1902 and 1925, even in former German Togoland where the British and the French had expelled German missionaries; this growth was continued between 1925 and 1938 in the British part. Third and last, 1938 French Togo represents the exception to this pattern where the supply of mission schools had collapsed by more than 70% compared to the 1925 level (see also figure 3). Yearly aggregate figures on school supply show that the collapse occurred in the years 1930/31 when the French administration imposed new regulations to the private school sector (see section 2.3 above). Table 5 shows that by 1938 the mission schools sector had not recovered from the 1930/31 collapse, and that the increase in government supply had not been sufficient to compensate for the fall in the total number of schools.

[Insert Table 5 about here]

From this enumeration of schools for which we have precise location, we create a variable giving the number of schools that were available to each GCR recruit by the age of 10 within a 5 kilometers radius around the place of birth and within the colony where he was living (see table 6 footnote). We first check that this school supply variable is positively correlated with recruits' literacy and Christian religion, but not correlated with height. In the southern border area, we find that having one school in the neighborhood at age 10 instead of none is associated with a 11 percentage points higher likelihood of being literate, and as well a 16 pp higher likelihood of being Christian.[31]

Table 6 shows how the aggregate evolutions of school supply translate at the individual level. It suggests that the school supply channel is a good candidate for explaining the observed divergence in education and religion.[32] In the top panel, we compute double difference estimates (DiD specification, see above) like we did for the literate or Christian outcomes, but this time for the number of schools of each type. In the bottom panel, we report alternative trend breaks estimates (DiD-T). All robustly point to a post-1914 divergence in school supply between British Togoland and French Togo. This divergence is driven by mission school supply, the above mentioned 1930/31 collapse on the French side being contrasted with continued growth on the British side. Double difference estimates suggest that school supply in French Togo lagged behind British Togoland by more than one school on average; even if more government schools were opened on the French side (0.5 more schools on average), this did not compensate for the relative loss of 1.7

[31]Estimates obtained by regressing literacy and religion on number of schools and number of schools squared, available upon request. We expectedly observe a slowly decreasing marginal impact of one additional school. This marginal impact is not significantly different between the three border areas under study. Of course, we do not claim these associations are causal: on the one hand, migrations between birth and school age as well as interpolation errors generate downward attenuation bias; on the other hand, endogenous placement of schools in places more favorable to education or evangelization can bias the coefficients upward.

[32]Econometrically, the double difference between British and French Togoland could even constitute a defensible instrument for school supply in literacy or religion equations, if we assume that all the divergence in outcomes went through this channel. We however find safer to remain with reduced form results.

mission schools.[33] The trend break estimates point to an even stronger divergence of almost 0.2 school per year between 1914 and 1930, i.e. a difference of 3 schools among recruits born in 1930. We find no such divergence in the Northern part of the border (result not shown), rather a tiny French advantage, already visible on the 1938 map (figure 3).

[Insert Table 6 about here]

The sudden collapse in mission school supply might explain why the divergence in religion is more robust in level than in trend. While the spread of literacy still depended on the overall progress of school supply whether from government or missions, the diffusion of Christian religion on the French side was overwhelmingly affected by the 1930/31 shock on mission schools. After the shock, the penetration of Christian religion then followed more or less the same pace in all territories, because schools were not the only medium of evangelization, especially in Southern areas where the share of Christians had already reached high levels.

5.2 Border discontinuities today

We now turn to border discontinuities in adult literacy and religion in 1998, using our survey sample of males born 1930-1979. At the national level, there is some convergence in primary school enrollment: among the youngest cohorts the shares of men who never went to school are 13% in Ghana and 17% in Togo (see also figure 2). In contrast, a very persistent 30 pp gap is observed for primary level completion, despite much progress again on both sides during the post-war period. As a consequence, the literacy rate (here measured by self-declared ability to read

[33] By combining this result with the correlation between recruits' outcomes and school supply, we calculate that the relative decrease of school supply in French Togo could account for 13 percentage points of literacy and 20 pp of Christians, to be compared with the 24 pp and 23 pp figures that we obtain with our basic DiD estimates (table 2). Given the measurement errors affecting our school supply variable that could bias its contribution downwards, this may seem a pretty good performance.

"easily") is 19 percentage points lower in Togo (71% vs. 52%). This literacy gap is slowly decreasing across birth year cohorts, from 31 pp among the 1940-49 to 18 pp among the 1970-79.

When restricting to border areas, in the Northern part we do not detect any discontinuity, neither in primary school attendance nor completion nor literacy (results not shown). The Southern part, in contrast, exhibits very significant discontinuities (table 7). In the case of primary level completion (top panel), a very significant 27 percentage points difference is found among the oldest cohorts (1930-54). This gap is even greater with true regression discontinuity estimates that range between 30 and 40 pp depending on the method or the bandwidth that are used. Lower school attendance directly translates into a lower number of school years, by as much as 3 or 4 years on average. Younger cohorts born 1955-79 seem to display a still significant but less acute difference, which could again denote a slow convergence process.[34]

Self-declared ability to read and religion were only collected for a reduced sample of men, which forced us to to put all 1940-79 cohorts together. Even with this, sample sizes on the Ghana side are very small. Here, differences in means between the two border areas are surprisingly reduced and insignificant. However, regression discontinuity estimates again point to a large shift in literacy (above 20 pp), meaning that distance to the border matters (see figure 6 below for an illustration).[35] When restricting the comparison to the Ewe ethnic group whose members dwell close and across the border, then both differences in means and border RDs display the same result, i.e. a 20 to 40 percentage points handicap on the Togo side. These figures are also robust to restricting the comparison to rural

[34]Those results do not apply to incomplete school attendance ("ever attended school" variable), which in the South reached pretty high frequencies: already more than 60% in the oldest cohorts, more than 70% in the youngest.

[35]Large and consistent differences in means and border RDs are found for women born 1950-79, whose samples are of larger size, thanks to higher sample rates, and less affected by migration bias. Anthropometric data on mothers also allows to check that no height discontinuity can be found.

localities. The magnitudes of primary level or literacy gaps perfectly fit with the divergence patterns in "literacy" (here as ability to sign one's name) found among the 1914-30 birth cohorts in military data.

Last, while a very persistent difference in level (20 pp) is found for the share of Christians at the national level, the evidence for a discontinuity at the border is weaker and less robust, even if all estimates have the expected negative sign, in particular among the Ewe ethnic group.

