IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF ECONOMICS

MASTER THESIS

COLONIAL ORIGINS OF COMPARATIVE DEVELOPMENT IN GHANA

IDDRISU KAMBALA MOHAMMED

THESIS SUPERVISOR: ASSIST. PROF. SADULLAH YILDIRIM

ISTANBUL, 2020

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COLONIAL ORIGINS OF COMPARATIVE DEVELOPMENT IN GHANA

by

IDDRISU KAMBALA MOHAMMED

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Arts in Economics

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APPROVAL PAGE

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Arts Economics.

Thesis Jury Members

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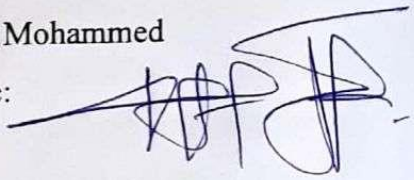
Signature: 

ÖZ

GANA'DA KARŞILAŞTIRMALI GELİŞMENİN SÖMÜRGE KÖKENLERİ

Iddrisu Kambala, Mohammed
İktisat Yüksek Lisans Programı
Tez Danışmanı: Dr. Öğr. Üyesi Sadullah Yıldırım
Haziran 2020, 90 sayfa

Sömürgecilik Gana'nın Kuzey ve Güney bölgesi arasındaki gelişme farkını açıklayabilir mi? Bu soruyu cevaplayabilmek için ilk olarak sömürgecilik öncesi etnik kurumları ve diğer sosyoekonomik verileri kullanarak bugün Güney bölgesinden önemli ölçüde daha az gelişmiş olan Kuzey bölgesinin, sömürgecilik öncesi zamanlarda Güney bölgesinden nispeten daha çok gelişmiş olduğunu ampirik olarak kanıtladım. Ardından sömürge döneminde Kuzey bölgesinin Güney bölgesine kıyasla daha az kamu yatırımı aldığını gösterdim. Ancak bugün Gana'da sömürge döneminde yapılan kamu yatırımlarının bugünkü gelişme üzerinde ciddi ölçüde pozitif ve kalıcı etkisi olduğunu buldum. Bu sonuç sömürge döneminde nispeten daha az kamu yatırımı almış olan yerlerin bugün Gana'da nispeten daha az geliştiğini göstermektedir. Son olarak, bu çalışma sömürge kamu yatırımları kontrol edildikçe bu iki blöge arasındaki gelişme farkının önemli ölçüde azaldığını bulmuştur. Dolayısıyla, bu çalışma Kuzey bölgesinin, sömürge kamu yatırımlarından yeterli pay alsaydı, sömürge öncesi gelişme hızını sürdürebileceğini ve bugün nispeten daha gelişmiş olabileceğini öne sürmektedir.

Anahtar Kelimeler: Etnik Kurumlar, Gelişme, Sömürgecilik, Sömürgecilik Öncesi, Sömürge Yatırımları

ABSTRACT

COLONIAL ORIGINS OF COMPARATIVE DEVELOPMENT IN GHANA

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Can colonial rule explain part of the development divergence between Northern and Southern Ghana? To answer this question, first I relied on precolonial ethnic institutions and other socioeconomic-related variables to empirically prove that the North, which is significantly less developed than the South today, had been relatively more developed than the South in precolonial times. Then I showed that during the colonial period, the North received significantly scant colonial public investments as compared to the South. However, I found that past colonial public investments have robust, permanent positive impact on current development outcomes in Ghana. This suggests that places that received scant colonial investments are comparatively less developed today in Ghana. Lastly, the study found that conditioned on past colonial public investments the current development gap between the two regions reduces considerably. Consequently, the study argues that if the North had received a fair share of colonial investments it would have maintained its precolonial development pace and would have been relatively more developed today.

Keywords: Colonial Investments, Colonial Rule, Development, Ethnic Institutions, Precolonial

DEDICATION

Dedicated to my parents.

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I would like to, first of all, thank Almighty God for giving me the courage, patience, resilience and understanding throughout the thesis preparation period. I send my profound gratitude to my thesis supervisor Dr. Sadullah Yildirim for his continuous intellectual support, guidance, assistance and encouragement. I also thank Prof. Alexander Moradi and Prof. Denis Cogneau for giving me access to their data on colonial schools.

Name Surname

Iddrisu Kambala Mohammed

ISTANBUL, 2020

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ACR	Annual Colonial Report
Agric.	Agriculture
Col.	Colonial
Dist.	Distance
DOTR	Distance to Old Trade Route
DR	Distance to River
DSC	Distance to Seacoast
Econ.	Economic
GCR	Gold Coast Regiment
GLSS	Ghana Living Standards Survey
Ln	Natural Log
NTs	Northern Territories
vs.	Versus

CHAPTER I

INTRODUCTION

A cursory look at the development landscape of modern Ghana quickly reveals a huge developmental differential between the North and the South. It is not uncommon to see or hear that Ghana is broadly divided into two geographical regions: the North and the rest (Dickson, 1968). “The rest” refers to the South which is far ahead of the North in virtually all indicators of development. Today many parts of the North are derogatorily referred to as “overseas” owing to their acute levels of development (Njogu et al., 2010). The region records the highest incidence of poverty coupled with the lowest literacy rate and the highest population growth rate. For the period 1991-2006 while incidence of poverty reduced in the South by about 59%, in the North it reduced by just 9% (Oteng-Ababio et al., 2017). In fact, the mere fact of living in the North today is almost akin to learning how not to be turned into a living-dead (Oteng-Ababio et al., 2017). Infrastructure in the region is also almost non-existing.

