

Comparing British and French Colonial Legacies: A Discontinuity Analysis of Cameroon

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ABSTRACT

Colonial institutions are thought to be an important determinate of post-independence levels of political stability, economic growth, and public goods provision. In particular, many scholars have suggested that British institutions and culture are more conducive to growth and poverty alleviation than those of France or other colonizers. Systematic tests of this hypothesis have plagued by unobserved heterogeneity among nations due to variable pre- and post-colonial histories. To deal with this problem, we focus on the West African nation of Cameroon, which includes regions colonized by both Britain and France. Taking advantage of the artificial nature of the former colonial boundary, we use it as a discontinuity within a national demographic survey. We show that rural areas on the British side of discontinuity have higher levels of wealth and local public provision of improved water sources. Results for urban areas and centrally-provided public goods show no such effect, suggesting that post-independence policies also play a role in shaping outcomes.

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Introduction

The men who built the British Empire did so with the conviction that they were doing those they conquered a favor. They argued that the institutional package that they brought to the colonies—David Livingston’s “Commerce, Christianity and Civilization” —would ultimately lead to a higher standard of living and quality of government than that provided by the institutions they destroyed (Livingston 1868). While contemporary scholars no longer see colonialism as unambiguously positive, they do agree on its importance. A series of quantitative studies, both within and across nations, have linked colonial-era policies and institutions to post-independence variation in economic growth (Acemoglu, Johnson and Robinson 2001, LaPorta, Lopez-de-Silanes, Shleifer and Vishny [LLSV], 1999), public goods provision (Banerjee and Iyer 2005, Iyer 2007), democracy (Lipset 1993, Weiner 1987), and corruption (Treisman 2000). One strand of this literature suggests that colonization by the British led to better outcomes than colonization by the French or by the smaller colonial powers, because of either the adaptability of British legal institutions to the market economy or the higher levels of personal freedom provided by British culture (Hayak 1960, Lipset 1993, North 2005, LLSV 1998). The argument has become a common one, and dummy variables for colonial background have become a common feature of large-N studies in comparative politics.

One major shortcoming of such studies is that they conceal a large amount of unobserved heterogeneity in 1) the preexisting conditions of the areas colonized, 2) the institutions imposed by the colonizer, and 3) the post-independence political histories of these countries. As such, any estimation of “colonizer effects” may be biased, and this bias could be particularly strong with respect to the British Empire, the largest, oldest, and most heterogeneous of the imperial units. It

could be, for example, that the British managed to take the “plum” colonies, which would have experienced better political and economic outcomes regardless of who colonized them.

To identify the effects of colonial legacy, we focus on one case, the West African nation of Cameroon. Originally colonized by Germany, Cameroon was divided between Britain and France during World War I, and the two powers implemented widely divergent colonial policies in their separate zones. The two areas were only reunited at independence in 1960, and despite a strong policy of centralization, they retain separate legal and education systems and a strong attachment to the language and culture of their respective colonizers. A comparison of these regions thus permits an excellent test of the colonizer influence hypothesis. The regions became British and French colonies due to an exogenous shock unrelated to local conditions (i.e., the German defeat in WW I), and they have similar post-independence histories. And while there might be differences in preexisting conditions across these regions, these differences are unlikely to be pronounced at the arbitrary internal boundary between them. Hence, we can use a regression discontinuity research design to identify the effects of colonial legacy. The use of a single case keeps us from examining within-colonizer variation, but we will argue that the strategies pursued by the British and French and Cameroon present a “hard case” for the hypothesis of British superiority.

A comparison of communities along the former colonial border shows that rural households on the British side have higher levels of wealth and are more likely to have access to improved sources of water (a locally provided public good). These results do not hold for urban areas or for centrally-provided public goods like education and roads, suggesting that the effect of colonial-era differences can be attenuated by post-colonial policies. The exact origin of the British advantage are impossible to determine with certainty, but we hypothesize that it is caused

by a combination of “hard legacies” (lack of forced labor, more autonomous local institutions) and “soft legacies” (common law, English culture, Protestantism). The relative role of these two types of influences is a fruitful topic for future study.

Previous Literature

Cross Country Studies

A number of distinguished scholars have argued that British colonial origin is associated with positive outcomes, though they have not always agreed on what these outcomes are or by what mechanism British colonialism produces them. The most influential strand has focused on economic growth and argues that growth is in part determined by the legal system bequeathed by the colonizer (Hayek 1960, North 2005, LLSV 1998). The effect of legal system on development is hypothesized to operate through three mechanisms: 1) Common law systems provide greater rights to investors and property owners, while 2) British culture creates a strong commitment to the enforcement of those rules that do exist, and 3) the independent judiciary and emphasis on separation of powers in common law systems provide a greater number of checks on political expropriation. As North (2005: 112) argues in the context of American economic development, “The heritage of British institutions created a favorable milieu for the development of the institutions of impersonal exchange which were the foundation of the long-term economic growth....”

These arguments have been tested by a number of large-N studies, though these studies have tended to focus on measures of governmental policy (which are correlated with economic growth) rather than on growth itself. LLSV (1998) find that both protections for investors and the enforcement of those protections were stronger in common law countries than in civil law

countries, particularly French civil law countries. The same authors (1999) find that legal origin was correlated with “quality of government” (corruption and public goods outputs) and size of the public sector, with civil law countries having larger public sectors. Treisman (2000) finds that common law countries have lower levels of corruption, and he also finds some evidence that this effect is due to the cultural and enforcement-enhancing effects of British culture rather than legal tradition (since common law and British colonization do not overlap perfectly). Hall and Jones (1999) find that output per worker is correlated with language, with English having a particularly strong positive effect, which they see as being primarily caused by the positive economic effect of European settlement.

Another strand of research has argued that British colonies are more likely to become democracies than are colonies of other nations (Weiner 1987, Huntington 1984). This effect is thought to be caused either by higher levels of political representation in former British colonies (Lipset 1993), the more gradual process of decolonization in the British Empire (Smith 1978), or the greater level of indirect rule in British territories (Whittlesey 1962). This hypothesis has received some limited support in quantitative studies (Barro 1996).

The arbitrary nature of colonial boundaries in Africa provided the starting point for a number of scholars to conduct qualitative small n-studies, generally comparing members of the same ethnic group on different sides of a boundary. Miles (1994) studied the Hausa of Nigeria and Niger, Welch (1966) the Ewe of Togo and Ghana, and Asiwaju (1976) the Yoruba of Nigeria and Benin. All argued that there were very marked differences in policy across empires, with the British-controlled areas being characterized by greater economic dynamism and respect for traditional political institutions than French-controlled areas. Miles (1994) in particular argued that these differences have persisted since independence, though it is difficult in practice to

separate this persistence from the effects of the different post-independence political histories of Niger and Nigeria.

One facet of colonial influence that has received relatively little attention is the role of religion. Max Weber (1947 [1905]) argued that Protestantism was ideologically well suited to a market economy, and that the hard work and repression of consumption that it encouraged promoted capital accumulation. Becker and Woessman (2009) used an instrumental variables design to show that a more important causal factor was the increase in literacy caused by Protestantism's greater textual emphasis. The economic efficiency of Protestantism is supported by Acemoglu, Johnson and Robinson (2001) who found evidence for the effect of religion on per capita income. Some scholars have also argued that the emphasis on the individual in Protestantism is helpful to the growth of democratic institutions (Lipset 1981, Huntington 1991). As religious traditions are strongly correlated with colonial origin, it may well be that some part of the cultural legacy of colonialism operates through religion.

Critiques of the Cross Country Literature

The positive effect of British colonial influence has not gone uncontested. Acemoglu, Johnson and Robinson (2001) find that dummy variables for colonial origin have a jointly insignificant effect on per capita income, while Acemoglu, Johnson, Robinson and Yared (2007) and Prezworski et al. (2000) find that these dummies did not have a significant effect on post-independence democracy. In general, the theoretical critiques have emphasized the large-scale unobserved variation in preexisting conditions, actual colonial institutions, and/or post-colonial policies. Acemoglu Johnson and Robinson (2001, 2002) focus on preexisting conditions, arguing that the main determinant of colonial legacy is not the identity of the colonizer but the

preexisting conditions within each colonized country, which determined not only the number of settlers that each country received but also the institutions that the colonizer chose to impose. This last formulation is congruent with Engerman and Sokoloff's (1998) argument that institutions are determined by the factor endowments of each territory. The emphasis on preexisting institutions is shared by Englebert (2000) who argues that state effectiveness is caused by state legitimacy, which is itself a product of the degree of contrast between pre-colonial and colonial institutions. Wilkinson (2009) examines intra-empire variation in institutions like elections and the development of an indigenous military and civil service, which he argues are as or more important than inter-empire variation. Henry and Miller (2008) focused on post-independence policies, pointing out the legal tradition argument is limited by the inability to separate legal tradition from particular laws and political conditions.

Within Country Studies

In addition to these cross-national studies, a recent literature has exploited internal variation within colonial empires to study the effect of institutions and policies on post-independence outcomes. By confining themselves to a single colony and taking advantage of the often exogenous and arbitrary nature of internal colonial policies, these studies have managed to avoid many of the identification problems that plague the cross national studies. Banerjee and Iyer (2005) examine the effect of different land tenure institutions in colonial India and find that areas that featured intermediate layers of revenue collectors had lower levels of agricultural productivity and public goods provision in the post-independence period. Kapur and Kim (2006) extend these results to the pre-independence period and to a wide variety of indicators of economic development. Berger (2009) found that arbitrary differences in tax policy in colonial

Nigeria have persistent effects on state penetration and health outcomes in the post independence era, while Iyer (2007) found that areas in India that were ruled indirectly have lower levels of public goods provision.

The main thrust of these results is that interventionist colonial governments create better outcomes than those that allowed native institutions a greater extractive role. By contrast, forced labor seems to create negative effects. Dell (2008) uses a regression discontinuity approach to show how the colonial forced labor system in Peru had led to lower levels of public goods provision and household consumption. This result echoes Nunn's (2008) finding that that the African slave trade negatively affects per capita income in the modern period.