[Insert Table 7 about here]

Figure 6 provides a graphical illustration of the main result of this table, i.e. the existence of a large border discontinuity in primary level completion and in literacy. The right-hand graph depicts column (3) estimate for literacy among the 1940-79 cohort (-22 pp). For comparison purposes, the left-hand graph depicts the primary level completion discontinuity among the same cohort (rather than 1930-54 or 1955-79 in the top panel of table 7), i.e. a point estimate of -28 pp.

[Insert Figure 6 about here]

All these results are strikingly in line with what we found using the colonial military data: (i) a strong divergence in literacy; (ii) a perhaps less persistent shock on evangelization; (iii) no impact in the North, and no impact on height.[36]

5.3 Discussion

Our border discontinuity analysis revealed post-independence differentials in education and religion, at the border. The origins of the divergence can be traced

[36] We also looked at the old 1914 border between Gold Coast and German Togoland; this border no longer exists on the field, it does not even correspond to any administrative boundary within Ghana. Using 1998 DHS data as well as data from the 1998 edition of the Ghana Living Standard Survey, we find little sign of any important difference in terms of literacy or evangelization, for cohorts of men born between 1930 and 1979. The same is found in the Northern area, for women, and other outcomes.

back to colonial times, not to deeper pre-colonial roots or geography. The analysis, however, does not provide unanimous evidence about channels. One interpretation of the results is that British Togoland simply benefitted from being merged with a wealthier region (cocoa producing Gold Coast), whereas French Togo was left on her own. Several facts are at odds with such a story. Firstly, while Table 1 indicated that education expenditures per pupil were higher in Ghana as a whole, hardly any of the costly government schools were located in British Togoland (Figure 3). As missionary schools were much cheaper, the gap in education spending was much smaller.[37] Secondly, the timing of the divergence does not support a fiscal income story. In the early 1910s, the Gold Coast administration already had a per capita budget about twice the one of Togo at her proposal. Thirdly, if there were large income differences at the household level, we should have found a divergence in heights, which we did not.

We favour a different channel. We argue that literacy was linked to evangelisation and that the deliberate British policy of allowing missionary influence in non-Islamized regions made the difference in educational outcomes between the British and the French side of the Togoland border. Spatiotemporal patterns of mission schooling and literacy support this interpretation. Literacy levels were strongly related to the exposure to mission schools, which were of greater numbers in British Togoland, whereas their supply was cut back in the French part. Strikingly, education outcomes were indistinguishable where colonizers chose fairly similar policies against missionaries - in the Northern regions of Togo and Ghana. The same is true for Ghana's northern border with French Upper Volta (later Burkina Faso).[38] RD estimates, not shown to save space, do not indicate border effects colonial divergence in any of the three dimensions.

[37] This is particularly true when considering the even less costly non-assisted mission schools.

[38] The border, running mostly on or parallel to the 11th degree north latitude, was agreed in 1904 and demarcated in 1906. For the colonial era we used the GCR data. For the comparison between present-day Burkina Faso and Ghana, we used the 1998 DHS for both countries, and the GLSS4 of Ghana and the "Enquête Prioritaire" of Burkina Faso for 1998 (EP2). For results, see earlier versions of this paper.

This does not mean that the link between education and religion has remained constant across time. As other channels exist for evangelization, if only simple epidemiological diffusion, the association between school and church faded over time. We can measure the strength of the link between literacy and Christian religion by the odds-ratio of the contingency table crossing the two variables. For the post-WWI cohorts of soldiers, the odds-ratio is around 6 both for Gold Coast (5.8) and French Togo (6.4), meaning that a Christian and a non-Christian are 6 times more likely to be respectively literate and illiterate than the reverse. The odds-ratio is at maximum among cohorts born between 1914 and 1922, reaching the value of 13, whereas for cohorts born 1923-30 the odds-ratio drops to 5. In the cohorts of males born 1940-79 (DHS data), it is close to this latter level of 5, although significantly higher in Ghana (7.0) than in Togo (4.8). Overall, with state-led school expansion after WWII, more and more children from Muslim families got enrolled in both countries, so that the link between school and church eroded across generations. This makes us confident that the educational legacy of missions will fade and eventually be overcome. Our estimates suggest that this process is under way in Togo. The remarkable education record of post-independence Cote d'Ivoire, catching up and overtaking Ghana, is a striking example of how "colonial legacy" can be overturned (Cogneau et al., 2010).

6 Conclusion

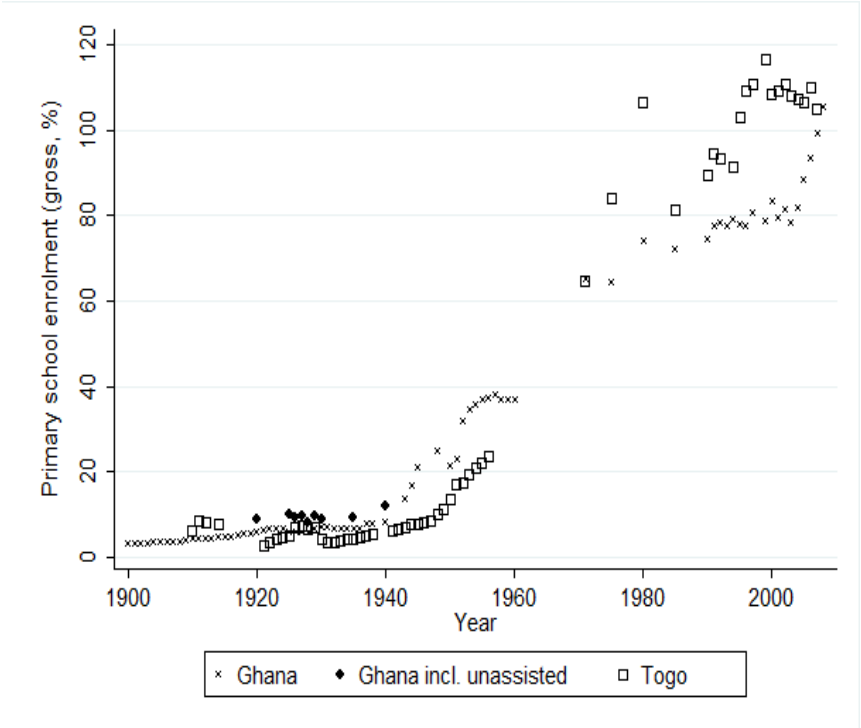
The partition of Africa and German Togoland after WWI provides for a natural experiment where subjects of otherwise homogeneous communities found themselves assigned to either British or French rule, and later to independent Ghana and Togo after 1960. Using a new data set of recruits to the Ghana colonial army 1908-1955, we find that the two mandates of Togoland started to diverge in terms of literacy as early as in the 1920s. Under the French mandate, a hostile stance was taken against missionary schools, a number of which were closed in 1930/31

without being replaced by secular ones. In the meantime, the British government pursued a "grant-in-aid" policy of mission schools subsidization. This divergence is only visible in the Southern part of the border. In the North, educational and evangelization efforts were weak on both sides, and did not produce any significant differences. Applying a border discontinuity analysis to contemporary survey data, we found border effects from the colonial times still to persist.