Studies that have tried to identify the causes of the backwardness of the region largely cite its arid savannah climate and the lack of mineral resources. However, such environmental deterministic explanations have shrouded the real origins of the underdevelopment tragedy of the region, as they do not explore the economic history, as well as the historical roots of the underdevelopment, of the region. The historical roots of comparative development across the world have recently been explored and debated. The debate has gained grounds because past events such as colonialism (Acemoglu et al., 2001) and slavery (Nunn, 2008) have strong tendencies to change the fortunes of societies overtime.

Therefore, to fully understand the Northern underdevelopment tragedy one needs to also extensively explore past events that could have irreversibly changed the region’s fortune. There are reasons to suggest that the most important event that changed the region’s state of affairs was colonialism. In other words, the roots of the North-South

development divergence lie in the dynamics of colonialism. While the mechanisms of colonialism worked to promote the interests and development of the South, they stagnated the North and subsequently hamstrung its future development. Retracting at least a century and half back when the hand of colonialism had not reached the region, reveals a picture of a different North.

Before colonial rule the North had been a prosperous region, booming with trade and industry. The region's fortune had always built on vibrant trade and enterprise owing principally to its space position between the Forest belt and Western Sudan (Dickson, 1968). Prior to the colonial project, the North had actually become the epicentre of 19th century trade routes and food production (Plange, 1979a). Aside the commercial aspect, the region was also highly politically structured, with truly democratic political structures paralleled with complex and comparatively well-regimented system and military organisation (Rattray, 1931). The need to control the vibrant interior trade and exact taxes might have prodded the growth of strong political centralisation in the region (Gocking, 2005). The centralised states efficiently managed the interior trade and other economic activities until the hand of colonialism confounded them. The onset of colonialism would reverse the fortune of the region.

The dynamics of colonialism created conditions that subsequently engendered differential developments within countries. During the colonial era different regions were approached and treated in distinct ways, usually based on the possibility of the materialisation of the interests of the colonising state. Colonialists had strong predilection for areas that best served their interests and, as such, it was deemed normal to invest substantially in those areas as profits could quickly be maximised soonest (Grossman & lyigun, 1993). These areas usually had vast natural resource reserves or had high potential for cash crop plantations. In India, for example, colonial policy strongly favoured areas with high agricultural potential (Iyer, 2010). Those areas that selected into colonial investments, especially in the form of railroad construction, shortly experienced high population growth and urbanisation which spurred development (Jedwab & Moradi, 2016). On the other hand, the 'unselected' regions, who were to wait for such a time that their real economic viabilities could fully be ascertained, started trailing behind.

Those were the same dynamics that worked to collapse Northern Ghana. Southern Ghana by virtue of its mineral resources and high potential for cash crop cultivation selected into colonial investments. The North was completely deprived of any meaningful colonial investments that could spur economic development due to its lack of mineral resources. By the end of colonial rule, the development landscape in Ghana had become completely skewed in favour of the mineral-rich South that had received almost all colonial investments (Fuseini & Kemp, 2015).

Although the North lacked any mineral resource, it had great potential in the cultivation of many exportable crops such as cotton, shea nut, rice, tobacco, indigo, among others. Also, cattle breeding in the area was better than some cattle-rearing areas in India, Argentina, and South Africa (Brukum, 1998). It was also estimated that the rice produced in the North could compete more favourably than those produced in Rangoon, where the country imported its rice. Also when the region first exported shea nuts to London, they were met with great demand because consumers attested that the shea nuts from this region was not only of high quality but contain at least 10 percent more oil than the ones imported from other places. It was also estimated that if railway was extended to, or built in, the North, it would cover its costs of construction and start making profits within a year of operation (Brukum, 1998). For the colonial state, however, none of these industries was 'economically viable' enough to merit investment or government support. As a matter of fact, the region had to wait "Until the Colony and Ashanti have been thoroughly opened up and developed ….." Governor Thorburn, 1912 (as cited in Staniland, 1975, p.44).

Aside being destitute of colonial investments, the colonial state also exploited and siphoned the region's manpower. Perhaps the most damaging colonial policy in the North was the systematic transformation of the region into a "labour reserve"(Brukum, 1997, 1998; Plange, 1979a, 1979b, 1984; Saaka, 2001). At the close of the 19th century when mining concessions had been awarded to expatriate firms and large scale public works had started in the South, the "idle" labour in the North were farmed out (Plange, 1979b). The start of the First World War also necessitated massive conscription of "martial" men from the region (Brukum, 1998; Plange, 1979b; Saaka, 2001). By 1918 about 90 percent of the rank and file of the Gold Coast Regiment, a local wing of the West Africa Royal Force, was filled by Northerners (Brukum, 1998; Saaka, 2001).

The North did not only experience depopulation in consequence of this experiment, but the war veterans and returnee migrants from the mines and public works became overnight dependents on their families and communities as they had either completely lost their productive capacities or were above active working age (Plange, 1979b). They were also vectors of respiratory, pulmonary and contagious diseases that they spread in their home villages. Reports of first cases of tuberculosis, for example, occurred in the North when the 'migrants' started returning home(Amo-Adjei et al., 2015).

Other colonial policies in the region, such as the delayed in the introduction of western education, restriction of missionary activities and the distortion of pre-existing economic order, equally hampered the future growth of the region. The work of missionaries was deemed detrimental to the peace and naivety of the newly "pacified" North and to the interests of the colonial state. For the colonial state, missionary activities would breed some "westernised" elites who would be vectors of chaos and revolts in the North, as had happened in the South. Hence, strict measures were rolled out to thwart the activities of missionaries and delay the introduction of western education.