Being confined to one country, these studies cannot directly address the question of colonizer influence. However, their results are helpful for this study because the "hard" institutions they examine—land tenure, forced labor, indirect rule—vary across as well as within empires. Indeed, the cross-empire variation in institutions is likely to be more pronounced, as different empires favored different sets of institutions. These studies also point out the importance of separating specific institutional differences from broad cultural and historical factors and the challenges of doing so empirically. Cameroon was chosen for study precisely because it enables us to address the question of cross colonizer variance while retaining the advantages of a within country study.

Historical Background: Cameroon

Even by African standards, the modern nation of Cameroon is an artificial construction. It unites four major ecological areas (coastal lowland, tropical highland, tropical plateau, and arid savanna), three major religious traditions (Islam, Christianity and Animism) and hundreds of

ethnic and linguistic groups. The creators of this mixture were the Germans, Cameroon's first colonizers. Latecomers to the imperial game, the Germans were forced to shoehorn their new territory between the existing British sphere of influence in the Niger delta and the French in the Sahel and Lower Congo (as it was, the Germans beat the British to the Cameroon coast by only five days). Germany had acquired its empire for prestige rather than with a specific economic plan, and their initial policy emphasized exploration over administration. Eventually, however, the German administration could point to a number of concrete achievements: the development of plantation agriculture in the coastal belt, the construction of the country's first railways, and the founding of the cities of Buea (the German colonial capital), Doula (the main port), and Yaoundé (the present day capital, in the interior plateau) (Chiabi 1997:2-10, Rubin 1971: 23-43).

The dream of a German empire in Central Africa, and the careers of a generation of German-speaking Africans, were destroyed by the outbreak of the First World War. The Allies immediately invaded Cameroon from Chad, Nigeria, and Gabon, and the Germans surrendered in early 1916. The British and French provisionally administered the areas that they had occupied, with the French getting the lion's share and the British contenting themselves with a narrow (though densely populated) strip along the Nigerian border. This arrangement was confirmed by the Treaty of Versailles, which gave the allies the ex-German colonies as "mandates" under the loose supervision of the League of Nations. For the next 42 years, "East" (French) and "West" (British) Cameroon would have separate histories.

The Colonial Border

The British region of present-day Cameroon consisted of what are now the Northwest and Southwest provinces while the French region covered the country's remaining eight

provinces.¹ The border between these zones was drawn on the basis of a hastily made agreement in March 1916. The boundary generally follows natural features such as elevation contours or, in the coastal zone, the river Mungo. None of these features are especially prominent, nor do they correspond to any preexisting cultural or political boundaries. Indeed, the most notable feature of the colonial border was the degree to which it cut across existing ethnic and religious boundaries. Lord Milner, who as colonial secretary was in charge of British team negotiating the final boundary at Versailles, complained that:

The boundaries of the zones of occupation are haphazard and, as a permanent arrangement, would be quite intolerable. They cut across tribal and administrative division, take no account of administrative divisions, and are in every way objectionable. (Quoted in: Louis 1964: 148.)

Despite Milner's complaint, the final boundaries were only slightly different from the provisional agreement.

The artificiality of the boundary should not be surprising, as its location had little to do with the territory it divided. More pertinent were the British desire to "round out" the territory of Nigeria, the superior performance of French troops during the Cameroon campaign, and a desire to compensate the French for British territorial gains elsewhere in Africa (LeVine 1964, 32). The British had little interest in Cameroon itself and were primarily interested in using it as a bargaining chip in a broader colonial settlement (Louis 1964.)

[Figures 1 and 2 about here]

The artificial nature of the colonial border can be seen in figures 1 and 2, which superimpose the boundary on existing ecological zones and linguistic divisions. The boundary also paid little attention to existing political institutions. The ethnic groups of coastal Cameroon

¹ The British also controlled a region known as North Cameroon, which upon independence became part of Nigeria.

had relatively simple institutions at the time of colonization; indeed, many did not have political structures beyond the village level. The highlands had recently seen the proliferation of small chieftaincies, though here too the boundary disrupted traditional relationships: The most cohesive and centralized kingdom, the Bamoun sultanate, was placed on the French side, while their sometime allies, sometime antagonists of the Nso kingdom were placed on the British side (Levine 1964:42-45).

Divergent Colonial Practices

The regions on either side of this boundary were exposed to very different colonial policies and institutions. Here, we highlight six key ways in which the British and French colonial practice differed.

1) Integration

Under the mandate agreement, the mandating powers were supposed to maintain their new territories as separate entities and send regular reports to the League in Geneva. This did not keep the Allies from treating Cameroon as an integral part of their existing possessions in British Nigeria and French Equatorial Africa and adapting the often exploitive policies of these territories (Rubin 1971 44-48, LeVine 1964: 194-195). The effects of this integration were more severe in Western (British) than in Eastern (French) Cameroon. Cameroon was large relative to France's other African possessions and retained its own bureaucracy under a chief commissioner, with a status equal to Congo, Gabon, and Chad. West Cameroon, on the other hand, was small and poor relative to Nigeria, and thus became an administrative backwater, with little local autonomy. Locals complained that the administration in Lagos starved them of development funds and educational opportunities, and that Cameroon was used as a "dumping

ground” for inexperienced or incompetent colonial officials (Chiabi 1997: 12-15). This sense of neglect would contribute to the movement to reunite the Cameroons in the postwar period.

2) Direct vs. Indirect Rule

British administration in Cameroon was based on the concept of indirect rule—that is, allowing native chiefs to perform most executive and judicial functions. Indirect rule was already standard practice in Nigeria, and it appealed to the British both because it appeared to respect native traditions and because it economized on money and manpower (Rubin 1971:74). Implementing indirect rule was relatively easy in Northern Cameroon (now part of Nigeria), which was controlled by well-established Fulani Emirates that had been little affected by German rule. In what was then known as the Southern Cameroons (present day West Cameroon) the situation was more confused, with a wide variety of ethnic groups, many of whom did not possess centralized political institutions (Chiabi 1997: 15-18). The British persevered regardless, administering through “headmen” who often had no traditional political status. As a native educated elite emerged, the British integrated them into the existing structure through the creation of elected advisory councils. After 1945, the British strengthened the native authorities by amalgamating them into larger units and granting them increased autonomy (Chiabi 1997: 18-19), which gave them a relatively high degree of legitimacy (Geschiere 1993).

French policy, by contrast, was focused on the closer integration of the colonies with the metropole. The mechanism for this was the policy of assimilation, by which Africans who had received a western education (*évolués*) were granted French citizenship and the legal rights of Frenchmen, including participation in elections to urban councils and the French parliament. The unassimilated majority were to remain under traditional law. Though the French found it impossible to immediately dispense with the services of the German-era chiefs, they steadily

reduced their autonomy and authority, treating them as petty bureaucrats who could be hired and fired at will (LeVine 1964: 92-98, Rubin 1971:49-50). Despite the maintenance of the chiefs, the French administrative system was in practice “quasi-direct” (LeVine 1964:98). It is notable that the nationalist movement in French Cameroon was led by urban *évolués*, rather than (as in the British Cameroons) by the chiefs.

3) Legal System

Like nearly all African colonies, both British and French Cameroon had two-track legal systems. Europeans and *évolués* were subject to the laws of the mother country, while “natives” were subject to local customary law, though this law was usually interpreted and enforced by the colonial administration. Mandami (1996) argues that this system generally led administrators to see the general population as passive subjects rather than active citizens, a view that persisted into the postcolonial era. Mandami’s argument certainly holds for the Cameroonian case: The local customary law was bitterly unpopular, and the harsh punishments it allowed were often used by the administration as a tool of political intimidation (LeVine 1964: 99-104).

Customary law was abolished in the late colonial period, though contemporary Cameroon still uses it as a source of land law and personal law (Anyangwe 1987: 234). For other types of disputes, Cameroon retains two legal systems, a common law system in West Cameroon and a system based on French civil law in East Cameroon (Anyangwe 1987: 251-260). The differences between civil law and common law are the subject of an extensive literature (see Merryman 1969) but a few are particularly salient: Common law attributes legal standing to judicial opinions and traditions, while civil law decisions are supposed to be based entirely on the codified legal text. While civil law thus grants less autonomy to judges, it grants greater autonomy to prosecutors and investigating magistrates, who are given great freedom in

investigating crimes. Civil law is also somewhat less solicitous of private property than common law, placing a greater emphasis on the perceived public good.

4) Labor policies

The chief source of the unpopularity of indigenous law in French Cameroon was that it allowed the use of forced labor. The Germans had imposed a labor tax on the native population and used the conscripted men to build the country's first roads, railways, and plantations. The British abolished the system when they acquired Cameroon and in its place recruited workers by offering good wages. In fact, plantation labor in West Cameroon was a relatively attractive prospect throughout the colonial period, and it attracted many migrants from southern Nigeria (LeVine 1964: 196-197).

The French, by contrast, swiftly reimposed the labor tax in a disguised form, the *prestation*, mostly for railway construction. The workers were unpaid and badly treated, with the death rate averaging around 60 per thousand workers (LeVine 1964: 104-110). Chiefs and colonial officials used kidnapping and corporal punishment to fulfill labor demands and were particularly enthusiastic in enforcement because they were often able to divert the laborer to work on private farms and plantations. The worst aspects of the system were repealed under international pressure in 1930, but the *prestation* continued in various forms until 1952, and it remains a bitter folk memory for many Cameroonians (Rubin 1971: 57).

5) Education and religion

Missionary groups had been active in Cameroon under the German regime and had already made many converts. The British encouraged this activity, and naturally English speaking Protestants predominated among the missionaries and their converts. Even today West Cameroon is the most Protestant part of the country. The colonial government, always anxious to

save money, allowed the missionaries to monopolize educational and social provision—nearly 90% of students in West Cameroon attended mission schools (Johnson 1970: 84).