Togo had a more favourable position than other French colonies in Africa, in that it had a history of German administration that let missionaries a relatively free hand. In 1920 Togo's literacy levels lagged behind the Gold Coast but they might still have been higher than the counterfactual of a French Only rule. Apart from this, the fact that British and French followed the same policies in Islamized regions has important implications. It suggests that a British Burkina Faso, Mali or Niger would have achieved no higher literacy levels than they actually did under their French colonizer.

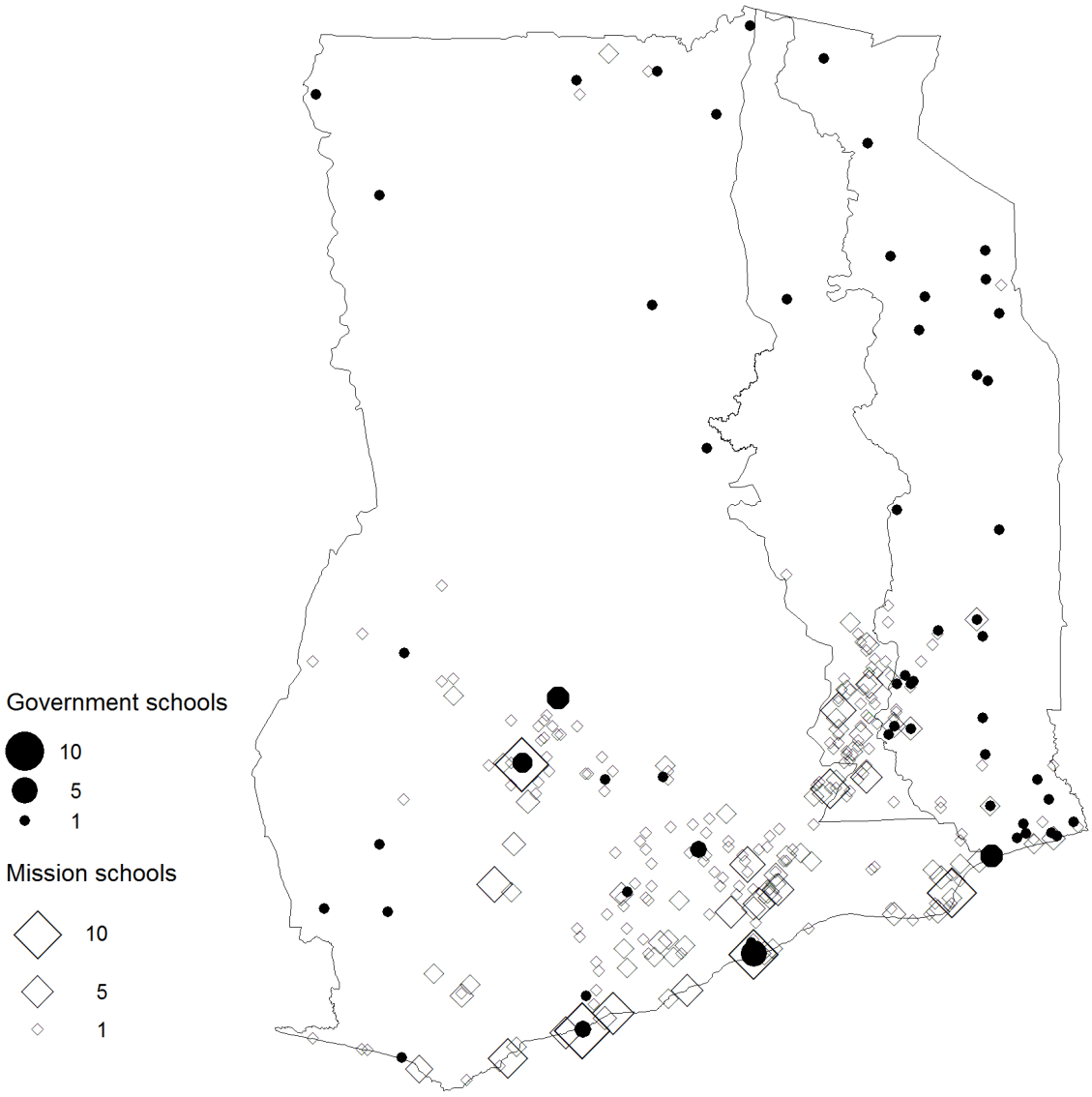
Figure 1: Changes in colonizer and borders 1914-1919