The kind of education the administration finally introduced in the region did not also provide room for higher education[1] and was practically biased in that pupils were taught in such crafts as brick laying, carpentry, book keeping, rope and mat weaving, pottery, leather works, and smithing(Brukum, 1997, 1998; Der, 2001). Therefore "products" of this education could neither seek higher positions in the administration nor were they intellectually invigorated enough to cause 'havocs' in the region. At the time of political independence in 1957, it is no wonder that only one student from the region had received a formal, higher education (Adu-Gyamfi et al., 2016).

Furthermore, the region's trade relations, routes and centres – the backbone of its fortune – were all terminated at the start of the colonial project. In fact by early 1870s the region was still teeming with sprawling, highly populated trade towns, notably Salaga, Kpembe, Nalerigu, Yendi and Wa, that housed merchants from Western Sudan

[1] The highest level was standard III (primary 6).

and the Forest belt. However, the collapse of these towns and the interior trade was so sudden that by 1888, when the colonial heist had assumed full gear, Salaga, the most important and vibrant of all the trade towns in the region, had only become "a shadow of its former self" (Dickson, 1968). This was mainly because trade flow was redirected towards the coast and new market centres and trade routes were created by the colonial administration (Plange, 1979b, 1984). Moreover, the region's major source of revenue, the caravan tax, was abolished because it was deemed 'detrimental' to trade. It took the region some 20 years to raise revenue comparative to the one in 1907, the year before the tax was abolished (Staniland, 1975).

This study hypothesises and advances that colonial rule is the root cause of the North-South divide. The study argues that colonial intervention led to the stagnation of the North and that subsequent colonial policies favoured the South but disfavoured the North, an experiment which caused the differential development across the two regions. To prove this, first I showed the current development differentials between the North and the South using satellite images at night as proxy for development. To grasp a finer, precise nature of the development differentials between the two regions, I constructed 2091 gridcells, each measuring 11x11 km. I summed up the total amount of light in each cell and used it as the level of development of each cell. Conditioned on a full set of controls including geography, climate, location and presence of minerals, if the status of a cell changes from "North" to "South" its light density (level of development) reduces by about 52 percent on average.

I then examined the historical development levels of the two regions using data from the Murdock's Ethnographic Atlas, which contains detailed precolonial information on over 1200 ethnic groups across the world. From this data, I focused specifically on groups' precolonial state capacity[2], economic specialisation, agriculture dependence and complex settlements. I also used distance to an old trade route as an additional measure of historical development. Conditioned on a wide range of controls, I proved that historically the North was more developed than the South.

To empirically prove the case that the North lagged behind as a result of colonial intervention, first I showed the discriminatory nature of colonial public investments

[2] In this study state capacity and political centralisation are used interchangeably.

across the two regions during the colonial era. Specifically, I focused on the number of colonial schools and colonial railway lines in each region. I proved that the North had comparatively scant colonial investments. I also proved that these colonial public investments have a robust positive impact on contemporary development in Ghana. This finding coincides with Huillery (2009) who found that past colonial investments particularly education, health and infrastructure explain about 30 percent of their current outcomes in French West Africa.

Moreover, the study found that conditioned on colonial public investments, the size of the negative "Northern" effect on current development reduces considerably. When colonial schools are conditioned, the current underdeveloped status of the North reduces by about 13 percent, whereas it reduces by 20 percent when conditioned on distance to colonial railroads. The findings here suggest that if the North had received substantial receipts of colonial investments as did the South, it would have maintained its precolonial development pace and would have been relatively more developed today.

This study contributes to the literature in a number of ways. First, to the author's knowledge, this is the only study that empirically justifies the colonial origins of the underdevelopment of Northern Ghana. Previous studies that underscored the colonial roots of the underdevelopment of the North only put forward anecdotal evidences, conjectures and claims devoid of any empirical justification. Second, it contributes to the literature that seeks to determine the persistent effects of colonial investments. Third, it adds to the literature on the overall impact of colonialism on contemporary comparative development.

The rest of the study is organised as follows. The next chapter reviews the literature that explain comparative development across regions and the presumable causes of the underdevelopment of the North. Chapter three conceptualises the role of colonialism in the theory of growth and development in Africa while chapter four briefly gives an account of the history of Ghana in the context of colonial rule. Chapter five discusses the various mechanisms through which colonial rule stagnated the North and subsequently impeded its future development. Chapter 6 describes the data and their

sources and explains the empirical methodologies used in the study. Finally, chapter 7 presents and analyses the empirical results while chapter 8 concludes the study.

CHAPTER II

LITERATURE REVIEW

This study largely concerns the root causes of comparative development. Numerous theories have been put forward to explain developmental differentials across regions. One is the "environmental determinism" theory which is couched on the premise that the natural environment determines the categorical life and wellbeing of people in any geographical area. It posits that human development is influenced by the natural environment (Hardin, 2009). Man is an offspring of the earth and is fed and mothered by the earth and his social and economic states are the direct results of environmental influences (Semple, 1911). In short, the environmentalists argue that man's social conditioning and development is a product of his environment. Income differences across the world and regions are therefore purely a product of the influence of man's environment.

Closely related to the above theory is the "Accident of Birth" hypothesis, which interprets comparative human development as a fate engineered by some specific personal circumstances. People are accidently born in some families, regions or countries over which they have no control and which eventually decide their destiny. The poor, for example, are born into the wrong families, countries, regions, industries, racial or ethnic group and would therefore never have the opportunity to escape from this vicious circle (Harrington, 1963). It is those accidental circumstances that constitute a major source of inequality (Heckman, 2010).