The French government played a marginally larger social role in East Cameroon, where only two thirds of students attended mission schools (Johnson 1970: 84). The most important government policy, however, was conscious favoritism of the Catholic Church over the Protestants. The Catholics developed a large and successful network of secondary schools, while the Protestants tended to remain focused at the primary level (Johnson 1970: 82-88). The level of collaboration with the church was unusual for French Africa, and was a result of the fact that the French acquired Cameroon after anticlericism had ceased to be a major issue in French politics.

The cultural differences inherited from colonialism remain highly salient in Cameroon today. English is the common second language of Western Cameroon, and Westerners remain oriented towards the English-speaking media and international Anglophone culture, while the East is French-speaking and oriented towards France. The two parts of the country also retain separate educational systems: Western students study for A-levels, Eastern students for the *bacalaureat*. These differences have persisted despite strenuous government attempts at national integration.

6) Development and investment

While the British government's rationale for empire was to increase trade, in practice economic policy was *laissez-faire*, which in the Cameroonian case shaded into neglect. The economic life of the area was dominated by migrant traders from Nigeria and the coastal plantations, most of which retained their German owners. Development grants from Britain were minimal in general and usually flowed to other areas. From 1955 to 1960 the Colonial Development Corporation invested only £2.2 million in West Cameroon, only 6.2% of what the

French were putting into the east (Ndongko 1986). The only interventionist policy of the colonial state came about accidentally, when confiscated German plantations were transferred to the Cameroons Development Corporation (1946). The CDC played a large role the economy of West Cameroon, but its profitability and efficiency were inconsistent (Rubin 1971: 79-81).

While the British Empire included many territories more attractive to investors than West Cameroon, East Cameroon was a relatively well positioned to attract Franc-denominated investments. The flow of money intensified after 1946, when the French government, as part of its policy of binding together the Empire established the colonial investment program FIDES² (Atangana 2009). Over \$500 million was invested in Cameroon between 1947 and 1959, triggering an economic boom and large scale urbanization—in the 1950s imports increased 700%, exports 250%, and the population of Doula 200% (Rubin 1971: 58). The infrastructure built with FIDES aid—roads, a new railway—would give large advantages to the economy of East Cameroon in the post-independence era.

How typical was the Cameroonian Experience?

The many institutional variations within empires makes it difficult to draw conclusions about British and French colonialism as a whole from the Cameroonian case, but it is still desirable to put Cameroon in a larger historical context. It is easier to make generalizations about the French than about the British Empire. With some exceptions (Algeria, coastal Senegal) the French possessions were colonized in the last two decades of the 19th century, received relatively few European settlers, and were exposed to similar institutions and policies (administrative centralization, assimilation, forced labor, restriction of traditional authorities) (see Gann and Dunnigan 1967, Deschamps 1971). This homogeneity is reinforced by the fact that a large

² *Fonds d'Investissements pour le Developpement Economique et Social*

majority of France's former colonies are in Africa, and all but the North African ones were administered by the colonial ministry.

Within this context, Cameroon appears to be relatively typical. Its bureaucratic structure, administrative policies, and political economy were nearly identical to neighboring countries in French-speaking Africa. The few exceptions, like the relatively large role of the Catholic Church in the educational system, seem to be minor. If anything, Cameroon seems to be a relatively favorable case of French colonial influence. Due its geographical location and the minor but persistent hectoring of the League of Nations, Cameroon appears to have had a higher level of investment inputs and a relatively more open and humane political structure than some French colonies in Africa.

Making general statements about the British Empire is more difficult. Britain's overseas possessions were acquired over three centuries, and many had long traditions of self-government and autonomy. Similarly, the empire included possessions in a wide range of cultural and climatic zones, many of which received substantial numbers of settlers. These territories were administered by a number of distinct bureaucracies with different goal and methods (India Office, Colonial Office, Foreign Office, various private corporations). Aside from a general reluctance to use forced labor and a relatively large willingness to delegate political authority, it is nearly impossible to generalize about British colonial institutions. Indirect and direct rule, assimilation and association, interventionism and laissez-faire—all coexisted within the same empire and often the same country.

Despite this heterogeneity, it is easy to conclude that West Cameroon received a relatively poor colonial legacy. The territory was ruled in an offhand and indirect fashion that did little to expose its inhabitant to modern political institutions. Similarly, the colony received

relatively few of the investment inputs that other colonies received: There were no railways, few roads, and no irrigation projects. What social and economic modernization did occur was led by private outsiders: German planters, Nigerian traders, American missionaries. Cameroon was acquired as an afterthought and was administered primarily to avoid spending money.

Cameroon thus presents a hard case for the hypothesis of a superior British institutional legacy. The comparison between West and East Cameroon is thus not just a comparison between a British colony and a French one but a comparison between a relatively poor and neglected British colony and an average to well-off French one. Even if, on average, British colonies enjoyed superior legacies, this comparison introduces a bias in the opposite direction.

Post-Colonial Cameroon

The French had originally intended to stay in Cameroon for an indefinite period, but in the late 1950s moved precipitously towards granting independence. They did not move rapidly enough for the largest Cameroonian nationalist group, the *Union des Populations du Cameroun* (UPC). The UPC tried to force the government's hand by conducting a low-level insurgency in the Bamileke areas of the highlands, though the conflict spread into Bamileke-populated areas of British Cameroon as well (Johnson 1964: 348-364). The French government ignored the violence and granted independence in 1960 to its own favored candidate, Ahmadou Ahidjo of the *Union Camerounaise*. In the British zone, the question was not when the country would become independent but with whom. In 1961 the British zone held a plebiscite on whether to join Nigeria or Cameroon. The Fulani north elected to stay in Nigeria, but the south (present day West Cameroon) chose to "reunite" with the Francophone east. As part of the reunification

agreement, Cameroon was made a federal state, with the Westerners granted substantial autonomy (Chiabi 1997: 105-156, LeVine 1964).

This autonomy proved ephemeral. Cameroon under Ahidjo rapidly developed into a one-party state, and the central government worked to undermine the West Cameroon government, culminating with the official abolition of the federal system in 1972. Anglophone Cameroonians complained that they were discriminated against in public employment and public goods provision (Tajoche 2003). Their complaints are borne out by some facts. For example, East Cameroon has 0.051 km of road per square kilometer, while the West has only 0.043 km.³ Similar patterns can be seen for public schools and public hospitals. These discriminatory policies were intensified under Ahidjo's successor, Paul Biya (1980-present), whose position was strengthened by a flood of offshore oil revenue in the mid 1980s. A widespread protest movement exists in the West against the government's discriminatory policies, but it has gained little traction in Cameroon's authoritarian political climate (Takougang and Krueger 1998).

The discriminatory policies of the Cameroonian government represent another reason Cameroon is hard case for testing the British institutions hypothesis. Whatever the institutional inheritance of colonialism, the government's favoritism towards the Francophone area biases us against the finding British institutions to have superior outcomes. This effect is reinforced by the fact that the natural centers of economic activity in any African country, the capital (Yaoundé) the major port (Doula), and the country's only railway (which connects them) are all located in the East. Any historical advantage the British zone received is thus pre-colonial rather than post-colonial in nature.

³ The data used in making this calculation are described below. The discrepancy between the British and French sides is even larger if we compare West Cameroon with the two neighboring French provinces (West and Littoral), which have a road density of 0.079 km per sq. km.

One final observation is in order: while the comparison between the British and French regions within Cameroon has a number of methodological advantages, it only allows us to test for colonial legacies that operate through local institutions (formal and informal). To the extent that some colonial legacies are thought to operate through central government institutions, the fact that the central government came from one colonizer, the French, is an obvious limitation. Therefore, this research design means that we cannot speak to whether the colonizer affects institutions and policies at the national level, such as whether a country is democratic or how much it spends on national public goods. We can, however, assess whether different colonial-era practices have led to persistent local differences in the lives and well-being of the people who live on either side of the intercolonial boundary.

Data and Methods

To test the various theories of colonial institutions, we used the 2004 Demographic and Health Survey (DHS) for Cameroon. DHS is a non-profit group dedicated to compiling internationally comparable survey data, traditionally focused on women's and child health. The 2004 Cameroon survey was carried out by the Government's National Statistical Institute (INS) and Ministry of Public Health, with funding from USAID, UNICEF and the World Bank (Cameroon INS 2005). For the purposes of the survey, the country was divided into 22 sampling strata: the rural and urban regions of each of Cameroon's ten provinces plus its two major cities, Yaoundé and Doula. Within each stratum, clusters (rural villages or urban neighborhoods) were chosen by random sampling from the universe of census enumeration zones, with the probability of selection proportional to the number of households in the zone. Households were then

randomly selected from each cluster so that, within each stratum, the households are all equally weighted (Cameroon INS 2005).

A number of variables were measured at the household level. In addition, detailed individual surveys were administered to all women in each household aged 15 to 49, and, in half of the households sampled, an individual survey was given to all men in the same age range. The final sample included 10,656 women and 5,280 men, selected from 10,462 households, which are in turn sampled from within 467 clusters. To correct for differences in sampling probabilities in the different surveys, DHS provides weights for each observation, which were used throughout the analysis. Not including the weights did not significantly alter any of the results.

The Cameroonian survey takers recorded the exact location of each cluster using handheld GPS units. Using ArcGIS software, we were thus able to plot the location of each cluster relative the former colonial border, as well as other features such as cities, major roads, rivers, and ecological zones. One minor complication is that the location of each cluster is only known with error: In order to prevent users of the survey data from recontacting respondents, DHS displaced the location of each cluster in a randomly chosen direction by a randomly chosen distance, 0-2 km for urban clusters and 0-5 km for rural clusters. The true positions of each cluster were then destroyed. The “jittering” of cluster location introduces a small amount of measurement error, whose implications we discuss below. Fortunately, the data record the true province in which the cluster is located, so there is no danger of misclassifying a cluster on the wrong side of the British-French border.