Figure 2: Primary school enrolment (gross, %), 1900-2008



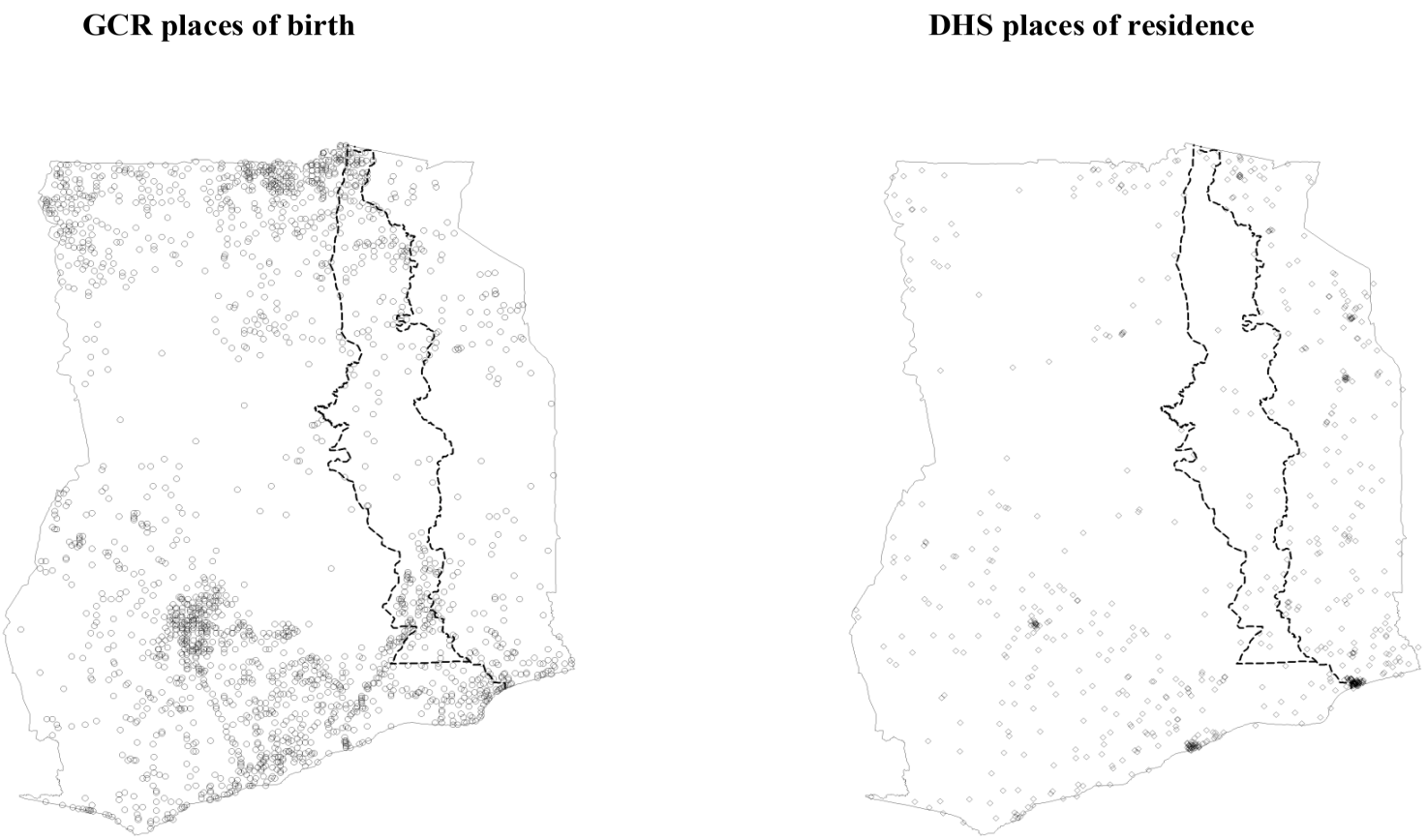
Population data was derived from the UN Population Division (2009). Throughout we assumed the school-age population to be 20% of the total population. This estimate is backed by Ghana population censuses: In the 1921 census the share of population aged 6 to 15 years was 23.7%, whereas in the 1960 and 1970 census the share aged 5 to 14 years was 25.3% and 28.6% respectively (Gold Coast Census Office, 1923, UN Population Division, 2009). Figures for the British administered part of Togoland do not differ much from the other regions in Ghana: in the 1921 Census the share was 22.9% in Togoland compared to 23.6% in the Gold Coast Colony, 22.8% in Ashanti and 24.8% in the Northern Territories (from south to north). The French administration estimated the Togolese school age population to be 7.48, 17 and 15% in 1928, 1950 and 1955 respectively (Gouvernement Français, various years). The 1958 and 1970 Togolese Census returned a 25.4% and 28.8% population share aged 5 to 14 years respectively (UN Population Division, 2009). The earliest information on the age distribution in Burkina Faso is the 1975 Census, which returned a share of 28.4%. Primary school age is 6-12 years.
Ghana: Enrolment data were derived from governmental education reports (Gold Coast, various years-b). Data refers to enrolments into government and aid-assisted schools only. For unassisted schools completion of annual returns was not compulsory; numbers reported between 1920 and 1945 fluctuate erratically, from 35 to 65% of the government and assisted school enrolment and averaging roughly 50% (Foster, 1965, Gold Coast, various years-a). Hence, figures understate the true primary schools enrolment rate by about a third. From 1945, the data includes all schools. Population data for 1900-1949 was derived by backward projection using population growth rates from Austin's (2007: 107) "Ghana adjusted Total" population series.
Togo: Enrolment data are from statistical yearbooks (Gouvernement Français, various years). Togo before 1914 refers to German Togoland. Population data for 1900-1949 was derived by backward projection using population growth rates from Austin's (2007: 107) "British Togoland" population series subtracted by 1% throughout. Using Austin's original series and the population estimate of 1950 by UN Population Division (2009) would result in implausibly low backward projections, e.g. a population of 568,000 in German Togoland in 1905 instead of the one million that was estimated by Kuczynski (1948).
Burkina Faso: Enrolment data is from Mitchell (1998).
School enrolment rates for the period after 1971 are from the World Development Indicators (World Bank, 2011).

Figure 3: Geographical location of government and mission schools (primary) 1938



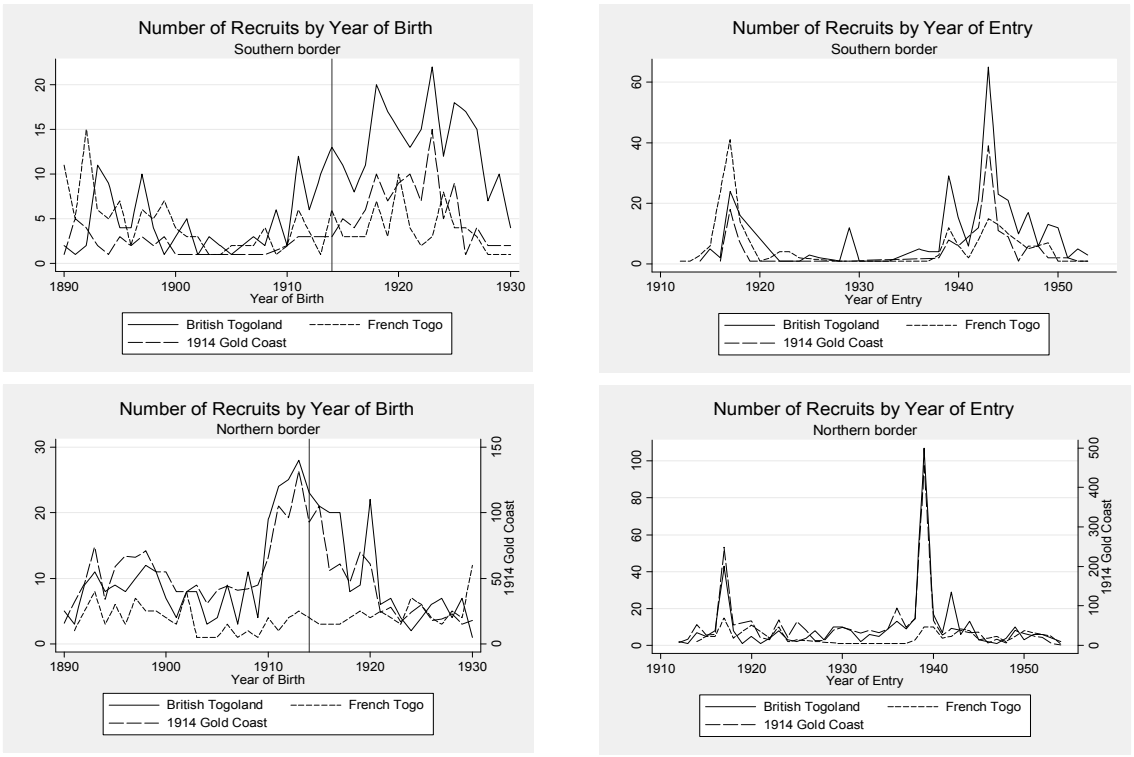
Sources: Gold Coast (1938-b: Map 1 & 2) and Gouvernement Francais (various years).
Note: The Togo reports contain a map of schools in 1929. We could reconstruct the location of all newly established schools from subsequent reports except three government schools in the North that are consequently missing.