A more recent theory explains comparative development with reference to its historical causes. According to this theory, today's comparative development across the world can be evaluated more effectively if societies' historical experiences are incorporated into the argument, for such experiences inevitably have affected the fortunes of societies. As far as Africa is concerned, this theory boils down to the role of colonialism and slave trade in the theory of Africa's development. Slave trade, for

example, siphoned the human resource of Africa and also weakened the foundations of African states and kingdoms. Regions that exported the higher number of slaves during the slave trade era are economically relatively less developed today in Africa (Nunn, 2008).

Similarly, colonial rule created artificial states and borders which have also contributed to Africa's underdevelopment tragedy (see Alesina et al., 2011; Easterly & Levine, 1997; Englebert et al., 2002; Herbst, 2000). Ethnic Groups and their lands were randomly partitioned into different, mostly adjacent, countries during the era of the Scramble for Africa. This experiment suppressed the national ambitions of various groups and continues to engender unrest in African countries (Alesina et al., 2011). These heterogenous groups, lamped into a single country, also continue to pursue their own parochial national agendas at the expense of the overall economic and political development of the country (Alesina et al., 2011).

Colonial rule also wiped out Africa's history, political states, trade, institutions, and control and power, thereby crumbling the precolonial existing African native structures that had worked greatly for the Africans (Rodney, 1973). The African states that were to emerge from colonial rule had nothing "native" in their core social, political and economic structures; everything had been destroyed. What colonialism bequeathed to the continent was rogued and extractive institutions that continue to hamper its development (Acemoglu et al., 2001).

However, one important area that has largely been ignored in the literature on colonialism is the manner in which colonial rule created income differentials within countries. Arguably, the way colonial rule engineered world income differences, it is less or more the same way that it engendered spatial development inequalities within countries. Preferential colonial investments in India, for example, created significant development disparities between regions administered under the British colonial Indirect Rule system and those under the Direct Rule system (Iyer, 2010). It is also true that resource-endowed areas experienced substantial colonial investments in the form of railroads constructions and such investments soared the development of the surrounding areas (Jedwab & Moradi, 2016).

It is this relatively new area of comparative development that this study is specifically related. The study analyses the colonial roots of the North-South divide in Ghana. A number of studies have so far attributed the poor state of Northern Ghana today to one or a number of the theoretical arguments outlined above. Kuu-Ire (2009), for example, borrowed the "Accident of Birth" hypothesis to argue that the ancestors of northerners should have chosen to settle in more favourable environments like the forest zones where natural resources abound, rather settling in the savannah zone. Others have also used the environmental determinism hypothesis, depicting the region's harsh climatic conditions as being the major cause of the region's underdevelopment. For example, Shaffer (2015, 2017), in his account of the perpetual seasonal hunger and poverty in the North, cites the region's poor soil quality, irregular rainfall pattern and lack of cash crop cultivation experience as contributing factors, but discounted the role of colonial policies.

If the aforementioned arguments were to hold, then regions further north, such as Burkina Faso and Mali, should be significantly less developed today than Northern Ghana. Second, the arguments defy history in that they do not account for the "Golden Age" of the region where trade and industry boomed; a time when the hand of colonialism had not confounded the region. These arguments, as Plange (1979a) argues, only consider the North in its "colonised" form and do not do justice to the region's precolonial past.

Other studies on the North underscore the numerous conflicts in the region as the main contributing factor for the region's underdevelopment. These studies (Awedoba et al., 2010; Debrah et al., 2016) explain the costs of the numerous ethnic conflicts in the North as retarding growth and development in the region. They argued that the region has recorded the highest incidence of civil conflicts in postcolonial Ghana, a situation which deters investors and frustrates government development efforts in the region. This argument prima facie may seem convincing, but a deep historical walkthrough reveals its weaknesses. The argument fails to account for the colonial roots of these seemingly unending conflicts in the region. Most of the conflicts in the region have colonial origins and are largely attributed to issues of land ownership and an assessment of paramountcy of one group over the other (Brukum, 2001; Maasole, 2012; Mahama & Longi, 2015).

A brief account of the nature of British administration in the region would quickly reveal the root causes of the unending conflicts. The extension of British rule to the region was followed by a policy of Indirect Rule where the agency of chiefs was to be employed in the daily administration of the area. In pursuant with this policy, some areas without chiefly authorities were appended to the jurisdictions of paramount chiefs in the centralised polities (Iliasu, 1975). This policy, however, was a serious error because each ethnic group – with or without chief – had its own territorial boundaries (Bacho, 2005). But subjecting the minorities or "chiefless" people to the control of some paramount king of a major group, gave the latter a flat illusion that the properties, especially lands, of the former were thenceforth invariably his property.[3] This form the prelude of the seemingly unending conflicts in the region, because the conflicts, as argued by Bacho (2005):

> stem from the feelings of subjugation and perceived loss of identity of the "minority" groups brought under the "major" ethnic groups and the bitterness stemming from the loss of control of their vital resource – land and all that there is in it. These problems have persisted to date and no adequate solutions beyond sheer admonitions have been provided successive governments even after independence. (p. 23)

One of the reasons for the 'surface' analyses of the causes of the underdevelopment of the North is due to probably its late 'discovery' by the Europeans and the fact that the early scholarly works on the region were predominantly Arabic since the region's first outside contacts were Muslim traders. Wilks (2008), for example, recounts his ordeal in the region when he was posted there in 1955 as an education extension officer. He reveals that he discovered substantial volumes of manuscripts in Arabic which "were desperately in need of study" in order to understand the region's past. Thus, as recent as the 1950s the region's scholarly manuscripts had not been explored.