Regression Discontinuity Research Design

The use of regression discontinuity (RD) is becoming increasingly popular in the social sciences (see, e.g., Imbens and Lemieux 2007 for a discussion of methodological issues and citations to recent studies). When the probability of treatment depends on an exogenous cutoff of some other variable, comparing outcomes in the neighborhood of the cutoff is an attractive way to identify the treatment's causal effects. For example, Lee, Moretti, and Butler (2004) use such a design to estimate the effect of party affiliation on a congressional voting behavior. Districts whose Democratic vote share is around 50 percent are similar in many respects, but the party of the representative depends on whether the votes share is just above or just below that exogenous cutoff. Comparing the voting records of Democratic and Republican representatives from close districts provides a way to estimate the effect of party affiliation while controlling for district characteristics.

Here, we exploit the fact that communities received different colonial-era treatments depending on which side of the British-French boundary they were on, even though communities in the vicinity of the border are similar in other respects. Given our focus on the area around the border, we restrict our attention in what follows to only four provinces: the two British provinces (Northwest and Southwest) and the two French provinces that share most of the intercolonial boundary (West and Littoral).⁴ Thus, our sample includes clusters that are no more 100km from the border on the British side and no more than 160km from the border on the French side, though some tests, as described below, focus on even narrower bands. See Figures 3 and 4 for map of the four provinces and the location of the rural and urban clusters, respectively. Note that the urban clusters include a large number in Douala, Cameroon's largest city, with a population

⁴ We note that Adamoua province touches the intercolonial border at the far north; however, there is only one cluster from Adamoua close to the border and none in close proximity on the British side. Hence, we exclude observations from Adamoua.

of around 2 million. These clusters, which were sampled separately from the rest of Littoral province, are not included in subsequent tests performed on urban observations, which should be seen as comparisons of small cities and towns.

[INSERT FIGURES 3 AND 4 HERE]

In principle, the RD technique allows us to identify the effect of the colonial treatment while controlling for underlying conditions that also affect economic and social outcomes. That said, there are three features of our data that complicate this analysis. First, while in most RD designs, the discontinuity is a point on a line (e.g., the 50 percent cutoff in vote share), in our case, the discontinuity is a line on a surface: a border that runs roughly north-south for about 350 km. Even though conditions do not change as one crosses the border at any particular point, conditions vary quite dramatically along the length of the border. Because the line was not tied to physical or demographic features, it cuts through different ecological and climate zones, elevations, and regions with varying ethnic, linguistic, and religious composition. Thus, at a given distance from the border, there can be substantial heterogeneity in outcomes. For example, communities near the coast tend to be better off than those farther inland; among the sample of clusters within 10km of the boundary, distance to the coast ranges from 0.1 to 320km. We deal with this challenge in two ways. First, we present comparisons of near neighbors along the border: clusters that were not only close the boundary, but also close to one another.⁵ The pairings of rural clusters are indicated on Figure 3. This permits a clean test of the boundary

⁵ For our purposes, “near neighbors” were pairs of clusters that were (1) on opposite sides of the border, (2) both within 15km of the border, and (3) within 30km of one another. If more than one cluster could be paired with a near neighbor on the other side of the border, the closest cluster was selected; the cluster(s) not selected were then eligible to pair with a different neighbor, if one existed. There are, however, two rural clusters on the British side (372 and 464) which are very close to one another, similar in their attributes, and almost the same distance from a cluster on the French side. Since a good alternative pair does not exist for either, these clusters were aggregated together.

effect, but it also substantially reduces the sample size, because some clusters do not have near neighbors. The second way we deal with this challenge is by including in the regression models a host of controls for other factors that determine outcomes. These controls are discussed below.

A second consideration that complicates the research is that the observations are not spread uniformly in space. Because of the survey sampling design, households are bunched together in clusters, and every household within a cluster has the same location. This means that, as one moves from the border in either direction, the number of households at each distance is quite lumpy. This is particularly true of urban clusters, since urban areas are few and far between but, where they do exist, they can contain a number of clusters. Indeed, it is possible to find only two pairs of urban clusters that are near neighbors on either side of the border, so the near neighbor comparison was not done for urban observations. More generally, the lumpiness of the observations complicates estimating the relationship between outcomes of interest and distance from the discontinuity. While standard practice often involves estimating this relationship non-parametrically (e.g., by looking at bins of fixed width on either side of the discontinuity) or using polynomials, overly flexible estimation techniques may end up overfitting the data by attempting to “chase” the lumps.

This problem is compounded by the third challenge in our data: the fact that cluster locations have been randomly displaced by as much as 5km, for rural clusters, or 2km, for urban clusters. Different estimation techniques are more or less sensitive to the measurement error introduced by this jitter. When we compare rural clusters that are reported to be within 10km of border, then we know that some of these clusters may actually be as far as 15km from the border. Moreover, there may be some clusters that are reported to be more than 10km from the border but which should actually be part of this comparison. But because these errors are random and

equally likely on both sides of the border, the measurement error does not bias the comparison. Similarly, when we estimate the linear effect of distance to the border, the measurement error is relatively small. The attenuation bias introduced by measurement error depends on the ratio between the variance of the noise and the total variance of the poorly measured variable (e.g., Greene 1997, 435-440). If the location of the cluster is uniformly distributed in a circle of radius 5km, then the variance in the distance measure due to the jitter is about 4.2.⁶ By comparison, the distance measure in our sample has a total variance of 820. Thus, the reliability of the distance from border measure is about 0.99, where 1 is the reliability of a variable measured with no error. By contrast, if we were to estimate the effect of distance from the border by analyzing evenly spaced bins—0-10km, 10-20km, etc.—then misclassification due to the jitter would be a more serious concern.

To overcome these problems will use three different techniques to estimate the effect of the discontinuity: 1) a regression with *Distance from the border* on the French and British sides as independent variables and a dummy variable for *British side*, which is a direct estimate of the discontinuity; 2) a regression using points within a fixed distance from the border; 3) in the case of rural clusters, simple bivariate comparisons (e.g., comparisons of means) using only pairs of near neighbors on either side of the border. These methods are subject to different problems (lumpy data, measurement error and small N) but together they provide a series of methods for estimating the effect of colonialism.

Dependent Variables

⁶ This calculation was done by simulation and was based on the assumption that the border is straight for 5km on either side of the perpendicular projection of the cluster center onto the border.

Though the DHS surveys are designed for the use of epidemiologists and public health workers, many of their questions can be related to concepts in the literature on colonialism. Here we examine four of these concepts and the survey questions that provide the best chance of measuring them.

Economic Development and Wealth

Most studies of the effect of colonialism on economic growth use either the outcome variable (change in GDP per capita) or the policies that are presumed to lead to it (shareholder rights). As both these variables are measured at the national level, they are unsuitable for measuring differences between regions of Cameroon. To get at these differences, we are forced to measure economic growth indirectly, through its effect on household wealth. This approach presents its own problems. In a poor country, individuals are likely to receive a large portion of their income in kind and may have only a hazy notion of the cash value of either their income or their assets. The usual solution has been to study consumption, and this was the strategy followed by DHS. They collected data on the goods possessed by each household,⁷ which were then analyzed using principal component analysis to obtain of *Wealth Factor Score*. This factor score was normalized to have a mean of zero and a standard deviation of 1. As is typical for developing countries, the distribution of this score is left skewed—the median is -0.32—and has a long right tail, with values ranging -1.25 to 3.21.

Local Public Goods

⁷ Goods surveyed include cars, motorcycles, bicycles, televisions, radios, type of floor material, type of toilet, type of kitchen fuel, the number of beds, electricity and type of drinking water.

The usual definition of public goods as non-rival and non-excludable is often difficult to meet and even more difficult to measure. In practice, students of developing nations have tended to focus on institutions that provide a public benefit and are in practice non-rival: schools, health facilities, electricity, and improved water sources (Banerjee and Iyer 2005). This approach creates another difficulty—identifying who provided a given public good. Schools, clinics and covered wells may be provided by public-spirited individuals, local governments, national governments, foreign NGOs, or some combination of these, and it is often difficult to determine *ex post* who should be credited. For our purposes, it is important to isolate the effect of *local* actors and institutions, since any variation in colonial legacies must operate at the local level. By contrast, the distribution of public goods spending by the central government is a potentially confounding factor, given the latter's bias toward the francophone zone.

We follow Banerjee and Iyer in arguing that certain public goods reflect the actions of local actors, through either their direct financial contributions, their ability to organize collective action, and/or their ability to lobby government agencies and NGOs. To ensure the validity of this assumption, we focus on one public good in particular, the provision of *improved sources of drinking water*. Unlike public schools and hospitals, the laws governing water supply in Cameroon give sizable scope to local initiative: Communities must commit labor and money to water projects in order to obtain funds from the central government (Page 2005: 62-3). In addition, water improvements do not require the government to hire and pay large numbers of people to maintain them, which gives the center increased control over other categories of public goods.

The importance of local initiative in this context also helps address the potentially confounding role of international efforts to promote development. From 1962 to 2007, the

Swiss NGO Helvetas helped build some 550 water projects in Cameroon, working closely with local governments and communities to provide technical assistance and training (Helvetas 2007). The fact that most of these projects were in West Cameroon might mean that the superiority of local public water provision was, at least in part, an externally-generated phenomenon. However, there is good reason to believe that the success of this intervention was mediated by local institutions. The NGO had a “community development” philosophy, which meant that they saw themselves as supporting “self-help initiatives” of the rural villages (Helvetas 2007). After a successful start in West Cameroon, the (French speaking) NGO sought to extend its efforts to francophone zone, but was unable to find cooperative villages and government agencies there.

Access to an improved water source was determined by a question in the household survey in which respondents were asked about their source of drinking water. Possible answers include: piped water in the house, in the courtyard, in a neighbor’s house, or from a spigot along the road; well water from either a well with a pump, a protected well, or an unprotected well; river/stream water from a protected or unprotected source; and rainwater. We created a dichotomous indicator for an improved water source, which includes sources that are piped, protected, or have a pump. In the national sample, about 45 percent of rural households and 88 percent of urban households have an improved water source. The results reported below are essentially unchanged if we use a more stringent criterion that the household have access to piped water.