Figure 4: Place of Birth / Residence in the Data Used



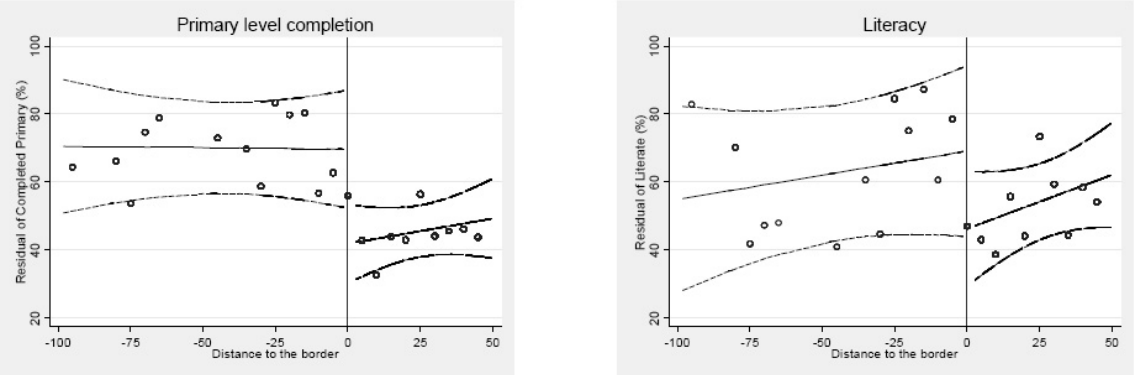
Note: In the GCR data a dot represents the place of birth of at least one recruit. In the DHS data dot shows the place of residence and is a primary sample unit (PSU, or survey cluster).

Figure 5: Number of recruits from each border area, plotted by year of birth and by year of entry



Note: Recruits whose place of birth lies no further than 50 km from the eastern border (British Togoland / French Togo) on the French side; no further than 100 km on the British side. Southern border: 6.3 to less than 9.3 latitude. Northern border: 9.3 to less than 11.3 latitude. Please note that in the two bottom graphs (northern border), the right-hand scale is for number of recruits from 1914 Gold Coast while the left-hand scale is for number of recruits from the two other areas: a disproportionate number of recruits were coming from Northern Territories in Gold Coast.

Figure 6: Border discontinuities in primary completion and literacy at the southern Ghana/Togo Border in 1998



Source and coverage: Ghana and Togo Demographic and Health Surveys 1998. Male individuals born 1940-79 whose place of residence lies between the 6.3 and the 9.3 parallels (South), and no further than 50 km from the Togo border on the Togo side, no further than 100 km on the Ghana side.
Reading: The graphs depict the border RD estimates corresponding to table 4 column (3), for two outcomes: primary completion on the left, and literacy on the right; the variable on the vertical axis is the residual outcome with the effects of latitude and altitude taken out. The right graph fits exactly with the estimate in the bottom panel of table 6, while the left graph extends the 1955-79 estimate to the 1940-79 birth cohort. In each graph, the plain line is the slope of the outcome with respect to distance to the border, the dotted lines are upper and lower bounds of the confidence interval at 95%. Dots plot the mean of outcome within 5 kilometers wide bins.

Table 1: Features of the educational systems in Ghana and Togo

	1914 G. Coast / 1919 G. Coast				German Togoland / French Togo			
	1902	1925[a]	1938	1955	1902	1925	1938	1955
Total population in 1000	1,915	2,694	3,669	5,792	651	852	1,104	1,438
Enrol. rate (primary, gross)[b]	3.8%	9.6%	10.2%	37.1%	2.1%	5.8%	4.2%	21.5%
Contribution of each type of school to primary school enrolment (%)								
Government schools	12.5	9.6	4.4	13.1[c]	2.1	29.0	42.9	50.6
Mission assisted	68.8	54.2	67.7	84.5	97.9	71.0	57.1	49.4
Mission non-assisted	18.7	36.2	27.9	2.4				
Government education expenditure (all schools)[d],[f]								
As % of total gov. spending	1.3	2.8	6.1	11.1[c]	0.8	4.2	6.3	15.9[e]
Per school child (1925 £)								
Government schools	3.7	18.5	17.1	17.8		1.8	1.9	4.2
Mission assisted[g]	0.8	1.0	2.6	4.0				
Mission all	0.6	0.6	1.7	3.8		0.1	0.6	0.9[h]
All schools	1.0	2.3	2.8	5.7	0.3	0.7	1.1	2.6
Education expenditure per school child (primary)								
Government schools			7.5			1.8	1.8	
Mission assisted	1.5	2.2	3.9					
Mission non-assisted		0.8	0.9					
Average teacher annual salary (government schools, 1925 £)[f]								
			152[i]			71[j]	56[j]	
School fees (primary, constant 1925 £)[f]								
Government schools	0.3	0.2	0.9	0		0	0	0
Mission schools (assisted)	0.1	0.5	0.9	0		0	0	0
Mission non-assisted		0.1	0.6	0				