The region caught the attention of many researchers and graduate students in the 1960s and 1970s when the "Northern problem" had come to light. Since then an appreciable number of studies have been conducted either to understand the line of political change in the region from the onset of colonial rule to political independence (Brukum, 1997, 1998, 1999) or to investigate the colonial policy of proletarianization of the region and

[3] For a comprehensive outline of the evolution of ethnic boundaries in the North, see "The Evolution of Administrative Boundaries in Northern Ghana" by Bening (1986).

the subjugation of "northern" interests to those of Ashanti and the Colony (Plange, 1979b, 1984). Others such as Staniland (1975) examine the political and structural changes in the most centralised states in the area, especially Dagbon, during the colonial period. Saaka (1972, 2001) is concerned with the evolution of "Northern" consciousness in Ghanaian politics and the strained bitter relation between Northerners and Southerners which, he believes, was exacerbated by British colonial policies. Oteng-Ababio et al. (2017) also study the inconsistencies and failures of post-independence government policies that sought to transform the region.

Der (2001) explores the expansion of missionary activities in the North and the hostile posture of the colonial regime towards missionaries' posts and schools. As we will see shortly, it is this negative disposition on the part of the colonial administration towards missionaries that partly acted to delay the introduction of western education in the region. Bening (1986, 2001) on the other hand discusses the arbitrary delineating and unfair naming of ethnic boundaries in the region by the British, which resulted in strained relations among established groups in the region.

A more closely related work is carried out by Grischow (1999), who gives an account of the historical development of the Northern Territories (NTs) between 1899-1957. This period roughly marks the longevity of colonial rule in the NTs. Noting the episodes of inconsistent colonial development policies in the region, Grischow's argument is that the colonial state's overarching objective in the region was to spearhead "community" development as against "civil society" development. Unguided civil society development had yielded unexpected results in the South, where "premature westernised Africans" rose up to oppose the colonial administration. To forestall such eventuality in the newly acquired, 'peaceful' North, an "African development" couched on African tradition was be instituted into the fabric of the region. This policy, as we will see later, was the main justification for the imposition of strict constraints on the activities of Christian missionaries and the delay in the introduction of western education in the region.

Aside the specifics, this study also broadly relates to the long-term impact of colonial public investments on current development. Huillery (2009) examined the permanent effects of colonial public investments on contemporary development in French West

Africa. He shows that colonial public investments such as education, health and infrastructure explain about 30 percent of their current outcomes in French West Africa. He also found that regions that initially selected into colonial investments continued to receive more and more receipts of colonial investments overtime. The same dynamics occurred in Ghana where the South, the initial recipient of colonial investments, continued to receive more and more colonial investments.

The study also relates to the importance of pre-colonial ethnic institutions, most particularly political centralisation. Michalopoulos & Papaioannou (2013) studied the impact of precolonial political centralisation on contemporary development in Africa. They found strong positive correlation between precolonial high political centralisation and contemporary development in Africa. Similarly, Gennaioli & Rainer (2006, 2007) have studied the impact of political centralisation on various indicators of development such as institutional quality and provision of public goods. They found that regions occupied by groups that had more centralised precolonial institutions have more capacity to provide many public goods such as education, health, and infrastructure and also have high quality institutions. The positive impact of strong precolonial political centralisation is explained by the fact that centralised groups are more likely to hold local elites accountable and are also able to reduce expropriation than fragmented groups. However, in Ghana the colonial state greatly hamstrung the development of the more highly centralised North to an extent that today it is the most underdeveloped part of Ghana.

My study coincides with those of Brukum (1997, 1998); Plange (1979a, 1979b, 1984); Songsore et al. (2001); Oteng-Ababio et al. (2017), among others, who have situated and discussed the underdevelopment problem of the North in its colonial and/or historical perspectives. They all explored the colonial policies that disfavoured the North in favour of the South and which later impeded the development of the former. However, none of them incorporated any empirical framework to justify these claims. It is this empirical gap that my study intends to fill. The thesis hypothesises and advances that the roots of the underdevelopment of the North lie in its colonial history. To prove this, I used Murdock's Ethnographic Atlas, which contains detailed information on the precolonial social, economic, cultural, political and geographical life of over 1200 ethnic groups across the world, to show that the North had been

previously more developed than the South. Second, I showed the discriminatory nature of colonial public investments across the North and the South. The results show that the North received scant colonial investments, compared to the South. Then I examined the correlation between colonial investments and contemporary development and found strong robust positive impact of colonial investments on contemporary development. Lastly, I used colonial public investments as potential mediating channels of the vast development gap between the two regions. I found that conditioned on these colonial public investments, the North-South development divergence reduces considerably. This suggests that if it were possible to control for all, or at least a wide range of, colonial investments there would be no development divergence between the two regions.

CHAPTER III

CONCEPTUAL FRAMEWORK

In this chapter I explore theoretical arguments on how colonialism matters for the subsequent development of the colonised world. Together with other examples I rely heavily on African experience since Africa has been the most victimised as far as colonialism is concerned.

3.1.Institutional Impact

Colonialism shaped and reconfigured the indigenous institutions of African countries. The kind of rogued institutions that the colonial state bequeathed to African countries greatly affected their future growths. The institutionalist hypothesis, as it is called, posits that the huge income differentials across the world today are attributable to the nature and functioning of distinct colonial institutions.

The manner in which colonial institutions affect development are supported by two different schools of thought. One divide, propounded by (Acemoglu et al., 2001, 2002; Acemoglu & Robinson, 2017) traces the density of indigenous populations and the disease environment in the era preceding colonial conquest. This argument posits that in consequence of the disease environment and the density of the indigenous population in the colonies, colonisers created two set of institutions in the colonies: inclusive and extractive institutions. Inclusive institutions created opportunities for the masses, guaranteed property rights, encouraged investments and, hence, promoted development. On the contrary, extractive institutions oppressed and exploited the people and extracted rents from the masses and also provided grounds for the expropriation of property rights.