Education and Literacy

Education is often argued to be an important variable for the development of democracy, economic growth, and the development of a vital community. While this view has been

challenged (Acemoglu, Johnson, Robinson and Yared 2005), education remains a variable of interest to political scientists. It is very difficult, however, to identify the causes of an individual's educational attainment. In some sense education is a public good, as someone has to construct the school building. Attendance, however, requires inputs of both time and money by parents and thus is correlated with their socio-economic status.⁸ Finally the effectiveness of the education children receive if they do attend is determined by the government's ability and willingness to pay and discipline teachers. The many factors involved in educational provision make it difficult to determine whether there is a colonial legacy in education, or how it might operate. Despite these problems, we test two measures of education: *literacy*, a dummy variable which indicates whether or not a respondent was able to read whole sentences, and *highest level attained*, an ordinal variable that captures whether the respondent had no education, some primary education, some secondary education, or had education beyond secondary.⁹ Both of these variables were measured using the individual level survey of male respondents. In the national sample, the 53 percent of rural men and 81 percent of urban men were literate; 33 percent of rural men and 66 percent of urban men had secondary or higher education.

Independent Variables

Geography

Aside from the discontinuity, a number of other geographical variables are known to affect economic performance. Clusters close to the coast have superior access to transportation

⁸ Attendance by females is further complicated by cultural beliefs and practices.

⁹ West Cameroonian schools require an additional year of primary and secondary school to attain a similar qualification, so a specification using *years of education* would be unable to untangle the colonial legacy from this continuing difference in rules. It should be noted, however, that West Cameroonians have a substantially higher average time in education than East Cameroonians.

and export agriculture. *Distance from the coast* (logged) was calculated using ArcGIS. Rural areas closer to urban areas have superior employment opportunity and access to urban markets. *Distance to city* (logged), is the distance from the center of each cluster to the nearest of Cameroon's ten largest cities and its provincial capitals. Similarly, clusters close to a major road may have better access to markets, and we were able to calculate *Distance to Nearest Road* (logged) using data from the Central African Regional Program for the Environment (CARPE), a program of USAID. Communications and trade are also more difficult for locations at a high elevation. *Altitude* is the cluster altitude in meters. In tests of water source, we also control for *Distance to Nearest River* (logged), which determines the availability of river water and, presumably, the demand for alternative sources.

As noted earlier, the region around the intercolonial border includes a variety of different ecological zones, which differ in terms of vegetation, climate, and soil quality. Variation in ecology can have a large effect on economic and social outcomes, through both the productivity of agriculture and the level of disease. To control for this, we code each cluster according to its *Ecological Zone*, as defined by CARPE. Particularly for rural clusters, this coding has the potential to be confounded by the measurement error in cluster location. It is quite possible that clusters near the border between ecological zones were displaced into an adjacent zone. To deal with this, we use ArcGIS to map the 5km radius circle around each rural cluster and then calculate what fraction of the circle's area was located in each ecological zone.¹⁰ Hence, the variables indicating ecological zones have values ranging from 0 to 1. This technique not only

¹⁰ More than three-quarters (61 of 79) of rural clusters in the four provinces of interest fell entirely in one ecological zone. For urban clusters, this correction is not as important, due to the smaller size of the jitter and the fact that few urban clusters are located near the border between zones.

captures the uncertainty induced by the jitter but also smoothes out ecological effects in areas where different zones meet.

Another potentially important geographical covariate is distance to the capital city. Following Herbst (2000), many scholars have argued that African states devote resources to the areas close to the capital, while neglecting the periphery. In the Cameroonian case, we might expect areas closer to Yaoundé to be better developed than areas close to the Nigeria. However, in practice, distance from the capital is almost perfectly collinear with distance to the former colonial border, for which we already control. Thus, we expect that distance from the border on the British side will be negatively associated with social and economic outcomes, while distance from the border on the French side (i.e., closer to Yaoundé) will have a positive effect. Herbst's hypothesis, if it holds, creates an additional rationale for focusing on the discontinuity: otherwise, a simple comparison of outcomes in the British and French zones would be biased in favor of the latter.

Throughout this analysis we will run separate specifications for urban and rural areas. As we have seen, the rural observations are much less lumpy geographically, and we thus expect the effect of the colonial discontinuity to be much better measured in rural areas. In addition, urban areas, as centers of formal sector production and government administration, are much more likely to be affected by post-independence economic policies, social changes, and internal migration. We should thus expect the influence of colonialism to be attenuated in urban areas.

Other Control Variables

The survey data include a number of variables measured at household and individual level that can have an effect on socio-economic status and performance: *Gender of Household Head*, *Religion* and *Ethnicity*. Households headed by women tend to be poorer than those headed by

men, due to their having fewer wage earners. *Religion* and *Ethnicity* are categorical variables.¹¹ Some ethnic groups may perform better than others, notably the Bamileke of West province. Controlling for this effect removes a potential confounding variable for economic performance. However, because of the large number of ethnic groups in the country, many groups have only a small number of respondents in the sample. In regressions with dichotomous dependent variables (i.e., improved water source and literacy), some small groups may drop out due to perfect prediction of the dependent variable. Hence, while we report results from regressions that include these controls, all models were estimated without them as well; any discrepancies will be noted.

In our analysis of the water data, we include a measure of household wealth, in order to focus on the community's public goods contribution. We are unable to use the wealth factor score as a control variable because the water question was used in its construction. To provide a rough control for individual wealth, we include a variable for type of flooring material, a consumption measure uncorrelated with public goods inputs. The variable *Improved floor* indicates whether or not the household had a floor covering other than earth or sand, something that was true of about half of households nationwide.

Results

In this section, we present the main results. Each dependent variable was analyzed using the methods outlined above: (1) a regression discontinuity analysis that estimates the effect of

¹¹ Since questions about ethnicity and religion were only asked in the individual-level surveys, these traits were connected to households by determining the ethnicity and religion of the head of household, if that individual was surveyed. If the head of household was not surveyed, then we use the religion and ethnicity of the oldest male respondent in the household. If no male member of the household was surveyed, we use the oldest female respondent in the household. There are some households in which no individual was surveyed, so we are missing data on ethnicity and religion.

distance from the border and allowing for a discontinuity at the border itself; (2) a regression performed only on clusters that are reported to be within 10km of the boundary; and (3) for rural households, paired comparisons of near neighbors on either side of the border.

Household Wealth

Overall, there is no difference in rural household wealth when we compare the two British provinces (Southwest and Northwest) and the two neighboring French provinces (West and Littoral). Among rural households, the average wealth score in the British region is -0.46 while the average in the nearby French regions is -0.50, a statistically insignificant difference. Recall, however, that British region is more peripherally located, and so the overall aggregates may understate any British advantage that holds at the discontinuity. Indeed, this is precisely what we find. Table 1 reports difference in means tests using six cluster pairs that are near neighbors on either side of the border. In 4 of the 6 comparisons, the British cluster had higher average household wealth, with the difference statistically significant (10 percent level) in 3 of those cases. In 2 of the 6 comparisons, the French clusters had higher household wealth. The average difference across all 6 comparisons favors the British side by 0.15, a difference that is significant at the 1 percent level.

Table 2 reports two sets of multiple regression estimates. The estimates were obtained using ordinary least squares regression, with weights to correct for different sampling probabilities across provinces and with standard errors clustered by survey cluster.¹² In column (1), we estimate the effect of distance from the border, on either side, as well as the discontinuity

¹² Because of the clustering of standard errors, dummy variables with only one non-zero observation have to be dropped. This meant that effects for a few small ethnic groups, with only one household in the sample, were not estimated.

at the border.¹³ The coefficient on *British side*, which gives a direct estimate of the discontinuity, is positive and significant. Because the dependent variable is a factor score, it is hard to give substantive meaning to the estimates, except to note that the standard deviation of the score is 1. Hence, the estimate in column (1) imply that moving across the border from the French to the British side is associated with an increase in mean household wealth equivalent to about one quarter of the national standard deviation. Notice that wealth is negatively correlated with distance from the border on the British side (though the estimate is insignificant) and positively correlated with distance from the border on the French side. This pattern is consistent with Herbst's (2000) expectation that economic development decreases with distance from the capital. Column (2) reports a similar analysis focusing on the clusters that are reported to be within 10km of the border. Once again, the effect of being on the British side is positive and significant, equivalent to about 40 percent of the national standard deviation. Similar results obtain if we expand the band around the border to 20km or 30km on either side.

[INSERT FIGURE 5 HERE]

Figure 5 shows the estimated discontinuity plotted alongside actual data. The data points were generated by regressing household wealth on all of the control variables other than those capturing distance to the border and the discontinuity, calculating the residuals, and then averaging across households within each cluster. Thus, each point represents that average household wealth of a rural cluster, once the effects of other covariates (e.g., altitude, ecological zone, ethnicity, religion) are taken out. The lines then show the estimated effect of distance to the border, and the 95 percent confidence intervals around the estimates, using parameter

¹³ To be clear, *Distance from border (British side)* equals zero for observations that are on the French side, and likewise for *Distance from border (French side)*.

estimates from the model in Table 2, column (1).¹⁴ Note that the estimated discontinuity is still significant (at the 10 percent level), though somewhat smaller, if the relatively wealthy British cluster near the border is removed. Since this cluster is reported to be around 12km from the border, it is not included in the regression model in column (2).