Sources: Gold Coast (various years-a, b), Kolonialamt (1903) and Gouvernement Français (various years)
(a): 1925-26 excludes Ewe Presbyterian schools (British Togoland). Though salaries were paid by the government, Ewe Mission schools were not listed in Education reports or Blue Books. (b): School-age population is assumed to be 20% of the total population. (c): Includes 65,508 enrolments into 568 "Local Authority Schools" equivalent to government schools. The figure went up to 31% by 1962/63. (d): Figures under this heading include both primary and secondary schooling (all schools). (e): The 19.3% stated in the 1955 Togoland report is presumably based on preliminary expenditure data. (f): The French Togo expenditures were transferred into pounds using the official exchange rate (Times Newspaper, 1971). Both series were expressed in constant 1925£ using the UK retail price index as deflator (Times Newspaper, 1971). (g): Costs borne by the government through grant-in-aids. (h): includes subvention à l'enseignement privé of 62 mio francs only. (i): Primary schools. No figures for government secondary schools. The average annual salary of primary (secondary) school teachers in assisted mission schools in 1938 is £88 (£336). (j): In 1925, total personnel expenditures divided by number of teachers; pure wages were lower (around £41) but a lot of bonuses were paid. In 1938, we first deduct from personnel expenditures our estimate of the wage subsidy given to authorized mission schools.

Table 2: At the Togoland borders before and after WWI - Double differences

	N		Literate (%)		Christian (%)		Height (cm)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Born in North: 9.3 to less than 11.3 degrees of latitude								
1914 G. Coast (level)	1,343	709	3.2	14.0	0.7	3.6	171.15	170.01
			(0.5)	(1.8)	(0.2)	(0.9)	(0.20)	(0.25)
British Togoland[(a)]	243	171	+1.4	+1.2	-0.1	-0.8	-0.01	-0.21
			(2.1)	(4.7)	(0.5)	(1.6)	(0.56)	(0.69)
French Togoland[(a)]	83	79	+3.4	-3.2	-0.7	+2.0	-1.11	-0.81
			(3.1)	(4.2)	(0.2)	(2.9)	(0.93)	(0.87)
Double difference[(b)]			-6.3		+3.5		+0.50	
			(6.9)		(3.1)		(1.49)	
Born in South: 6.3 to less than 9.3 degrees of latitude								
1914 G. Coast (level)	43	101	20.1	51.9	54.1	81.7	166.55	167.72
			(7.3)	(6.1)	(8.6)	(4.1)	(1.10)	(0.72)
British Togoland[(a)]	104	228	-14.0*	-9.9	-22.7**	-10.6**	+1.93	+0.00
			(7.8)	(7.2)	(10.6)	(5.3)	(1.47)	(0.82)
French Togoland[(a)]	101	65	-15.9**	-36.1***	-21.6*	-32.7***	+1.87	+1.02
			(7.9)	(7.8)	(11.6)	(9.2)	(1.41)	(0.97)
Double difference[(b)]			-24.3***		-23.1*		+1.07	
			(7.4)		(13.4)		(1.52)	
Born in South and Unskilled Occupation[(c)]								
1914 G. Coast (level)	27	54	6.9	31.8	43.4	68.8	165.74	168.16
			(4.8)	(7.9)	(10.0)	(7.3)	(0.97)	(1.12)
British Togoland[(a)]	75	132	-3.5	-4.7	-19.4	-5.7	+2.67*	+0.20
			(5.6)	(8.9)	(12.3)	(8.7)	(1.55)	(1.23)
French Togoland[(a)]	87	41	-2.9	-27.6***	-16.4	-48.1***	+2.33*	+0.41
			(5.9)	(8.3)	(13.3)	(10.0)	(1.36)	(1.35)
Double difference[(b)]			-23.5***		-45.5***		+0.55	
			(6.6)		(14.1)		(1.80)	

Source and coverage: Gold Coast Regiment data. Recruits enlisted 1908-1955, born 1890-1930, and *whose place of birth is 50 km or less from the Eastern border on the French side, 100 km or less on the British side.* Standard errors in parentheses. ***: Significant at 99%; **: at 95%; *: at 90% (2-tails tests). Year of birth cohort sizes are reweighed assuming a 2% demographic growth rate from 1890 to 1930 in each of the six areas. Pre = Born 1890-1913; Post = Born 1914-1930.

(a): Simple difference with 1914 Gold Coast: $\delta_k^p - \delta_0^p$ where $p = pre, post$ and $k = 1, 2$.
(b): Double difference between French Togo and British Togoland: $(\delta_2^{post} - \delta_2^{pre}) - (\delta_1^{post} - \delta_1^{pre})$.
(c): Recruits having declared an unskilled occupation at entry (mainly farmers).

Table 3: At the Togoland borders before and after WWI - Trend breaks

	Literate (%)		Christian (%)		Height (cm)	
		Yr entry controls		Yr entry controls		Yr entry controls
	(1)	(2)	(3)	(4)	(5)	(6)
Born in North: 9.3 to less than 11.3 degrees of latitude						
Difference in post-1914 trends[(a)]	-0.26	+0.50	-0.35	-0.43	-0.00	-0.00
	(0.98)	(0.76)	(0.31)	(0.39)	(0.17)	(0.15)
Tests (p-values):						
1914: Br.Togol. = Fr.Togo[(b)]	0.80	0.34	0.16	0.23	0.57	0.91
1890-1914: Br.T. = Fr.T.[(c)]	0.57	0.53	0.12	0.12	0.92	0.55
1914-1930: Br.T. = G.C.[(d)]	0.47	0.17	0.73	0.93	0.44	0.73
Double diff. in trends[(e)]	0.95	0.47	0.16	0.18	0.95	0.77
Born in South: 6.3 to less than 9.3 degrees of latitude						
Difference in post-1914 trends[(a)]	-3.69***	-2.61***	-2.27	-0.70	+0.14	+0.21
	(1.07)	(0.89)	(1.93)	(1.47)	(0.16)	(0.17)
Tests (p-values):						
1914: Br.Togol. = Fr.Togo[(b)]	0.43	0.86	0.99	0.22	0.71	0.70
1890-1914: Br.T. = Fr.T.[(c)]	0.17	0.73	0.90	0.32	0.49	0.38
1914-1930: Br.T. = G.C.[(d)]	0.28	0.64	0.47	0.78	0.19	0.37
Double diff. in trends[(e)]	0.00	0.02	0.37	0.94	0.39	0.22
Born in South and Unskilled Occupation[(f)]						
Difference in post-1914 trends[(a)]	-2.81***	-2.92***	-4.27**	-4.03**	+0.07	+0.34
	(0.89)	(0.90)	(1.72)	(1.90)	(0.20)	(0.23)
Tests (p-values):						
1914: Br.Togol. = Fr.Togo[(b)]	0.74	0.94	0.84	0.48	0.64	0.30
1890-1914: Br.T. = Fr.T.[(c)]	0.60	0.98	0.94	0.65	0.63	0.39
1914-1930: Br.T. = G.C.[(d)]	0.81	0.02	0.37	0.22	0.66	0.90
Double diff. in trends[(e)]	0.01	0.01	0.10	0.18	0.65	0.16