In places such as Latin America and Africa where early native populations were relatively dense, the colonialists had an incentive to exploit the masses by setting up

extractive institutions. However, in places with less dense native populations such as North America and Australasia they set up inclusive institutions because they could not thoroughly exploit the relatively small native populations. Further, in North America and Australasia the disease environment was conducive for the colonisers, so they were able to settle and establish inclusive institutions that enhanced development. However, in other places like Africa the colonisers died like flies owing to the harsh disease environment. In these places the aim of the colonisers was not to settle, but to extract resources and exploit the people, and, therefore, they created extractive institutions. It is the persistence of these two set of institutions that has affected the development outcomes of individual countries and regions overtime. Today, Africa's underdevelopment tragedy is then associated with the extractive institutions that colonialism bequeathed to the continent.

The other spectrum associates current development to the legal origins of colonisers. This argument posits that the legal traditions of most countries today are generally influenced by their former colonisers' respective legal identities. The Legal Origins Theory, as it is called, was developed by La Porta et al. (2008). It discusses the evolution of the indigenous (legal) institutions of colonies ever since they (indigenous institutions) came into contact with either the English Common Law or the French Civil Law. According to the theory, the influence of the legal identities of the colonising states was so great that they gradually wiped out the indigenous institutions. By this theory, each colony is more likely to adopt the legal system of its colonising state. Accordingly, today British former colonies practice the Common Law framework while the French colonies use the (French) Civil Law. However, these two legal systems have innate characteristics and profound differences that differentially affect economic outcomes.

Common Law, relative to French Civil Law, is associated with reduced government interference, curt judicial formalism, less corruption, profound judicial independence and less market entry restrictions. Common Law, as distinct from French Civil Law, also protects outside investors and their interests, thereby promoting financial development (La Porta et al., 1997, 1998). It is this financial development channel that the legal origins hypothesis seeks to explain the effect of legal origins on economic outcomes (La Porta et al., 2008). Studies have shown that the fact that the English

Common Law supports free markets and protects the interests of foreign investors helps foster faster growth and development.

Recent growth rates indeed show that English Common Law countries have achieved faster economic growth rates than French Civil Law countries (Mahoney, 2001). Also, for each year between 1960-2000, GDP per capita in French Civil Law countries grew 0.60 percentage point slower compared to growth rates in English Common Law countries and years of schooling in the latter are significantly higher than they are in the former (La Porta et al., 2008). The evidences, therefore, lead to the conclusion that today English Common Law is generally associated with better economic outcomes compared to French Civil Law. In Africa, for example, former French colonies are comparatively less developed today than the English colonies.

Although the two institutionalist arguments have different explanations for how colonialism matters for development, the conclusion is the same in that they both argue that colonialism instituted non-indigenous institutions in the colonies.

3.2.Exploitation of Mineral Resources

Prior to colonial rule, the vast mineral resources in Africa served the interest of the African people. The onset of colonialism saw the awarding of mining concessions to expatriate firms whose main aim was to accrue as much profit as possible. The interest of Africa suddenly vanished from the schemes of the colonial capitalists who had come to Africa to invest their accumulated surplus capital realised from the Industrial Revolution.

By the tail end of colonial rule, a vast percentage of Africa's mineral wealth had been siphoned to the metropolis of the colonising states. Most of these were used as raw materials to feed the teeming industries in Europe. It is argued that if part of the profits accrued from the extensive scale mining operations were to serve the interest of Africa during the colonial era, today the continent's situation would be far better. In other words, in the colonial era, Africa did not get the chance to use her resources for her own development. As President Nkrumah puts it, "If Africa's multiple resources were used in her own development, they could place her among the modernized continents

of the world. But her resources have been, and still are being used for the greater development of overseas interests." (as cited in Konadu & Campbell, 2016, p.307)

Also the extensive scale of the mining operations heeded no attention to environmental concerns. Mining operations degraded the lands, polluted air and local water resources, thereby disturbing biodiversity and posing tremendous health problems on the local people. In Ghana, for example, the first cases of respiratory and pulmonary diseases such as tuberculosis, silicosis and pneumonia erupted in and around mining towns (see Amo-Adjei et al., 2015; Dumett, 1993; Thomas, 1973). Thus, colonialism did not just merely exploit resources from the colonies, but it left behind wanton environmental and health problems with which post-independent African governments had to contend with.

Rodney (1973) argues that today all the countries being called 'underdeveloped' or 'developing' were once at a time in history had their mineral resources exploited by a European coloniser. Initially, all countries had had the ability to exploit nature's resources for their own satisfaction and for a decent life. All countries were developing independently until a time when the colonial heist began. And when the colonial state was fully instituted in the colonies, what followed was increased exploitation and the export of surplus which deprived the colonies of the benefits of their resources. For Rodney, this is where the critical origins of the modern concept of underdevelopment lie.

3.3.Impact on Human Capital

Although slavery, by far, had the largest toll on Africa's manpower resource and had ended before the onset of colonialism, there were remnants of slavery during the colonial era which took the form of forced labour.

Forced labour was implemented largely as a result of the reluctance of Africans to work in the new political economy. The African mode of production and exchange in the precolonial era was essentially different from the newly introduced colonial economy that sought to integrate the indigenous African political economy to the

global capitalist economy. Africans had to leave their 'archaic' modes of production and embrace the new colonial political economy, to which they showed unflinching reluctance. The problem was compounded by the numerous initial complaints of harsh working conditions in the new political economy, most especially in the mines (Thomas, 1973).