Turning to urban observations, we find that, in the aggregate, the household wealth in the two British provinces (0.57) is greater than in the two neighboring French provinces (0.44), a difference that is statistically significant. However, this comparison is problematic for several reasons. First, if we compare adjacent pairs of provinces separately—that is, Northwest vs. West and Southwest vs. Littoral—it becomes clear that the aggregate masks substantial within-colonizer variation. While the British side is wealthier when comparing the two coastal provinces (0.89 vs. 0.32), the reverse is true when comparing the two inland provinces (0.22 vs. 0.59). Moreover, the comparison of Littoral and Southwest is complicated by the fact that observations from Douala, the major port city and capital of Littoral province, were excluded. If observations from Douala are included, average in urban wealth in Littoral rises to 0.97, which puts it on par with Southwest. Finally, Table 3 reports multiple regression results analogous to those presented above. It is clear that, once other control variables are included, there is no significant effect, in either direction, associated with the border.¹⁵ In short, the colonizer effect that shows up in rural households is not present in the urban sample.

¹⁴ These estimates, as well as the confidence intervals, were obtained using Clarify. In order get the lines and data points to be measured on the same scale, the residuals were re-centered by adding average household wealth before calculating cluster averages.

¹⁵ The positive coefficient on distance to the border on the British side is not robust to the exclusion of ethnicity and religion indicators. Douala observations are not included in these regressions, but since Douala is about 20km from the border, these observations would be excluded from model (2) anyway.

Improved Water Source

In addition to being wealthier, rural households in the British provinces are also more likely to have access to an improved source of drinking water, which we consider a proxy for the ability to provide local public goods. For this dependent variable, the British side's advantage shows up even in the provincial aggregates. Among rural households in the two British provinces, 50.5 percent have access to an improved water source; in the two neighboring French provinces, the corresponding number is 36.3 percent, a difference that is significant at the 1 percent level.¹⁶ The comparison is even starker if we look at whether a household has access to piped water, something which holds for 39.4 percent of households on the British side compared to 14.7 percent on the French side. Table 4 compares the frequency of improved water sources in the six pairs of near neighbors. Once again, the British cluster does better in 4 of the 6 pairs, which a significant advantage for the French side in only 1 case.

Table 5 presents the multiple regression estimates obtained using a probit model, again with probability weights and clustering of standard errors. As before, column (1) reports the discontinuity, along with the effects of distance from the border. The estimates show that the probability of having an improved water source decreases as one moves away from the capital and approaches the border from the French side; it then jumps up at border then stays roughly level as one moves further into the periphery. The discontinuity is significant at the 10 percent level ($p=0.06$). If we use a more restrictive measure—indicating a piped water source—then the discontinuity is larger and significant at the 5 percent level. The same finding emerges when we focus on clusters within 10km of the border (column 2). The estimated coefficient translates to

¹⁶ This comparison also holds if we look at adjacent provinces separately, i.e., comparing Southwest (58.8 percent) to Littoral (38.3 percent) and Northwest (43.5 percent) to West (35.1).

an increase of 0.11 (from 0.44 to 0.55) in the predicted probability of having an improved water source on the British side of the border.

[INSERT FIGURE 6 HERE]

Figure 6 shows the estimated discontinuity plotted alongside actual data. In this case, the data points measure the fraction of households in each cluster that had access to an improved water source. The solid line shows the predicted probability that a household will enjoy such an improvement given its location relative to the border, with all other variables set at their means. The dashed lines show the 95 percent confidence intervals around these predictions.

Turning to urban observations, there is some evidence to suggest an advantage on the French side. In aggregate, there is no difference in the frequency of improved water sources across the two zones, though once again the British side does somewhat better in the comparison of the coastal provinces while the reverse is true in the inland provinces. Table 6 presents the multiple regression results. The discontinuity analysis in column (1) reveals no colonizer effect. However, when we focus on the sample of households close to the border, there is an apparent advantage to being on the French side. Indeed, within 10km of the border, 100 percent of urban households on the French side have an improved water source, compared to 70 percent on the British side. Looking back at Figure 4, however, we see that all French households within this narrow band are in the wealthier Littoral province, while British households in this band come from both the coastal and inland provinces. When we compare the two coastal provinces, the French advantage is 100 vs. 87.5 percent, still significant.

The fact that being within 10km on the French side perfectly predicts having an improved water source means that we cannot use a probit model on this sample to estimate the colonizer effect controlling for other factors. If we extend the range slightly, to 15km, there is sufficient

variation, and the estimates are shown in column (2). In this model, the coefficient on *British side* is negative and significant at the 10 percent level. This result is not, however, robust to the exclusion of ethnicity and religion variables. In sum, there is some evidence that urban households on the French side of the border had an advantage in getting improved water sources, but the result does not hold up to all the robustness checks.

Literacy and Educational Attainment

The results on literacy and educational attainment can be dealt with briefly. In the aggregate, there are no significant differences on either measure among male survey respondents between the zones. In multiple regression analysis, there were no significant discontinuities at the border, nor were there statistically significant differences among the sample within 10km of the border.¹⁷ In the model of literacy among rural men within 10km of the border, there was a significant positive coefficient on *British side*; however, this finding was not robust to the exclusion of ethnicity and religion variables, nor was it confirmed in the discontinuity analysis.¹⁸

Conclusions

The results we have presented suggest that despite that despite administrative neglect in both the colonial and post-independence eras, rural areas of West Cameroon perform

¹⁷ Results are available from the authors.

¹⁸ This case shows the potential problem associated with the ethnicity indicators. When these variables are included, 29 observations (out of 257) are dropped due to perfect prediction of the dependent variable. This includes 13 respondents from the Peulh, all of whom were illiterate and on the British side of the border. If we attribute these respondents' illiteracy to their ethnicity then it makes sense to drop them (as the outcome would be no different on the other side of the border); however, this is a strong (and possibly offensive) assumption, and the exclusion of these respondents from the regression sample clearly contributes to the a positive coefficient on *British side*.

consistently better than rural areas of East Cameroon with essentially similar preexisting conditions. In these areas, the West has higher levels of economic dynamism, evidenced by greater household wealth, and better functioning local government institutions, evidenced by its higher level of public goods provision. We thus have limited confirmation of the hypothesis that British colonial institutions generate superior outcomes. We should check ourselves, however, before concluding that British-colonized areas always perform better or that West Cameroon is an elysia of wealth and strong institutions. The Eastern advantage in colonial and post-colonial investment and the centralization of most government functions in this zone have had substantial effects. In aggregate, East Cameroon is *richer* than the West, due to its larger concentration of urban areas. The East also has slightly higher levels of centrally-provided public goods like education and roads. The effect of colonial institutions thus coexists with the effects of government policy—where the capital is located and how money is spent. If colonial institutions matter, modern institutions certainly matter as well.

Another limitation of our results is that we cannot know by what mechanism British colonialism causes superior outcomes. In particular, we cannot easily separate the affect of the “soft” cultural effect commonly asserted in the cross-country literature from the “hard” extractive institutions usually chosen for within-country studies. Colonial origin is a macro-institution, with many different components that may differ in effect in different places. Analyzing the relative importance of these effects is a productive area for future research, and one that will hopefully take us closer to the design of policies to correct these inequalities in outcomes.

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Table 1. Rural Household Wealth: Paired Comparisons of Near Neighbors

Cluster pair	British wealth	French wealth	Difference
407 vs. 347	0.23	-0.40	0.63**
151 vs. 353	-0.61	-0.30	-0.31 +
464 & 372 vs. 403	-0.073	-0.40	0.33 +
146 vs. 152	-0.27	-0.64	0.37*
346 vs. 26	-0.72	-0.85	0.14
406 vs. 465	-0.77	-0.52	-0.24**
		Mean difference	0.15**

** p<0.01, * p<0.05, + p<0.1

Table 2. Regression Analysis of Rural Household Wealth

VARIABLES	(1) Discontinuity	(2) <10km from Border
British	0.241* (0.116)	0.385** (0.0869)
Distance from border (British side)	-0.000455 (0.00228)	
Distance from border (French side)	0.00432* (0.00164)	
Distance to city	-0.145+ (0.0741)	-0.378* (0.141)
Distance to coast	-0.0350 (0.0520)	0.00970 (0.0431)
Distance to road	-0.0925** (0.0278)	-0.189** (0.0475)
Altitude	2.25e-06 (8.66e-05)	5.33e-05 (0.000129)
Male-headed household	0.0807** (0.0245)	0.149** (0.0457)
Constant	-0.762** (0.270)	-0.355 (0.399)
Observations	1512	372
R-squared	0.393	0.446

Note: Controls for ecological zone, ethnicity, and religion included but not reported. Observations weighted by household weight. Standard errors corrected for clustering on survey clusters.

** p<0.01, * p<0.05, + p<0.1

Table 3. Regression Analysis of Urban Household Wealth

VARIABLES	(1) Discontinuity	(2) <10km from Border
British	-0.203 (0.221)	0.0348 (0.132)
Distance from border (British side)	0.00999* (0.00463)	
Distance from border (French side)	0.000419 (0.00316)	
Distance to city	-0.257** (0.0465)	-0.104 (0.188)
Distance to coast	-0.115+ (0.0583)	-0.0498 (0.0691)
Distance to road	-0.0385 (0.0419)	-0.126** (0.0233)
Altitude	0.000347+ (0.000184)	-0.000643* (0.000231)
Male-headed household	0.170** (0.0504)	0.152 (0.0993)
Constant	0.376 (0.440)	0.497 (0.520)
Observations	1242	252
R-squared	0.322	0.515

Note: Controls for ecological zone, ethnicity, and religion included but not reported. Observations weighted by household weight. Standard errors corrected for clustering on survey clusters.

** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Table 4. Improved Water Source in Rural Clusters: Pair Comparisons of Near Neighbors

Cluster pair	% improved British	% improved French	Difference
407 vs. 347	60.00	26.47	33.53*
151 vs. 353	0.00	44.44	-44.44 **
464 & 372 vs. 403	100.00	54.55	45.45**
146 vs. 152	72.22	7.14	65.08**
346 vs. 26	46.88	7.14	39.74**
406 vs. 465	5.71	9.09	-3.38

** p<0.01, * p<0.05, + p<0.1

Table 5. Regression Analysis of Improved Water Source (Rural Clusters)

VARIABLES	(1) Discontinuity	(2) <10km from Border
British	0.761+ (0.400)	1.217** (0.464)
Distance from border (British side)	0.00524 (0.00795)	
Distance from border (French side)	0.00970* (0.00392)	
Improved floor	0.202+ (0.111)	-0.202 (0.190)
Distance to city	-0.152 (0.224)	-1.471+ (0.796)
Distance to coast	0.269 (0.180)	1.375+ (0.823)
Distance to road	-0.371** (0.103)	-0.394* (0.195)
Distance to river	0.214* (0.0960)	0.0772 (0.408)
Altitude	0.000531+ (0.000312)	0.000160 (0.000867)
Male-headed household	-0.000431 (0.103)	0.0707 (0.140)
Constant	-1.001 (1.165)	4.858** (1.425)
Observations	1458	334
Percent correctly predicted	72.15	78.45
Frequency of modal outcome	55.21	50.90

Note: Controls for ecological zone, ethnicity, and religion included but not reported. Observations weighted by household weight. Standard errors corrected for clustering on survey clusters.

** p<0.01, * p<0.05, + p<0.1

Table 6. Regression Analysis of Improved Water Source (Urban Clusters)








VARIABLES	(1) Discontinuity	(2) <15km from Border
British	0.0605 (0.362)	-1.167+ (0.697)
Distance from border (British side)	-0.00431 (0.00963)	
Distance from border (French side)	0.0200* (0.00779)	
Improved floor	0.846** (0.145)	0.688** (0.197)
Distance to city	-0.306** (0.116)	-2.435* (1.088)
Distance to coast	-0.0159 (0.109)	0.0452 (0.176)
Distance to road	-0.462 (0.309)	-3.584* (1.493)
Distance to river	0.0301 (0.0793)	-0.125 (0.383)
Altitude	0.000181 (0.000451)	0.00146 (0.00134)
Male-headed household	-0.126 (0.101)	-0.509** (0.171)
Constant	3.005+ (1.725)	25.24** (8.679)
Observations	1111	457
Percent correctly predicted	86.77	88.62
Frequency of modal outcome	84.43	80.53

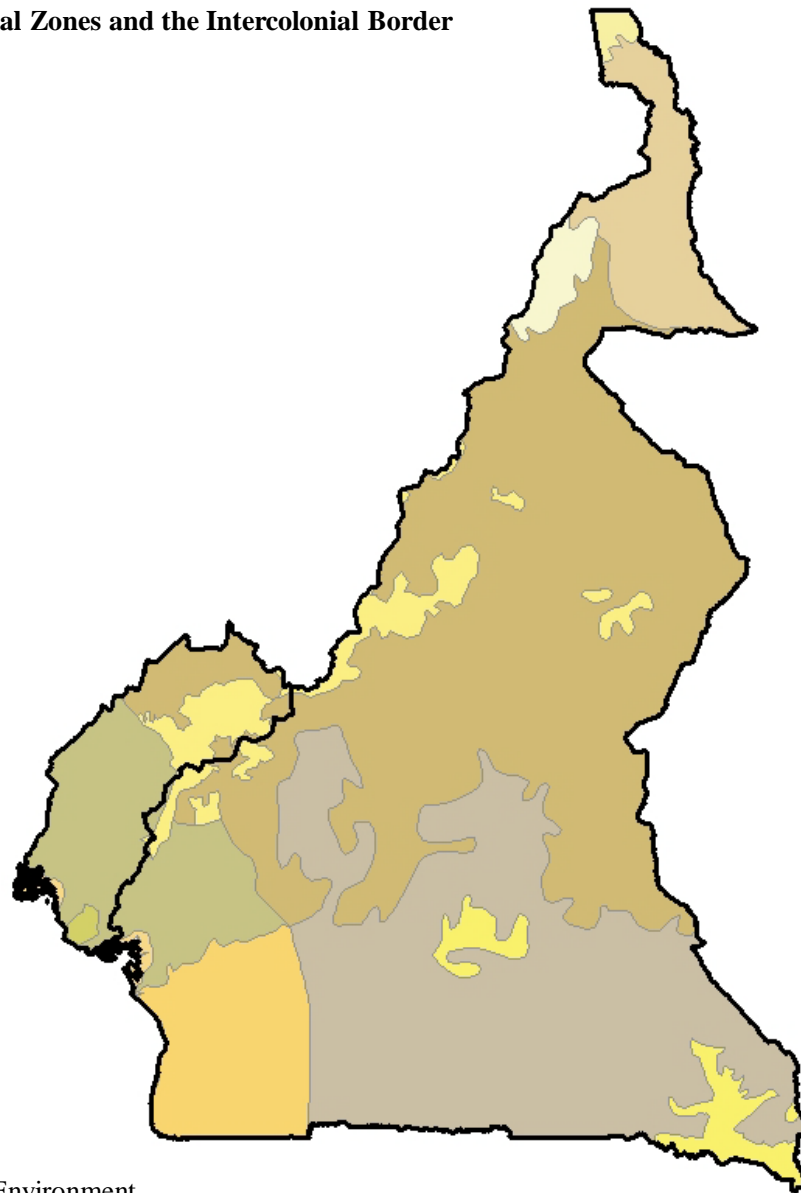
Note: Controls for ecological zone, ethnicity, and religion included but not reported. Observations weighted by household weight. Standard errors corrected for clustering on survey clusters.

** p<0.01, * p<0.05, + p<0.1

Figure 1. Cameroon's Ecological Zones and the Intercolonial Border

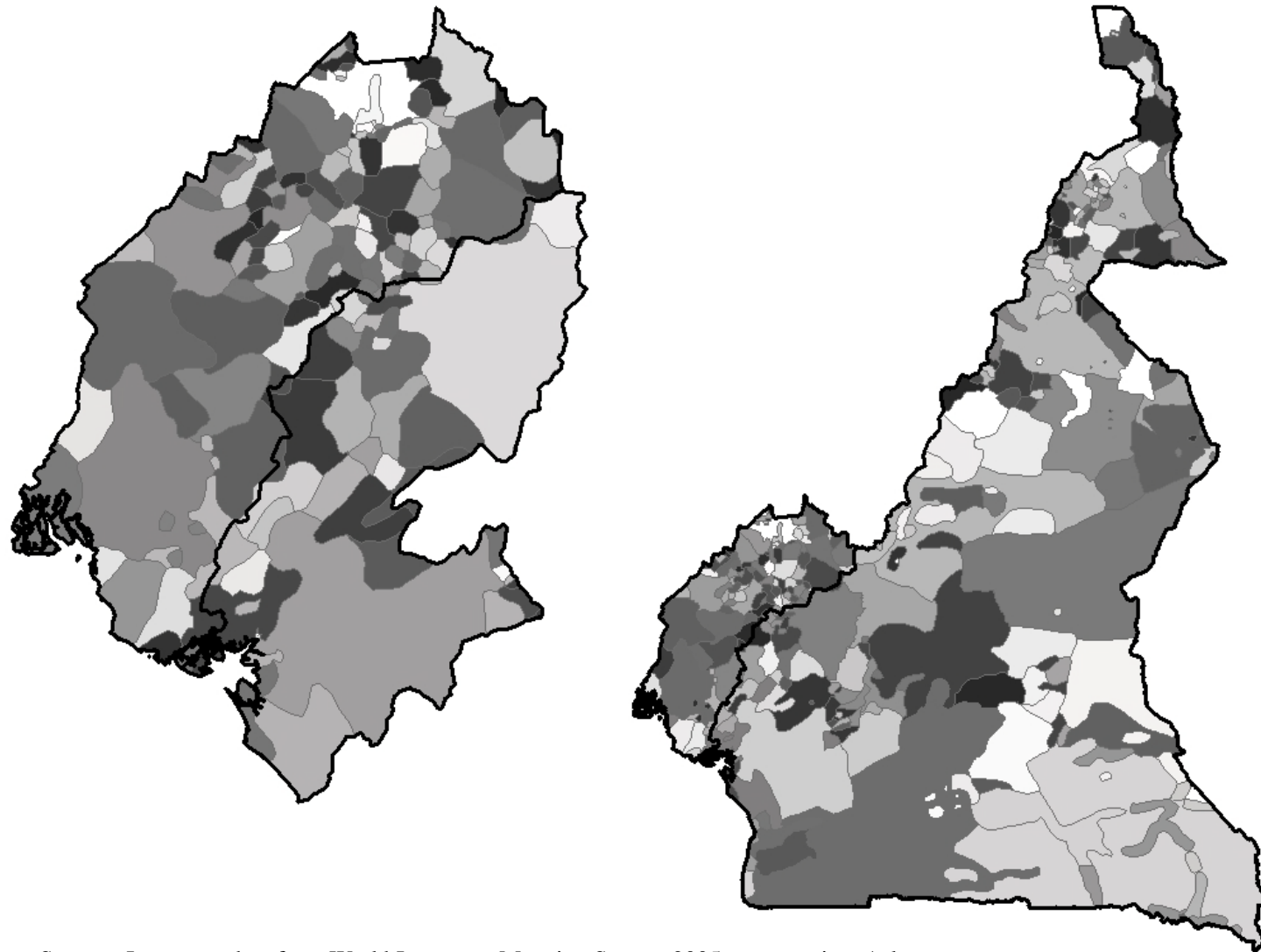
Ecological Zone

-  Acacia Sahelian Savanna
-  Cameroon Highland Forests
-  Central Africa Mangroves
-  Congolian Coastal Forests
-  Congolian Swamp Forests
-  Cross River Forests
-  East Sudanian Savanna
-  Lake Chad Flooded Savanna
-  Mandara Plateau Mosaic
-  Mount Cameroon Forests
-  NW Congolian Low. Forests