Source and coverage: Gold Coast Regiment data. Recruits enlisted 1908-1955, born 1890-1930, and *whose place of birth is 50 km or less from the Eastern border on the French side, 100 km or less on the British side.* Errors clustered by area and year of birth. Standard errors in parentheses. ***: 99%; **: 95%; *: 90% (2-tails tests). Cohort sizes reweighed assuming a 2% demographic growth rate from 1890 to 1930, see table 2 and text. Birth year trends are connected and centered at the kink point 1914, see equation (3). Cols (2), (4) and (6): Dummies for year of entry (from 1908 to 1955) as controls.

(a): Coefficient $(\beta_2^{post} - \beta_1^{post})$, in percentage points per year, see text.
(b): Test $\alpha_1 = \alpha_2$, see text. (c): Test $\beta_1^{pre} = \beta_2^{pre}$, see text. (d): Test $\beta_1^{post} = \beta_0^{post}$, see text. (e): Test $(\beta_2^{post} - \beta_1^{post}) = (\beta_2^{pre} - \beta_1^{pre})$, see text.
(f): Recruits having declared an unskilled or semiskilled occupation at entry.

Table 4: More on divergence at the Southern Togoland border: Robustness checks

	Base estimates (tables 2 & 3)				Geography and distance to border controls			
Sample selection:	No		Unskilled[a]		No	6.1-7.3[b]	Unsk.[a]	No
Geographical Controls:	No		No		Latitude & Altitude controls[c]			
Other controls:	No		Year of entry		No	No	Yr entry	Border[d]
Cohort size weights[e]:	Rew.	Raw	Rew.	Raw	Reweighed			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Double difference pre and post-1914[f]								
Literate (%)	-24.3***	-14.1*	-20.6***	-16.8**	-21.5**	-20.3**	-18.2***	-23.7*
	(7.4)	(8.0)	(5.4)	(8.1)	(9.0)	(8.8)	(6.8)	(14.2)
Christian (%)	-23.1*	-15.2*	-46.0***	-36.0***	-28.4*	-28.0*	-43.9**	-66.2**
	(13.4)	(9.0)	(12.5)	(11.6)	(15.5)	(14.6)	(17.9)	(25.6)
Difference in post-1914 trends[g]								
Literate (%)	-3.69***	-2.17**	-2.93***	-2.15**	-4.26***	-4.73***	-3.37***	-5.77***
	(1.07)	(1.25)	(0.90)	(0.96)	(0.98)	(1.13)	(1.14)	(1.72)
Christian (%)	-2.27	-0.25	-4.03**	-2.73	+0.44	+1.65	+0.06	+0.81
	(1.93)	(1.46)	(1.90)	(1.75)	(1.44)	(1.61)	(2.37)	(3.23)
N	642		416		642	769	416	642

Source and coverage: Gold Coast Regiment data. Recruits enlisted 1908-1955, born 1890-1930, and *whose place of birth is 50 km or less from the Eastern border on the French side, 100 km or less on the British side.* All columns except (6): Born in South, i.e. between 6.3 and less then than 7.3 degrees of latitude. Errors clustered by area and year of birth. Standard errors in parentheses. ***: 99%; **: 95%; *: 90% (2-tails tests).
(a): Recruits having an unskilled occupation. (b): "Extreme South": Recruits whose place of birth lies between 6.1 degrees and 7.3 degrees of latitude.
(c): Dummies for each half degree of latitude. Dummies for each 100 m elevation above the sea level (from 0 to 300 or more). Geographical dummies are interacted with pre-post dummies (top panel) or with pre and post birth year trends (bottom panel).
(d): Regression discontinuity design: distance to the border between British Togoland and French Togo, interacted with all the variables of the base model (area dummies, pre-post dummies or birth year trends and their mutual interaction).
(e): Reweighed estimates: Year of birth cohorts are reweighed assuming a 2% demographic growth rate from 1890 to 1930 in each area.
(f): Double difference between British Togoland and French Togo, $(\delta_2^{post} - \delta_2^{pre}) - (\delta_1^{post} - \delta_1^{pre})$, see table 2.
(g): Coefficient $(\beta_2^{post} - \beta_1^{post})$, in percentage points per year, see text and table 3.

Table 5: Schools 1902-1938

	Number of schools					
	Government			Mission		
	1902	1925	1938	1902	1925	1938
All areas						
1914 Gold Coast	7	22	34	117	220	327
British Togoland	0	0	1	24	52	81
French Togoland	2	24	37	46	134	39
Southern border[(a)]						
1914 Gold Coast	0	1	1	8	17	20
British Togoland	0	0	0	24	52	80
French Togoland	0	10	14	19	51	22

Source: Gold Coast (various years-a, b) and Gouvernement Français (various years). The 1902 German statistical yearbook did not list the schools of the Bremen Mission ("Norddeutsche Missionsgesellschaft"). We use the location of mission stations instead, i.e we allocated 34 Bremen Mission schools to their 31 missions (hence 34/31 schools in each mission). Likewise none of the schools of the "Ewe Presbyterian Church" was on the Gold Coast assisted list of 1925, despite teacher salaries being paid by the government. The Ewe mission had 49 schools, 17 of which we identified through a list of exam candidates, so that we assigned the remaining 32 schools to 36 mission stations locations (hence 32/36 school in each). Finally, the 1925 yearbook of French mandated Togo only gives summary statistics for the Catholic and Evangelic mission by district, not locality, whereas schools of the Wesleyan Mission (Methodist) were given by locality. We entered the geographic coordinates of the district capital.
(a): From 6.3 degrees of latitude to less than 9.3. Schools no further than 55 km from the border on the French side, 105 km on the British side.