The colonial state then devised various subtle ways to recruit enough labour for the colonial economy. One immediate way to enforce the recruitment of forced labour was the introduction of tax (Jerven, 2016; Ocheni & Nwankwo, 2012). Generally, tax was not a new phenomenon to Africans because they had previously paid tax to their chiefs either in kind (food crops or animals) or cash. The colonial tax, however, was unusual because it was not only paid in colonial currency but was deemed as a civil duty to the (colonial) state, a negligence of which was deemed criminal and punishable (Ocheni & Nwankwo, 2012). For the average African, he must work long hours for the colonial state to raise enough money to pay the tax.

The second way to enforce the recruitment of forced labour was through the distortion of gender occupations. The colonial cash crop economy did not leave out women and children at home but forced them into the production system (Settles, 1996). This became possible because the wage earned by the man from the taxing work in the mines and on the plantations was inadequate to provide for the family. Consequently, women and children soon constituted the bulk of the working labour in the new expatriate businesses whose fruits enriched only the owners (Grier, 1992). The economic demands of colonialism therefore reconfigured the pre-existing social division of labour where women and children had lived outside of the mainstream of the labour force.

Forced labour also took the form of military recruitment for war efforts. Many regional regiments – the West African Frontier Force, for example – were established in the colonies during the First and Second World Wars. The rank and file of these regiments was substantially filled by conscripts of 'native troops'. It is argued that when the World War I finally broke out in Europe, the scale of manpower mobilisation in Africa was unprecedented in the history of the continent (Savage & Munro, 1966). The main agents for this urgency were the chiefs who were instructed to supply their able-bodied

men for the war efforts as a sign of civil duty to the state (Thomas, 1973). The scheme tricked many chiefs to believe that the wars were actually a mutual effort to protect not only the colonialists' interests but the lands and possessions of the chiefs who would serve as allies in the war. Thomas (1973) gave an example of when the Dagomba chiefs in Northern Ghana were actually incited to supply their men to the Gold Coast Regiment during the First World War to fight against the Germans who had previously defeated the Dagombas and split their lands.

The human capital of Africa was also adversely affected through the introduction of botched western education in the colonial era. The emphasis of western education in Africa was to produce "literates" who were just capable enough to serve as clerks, interpreters, inspectors, artisans and messengers in the colonial administration. Such education could not yield any real developmental progress because it was neither technologically based nor was it carefully couched on the existing African culture to suit the prevailing environment (Ocheni & Nwankwo, 2012).

All of these mechanisms had immediate and remote impact on Africa's development. For example, not only did the war recruitment schemes take away the continent's manpower needed for development, but also the African war veterans had lost all their productive capacities and had also contacted several contagious diseases from the battlefields which they spread in their home communities. The same is true for those who returned from the mines as they looked emaciated and reeled with various respiratory and pulmonary diseases. The distortion of the pre-existing gender occupations also affected traditional modes of production that had worked efficiently for the people prior to colonial rule. The line of dependence also changed in that the emaciated returnees from the mines, industries and the wars were forced to now depend on the women and the young. The literary, theoretical western education which is still prevalent in Africa today does not also help to achieve any meaningful development.

3.4.Impact on Pre-Existing Economic Landscape

Prior to colonial conquest, African families and states decided freely on the mode, type and nature of production. There was no central planning authority to solely decide on

the kind of economic activities the people should or would engage in; what kind goods to be exported; and what to consume. However, colonial rule wildly changed the dynamics. The colonial state required African farmers to produce mainly exportable cash crops (Jerven, 2016; Ocheni & Nwankwo, 2012; Settles, 1996). Production for local consumption became a non-essential venture and, therefore, the cultivation of food staples reduced. As the production of food staples declined, food shortage reigned and prices skyrocketed, all because colonialism suppressed the "satisfaction of local needs" in order to satisfy "foreign needs" (Ocheni & Nwankwo, 2012).

Also, restrictions on imports and exports were imposed. The colonies were obliged to import goods from, and export goods to, the markets of the colonising state. Imports and exports from rival Europeans were strictly banned. The long-established trade relations between African states and a large number of other European countries were immediately terminated. Consequently, local producers faced limited choices of exchange and therefore lost the power to set prices. Indeed, price decisions were to be made in a predetermined market never previously known to the local producers. Maximum price controls were fixed and farmers that violated this regulation or hoarded or smuggled cash crops were abruptly dealt with. Also, the prices of the exported agricultural products from the colonies were unimaginably low compared to the prices of imported manufactured goods from the metropolis. The implication is that the colonial period saw the profit margins of foreign capitalist firms rising while local African producers remained marginalised and poor.[4]

Another economic distortion came from the decay and collapse of traditional markets and trade routes. The colonial state opened new market centres and created new trade routes where all economic agents were obliged to carry out their exchanges. These new market centres and trade routes were virtually hotspots for the transport of raw materials (Ocheni & Nwankwo, 2012) or better still they were the headquarters of colonial administrations (Plange, 1984). This caused the decay of the old traditional markets and trade routes, thereby "distorting African pattern of urbanisation and development." (Ocheni & Nwankwo, 2012).

[4] The author owes to this information to Ocheni & Nwankwo (2012).

The trajectories of colonial investments also distorted the pre-existing economic landscape. The colonial state largely invested in areas with vast mineral reserves or with great potential for cash crop production. The investments took the form of railroad construction that connected only 'economically viable regions' and were generally oriented towards the seacoast (Settles, 1996). The places lucky enough to get connected to the railway lines experienced sudden economic boom which engineered urbanisation and development (see Herranz-Loncán & Fourie, 2018; Jedwab & Moradi, 2016). This greatly matters for development because after political independence African governments could not change the implanted landscape and had to manage countries with vast development differentials across regions.