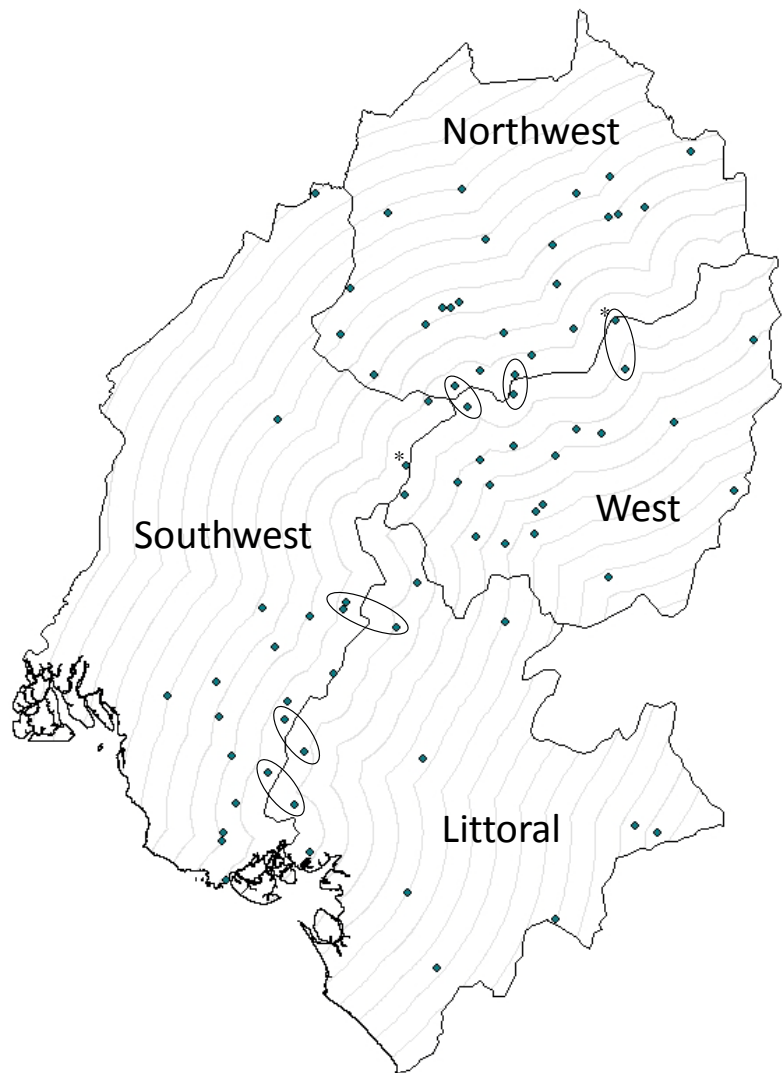
Source: Central African Regional Program for the Environment.

Figure 2. Cameroon's Language Areas and the Intercolonial Border



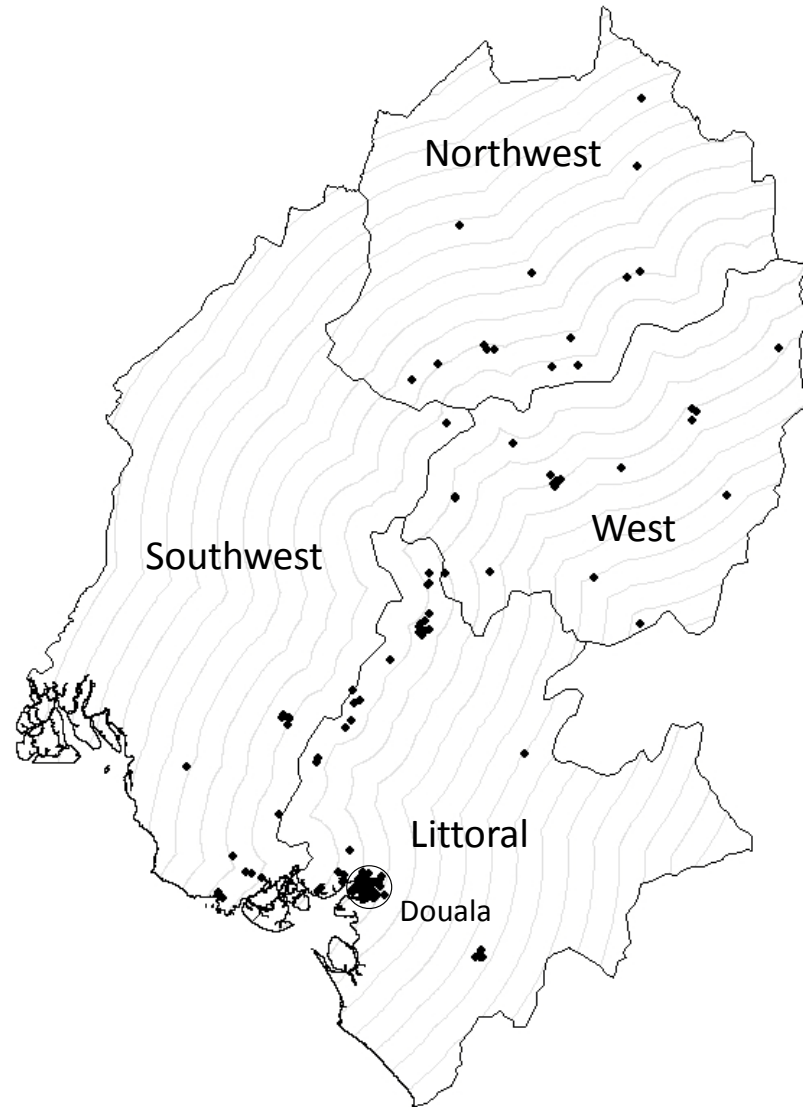
Source: Language data from World Language Mapping System 2005. www.gmi.org/wlms.

Figure 3. The Locations of Rural Clusters



Note: Grey lines indicate 10km bands from the intercolonial border. Ovals indicate "nearest neighbor" pairs. Asterisks (*) indicate clusters that were displaced across the border.

Figure 4. The Locations of Urban Clusters



Note: Grey lines indicate 10km bands from the intercolonial border.

Figure 5. The Estimated and Observed Discontinuity in Rural Household Wealth

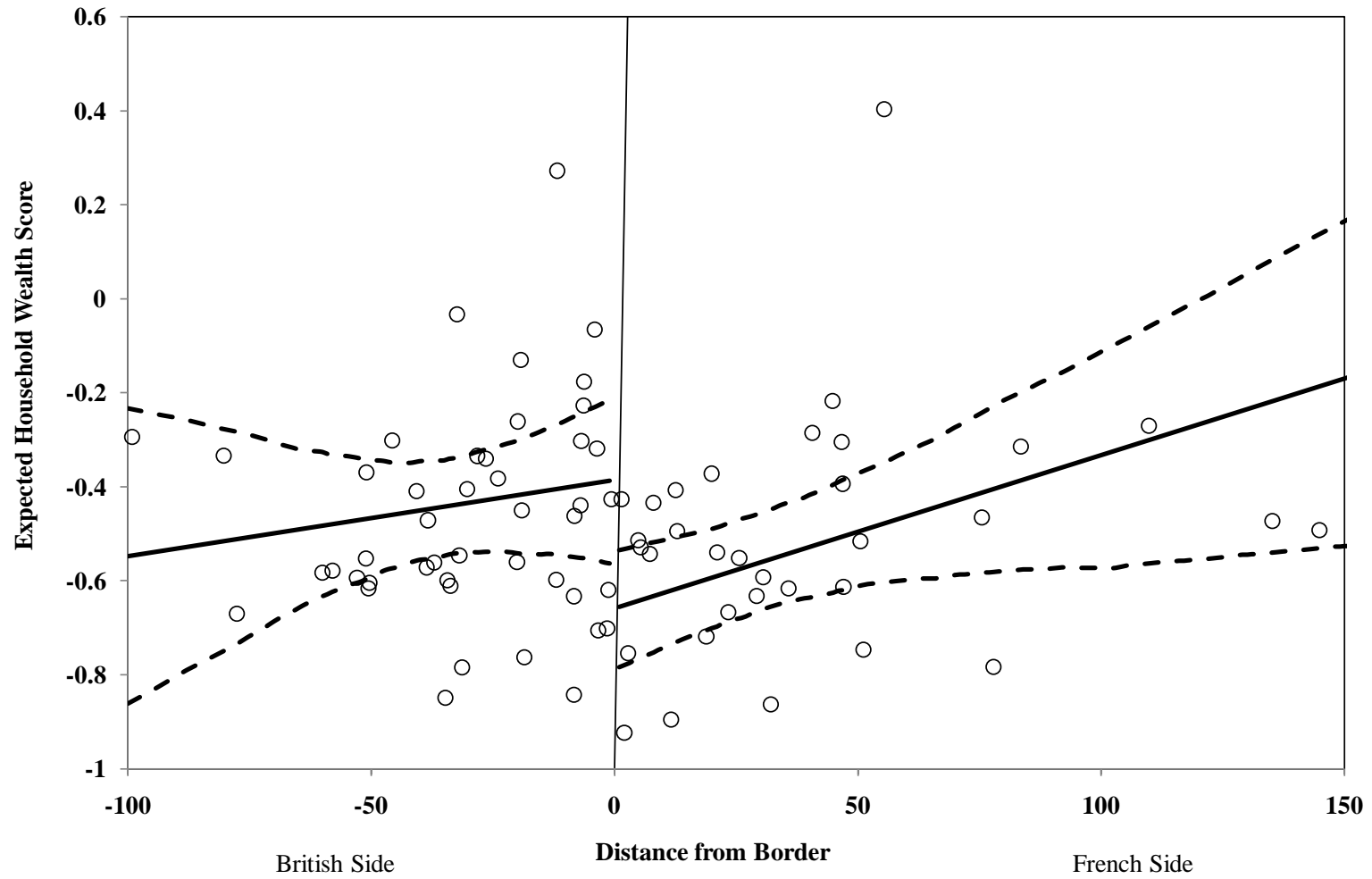


Figure 6. The Estimated and Observed Discontinuity in Rural Water Improvements