Table 6: Divergence in school supply at the Southern Togoland border

	Number of schools in a 5 km radius around the place of birth[a]					
	Government		Mission		Total	
	Pre	Post	Pre	Post	Pre	Post
Double difference estimates (DiD)[b]						
1914 Gold Coast (level)	0.00	0.04	1.61	4.00	1.61	4.04
	(-)	(0.03)	(0.25)	(0.41)	(0.25)	(0.41)
British Togoland	0.00	-0.04	-1.25***	-1.85***	-1.25***	-1.90***
	(-)	(0.03)	(0.26)	(0.44)	(0.26)	(0.43)
French Togoland	+0.30***	+0.64***	-0.18	-2.48***	+0.12	-1.84***
	(0.07)	(0.09)	(0.55)	(0.61)	(0.54)	(0.61)
Double difference	+0.38***		-1.70**		-1.32**	
	(0.12)		(0.68)		(0.67)	
Idem unskilled	+0.57***		-1.70**		-1.13	
	(0.13)		(0.71)		(0.69)	
Trend breaks estimates (DiD-T)[c]						
Diff. in post-1914 trends	+0.02		-0.23**		-0.21**	
	(0.01)		(0.09)		(0.09)	
Idem with year of entry [d]	+0.01		-0.18*		-0.17*	
	(0.01)		(0.10)		(0.10)	
Idem + unskilled[d],[e]	-0.00		-0.18**		-0.19**	
	(0.02)		(0.08)		(0.09)	

Source and coverage: Gold Coast Regiment data and school data (see table 5). Recruits enlisted 1908-1955, born 1890-1930, and *whose place of birth is 50 km or less from the Eastern border on the French side, 100 km or less on the British side.*
Standard errors in parentheses. ***: Significant at 99%; **: at 95%; *: at 90% (2-tails tests). Year of birth cohort sizes are reweighed assuming a 2% demographic growth rate from 1890 to 1930 in each of the six areas. Pre = Born 1890-1913; Post = Born 1914-1930.

(a): Within a 5 kilometers radius around the place of birth and in the relevant colonial territory.
Construction of the number of schools variables: For each place of birth in the GCR dataset, we first compute the number of schools lying in the 5 km radius and within each territory in the years 1902, 1925 and 1938. We consider that soldiers were exposed to primary school attendance between 7 and 13 years of age, and take the middle age of 10 as benchmark. We thus consider that cohorts born before 1904, i.e. having reached 10 years of age in 1914, have been exposed to the distribution of schools prevailing within the territory of birth as delineated by pre-war borders (either Gold Coast or German Togoland). Similarly, cohorts born after 1912, i.e. having reached 10 years of age after 1922, have been exposed to the school supply prevailing within post-war territories (either Gold Coast or French Togo). For intermediate cohorts born between 1905 and 1911, we take a simple average of the two territorial distributions. Still taking 10 year-old as the reference school age, the cohorts born in 1892 or before are attributed the 1902 distribution of schools around their birth place; the 1915 cohort is attributed the 1925 distribution; and the cohorts born in 1928 or after the 1938 distribution. For cohorts born between 1892 and 1915 (resp. between 1915 and 1928), we linearly interpolate the distribution of schools using the 1902 and 1925 (resp. 1925 and 1938) distributions.
(b): See table 2.
(c): See table 3.
(d): Dummies for year of entry (from 1908 to 1955) as controls.
(e): Recruits having declared an unskilled or semiskilled occupation at entry.

Table 7: At the border of Togo with Ghana in 1998 (South)

	Means		Border RD estimates		
	Ghana side (level)	Togo side (diff.)	Locally linear	Cubic	Loc. lin. [-50;25] bandw.
	(1)	(2)	(3)	(4)	(5)
Born 1930-54: Primary[(a)] (%)	53.0	-26.6***	-38.2***	-30.6**	-42.2***
	(6.7)	(7.3)	(10.0)	(13.0)	(12.6)
Born 1930-54: Years of school	6.1	-3.0***	-4.6***	-4.2**	-5.8***
	(0.9)	(0.9)	(1.4)	(1.9)	(1.7)
N (PSUs)	125 (32)	521 (66)	646 (98)		350 (56)
Born 1955-79: Primary[(a)] (%)	64.2	-14.5**	-29.1***	-21.1*	-34.9**
	(6.5)	(7.0)	(8.1)	(10.9)	(13.0)
Born 1955-79: Years of school	7.0	-1.4*	-2.4***	-1.8	-3.4**
	(0.7)	(0.8)	(0.9)	(1.1)	(1.3)
N(PSUs)	278 (32)	1,291 (66)	1,569 (98)		774 (56)
Born 1940-79: Literate[(b)] (%)	58.6	-2.8	-22.8**	-28.7*	-42.3**
	(7.6)	(8.2)	(10.7)	(15.2)	(15.9)
Born 1940-79: Christian (%)	72.6	-8.8	-6.1	-9.4	-11.0
	(6.0)	(7.0)	(9.3)	(9.8)	(11.3)
N(PSUs)	112 (32)	685 (66)	797 (98)		381 (56)
Ewe & 1940-79: Literate[(b)] (%)	79.2	-20.5**	-19.1	-29.3*	-40.8***
	(7.7)	(8.6)	(11.7)	(14.8)	(14.0)
Ewe & 1940-79: Christian (%)	92.1	-27.1***	-4.7	-12.5	-34.2***
	(5.0)	(7.3)	(9.0)	(11.6)	(11.7)
N(PSUs)	62 (21)	336 (47)	398 (68)		234 (43)

Source and coverage: Ghana and Togo Demographic and Health Surveys 1998. Male individuals 20-69 year-old whose place of residence lies between the 6.3 and the 9.3 parallels, and no further than 50 km from the Togo border on the Togo side, no further than 100 km on the Ghana side; except last column: less than 25 km and less than 50 km.
Errors clustered by Primary Sample Units (PSUs). Standard errors in parentheses. ***: Significant at 99%; **: at 95%; *: at 90% (2-tails tests). Probabilistic sample weights used, adjusted for sample rate differences between the two countries.

Positive numbers indicate differences in favor of Togo. Col. (1): Ghana sample means; col. (2): difference between Ghana and Togo sample means. Col. (3)-(5): Locally linear regression in distance to the border on each side, or cubic polynomial, see equations (3) and (4). Controls (only in the border RD estimates): Dummies for each half degree of latitude, and for each 100 meters of elevation (from 0 to 300 or more).
(a): Primary = Completed primary level.
(b): Literate = "Reads easily" (self-declared).

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