3.5.Political Impact of Colonialism

According to Fortes & Evans-Pritchard (1940), the (precolonial) African political system took two forms: the centralised political groups and the non-centralised (or acephalous) ones. The first type had a form of government while the latter had no form of government. The political impact of colonialism differs according to the type of the indigenous political arrangements.

Heldring & Robinson (2012) argue that there is a clear-cut argument for colonialism retarding development in the politically centralised groups because in any case the political development that they had achieved prior to the Scramble for Africa would have continued in the same path and they would have been more developed today. As a matter of fact by the later part of the 19th century these states had already started adopting modern technology and such progress would have continued. Formerly, centralised groups in Africa possessed a high degree of transparency and accountability (Herbst, 2000). What colonialism did was to retard political development as it instituted and graced local political elites who were not accountable to the people, a phenomenon which gave rise to "predatory rulers" in post-independent Africa (Heldring & Robinson, 2012).

For the non-centralised groups, it is quite ambiguous to argue that their institutions had or had not been conducive for economic development and whether they would have been more or less developed today absent colonialism. It cannot, however, be argued

that in lieu of their ‘unstructured’ system, colonial rule has helped them to form centralised states or institutions conducive for development. Even in areas where the colonisers had helped to restore political stability among warring factions – such as Uganda – the gains seemed short-lived as political instability re-ensued after the departure of the colonialists (Heldring & Robinson, 2012). In extreme instances, the interests of the acephalous groups were actually marginalised or subjugated to those of the centralised groups. In Northern Ghana, for example, some non-centralised groups and all their possessions were appended to the jurisdiction of the centralised groups, a development which bred tension and conflicts in the region.

CHAPTER IV

COLONIAL HISTORY OF GHANA

This chapter intends to highlight the times and circumstances of earlier European contacts with the native peoples and the subsequent annexation and colonisation of the three broad colonial regions: the Gold Coast Colony, Ashanti, and the Northern Territories. First each region's first contact with Europeans and/or foreigners are discussed. Then the exchange and sale of possessions among European powers on the coast are highlighted. Lastly, the race for colonisation is outlined.

Archaeological evidence shows that modern Ghana was inhabited as early as the Stone Age, and by 50,000 B.C.E, farming and cattle rearing had developed and human settlements emerged in the savannah area (Gocking, 2005). Kintampo Culture, an archaeological identification of the village complex that sprung in the savannah region around this period, was characterised by the arts of tool making, pottery making, farming, and animal raising (Anquandah, 2013; Gocking, 2005). Coincidentally, it is in and around the savannah zone that centralised states later emerged (Gocking, 2005; Saaka, 2001b) and which became an epicentre of vibrant commercial activities.

Recorded history places the Portuguese as the first Europeans to have settled on the coast of West Africa and traded with the coast tribes. Specifically, the Portuguese and their fleet officially arrived at what is now Elmina in Ghana in January 1482 (Migeod, 1916). Historically, the Gold Coast extended from Assinie in modern Cote d'Ivoire to the Volta River in modern Ghana (Decorse, 1992). It had a length of about 260 miles (Meredith, 1812). The area north[5] of the coast, however, was particularly unknown to the Europeans and any developments about the people of this part of the country were based on pure hearsay (Migeod, 1916).

[5] This includes Ashanti and the North.

The Ashanti region, which encompasses the area to the immediate north of the coastal region, was first heard of by the Europeans in 1699 when they (Asante) started their expansionist activities to capture and "colonise" the non-centralised, petty chiefdoms on the coast (Migeod, 1916). The Ashantis had exported kola and gold to the large markets in the Sudanic empires using the caravan trade routes that ran from the South to the Sudanic empires via the northern entrepots. However, the immediate effect of the coastal people's first contact with the Europeans was the "gradual refocusing of power and influence away from the interior to the coast." (Gocking, 2005). So the main aim of Ashanti's expansion southwards was to capture the emerging trade flow in the coast and to break the middlemen roles of the coast tribes (Plange, 1984). It was at this time that they first came into contacts with the Europeans.

Not much is known about the precolonial life of the people in the interior savannah (the Northern Territories). What historical accounts agreed on is that the region's strategic place as far as the caravan trade is concerned exposed it to many foreign traders from the far interior, most notably the Muslim traders from the Sudanic empires. This contact led to the expansion of this region's trade links with the Sudanic states that studded further north (Gocking, 2005). As Muslims traders trooped into the region, it did not take long before a large section of the region was completely 'Islamised'. Indeed, in West Africa the dispersion of Muslim traders across the region had always constituted the first stage of the spread of Islam (Levtzion, 2000).

Its first contact with Muslims traders actually enriched its history. Reports indicate that at least 4/5 hundred years ago, Timbuktu medieval prototype Quranic schools and mosques propped up and dotted the region (Wilks, 2008). However, its Islamisation in a way has also shadowed the precolonial history of the people. The writings on this region and its people are predominantly Arabic ((Brukum, 1997; Wilks, 2008) and the efforts to translate them into English have been slow. Obviously this has slowed research in the region and has even illuded some historians into thinking that literacy was first introduced to the Ghanaian coast tribes by the European missionaries (Boahen, 1966).

The Portuguese, the first Europeans settlers on the Gold Coast, were to be replaced by the Dutch in the early seventeenth century. Although other Europeans settlers, such as

the Danes, the Swedes, French, English, and the Brandenburgers, also visited and/or settled and built fortifications on the coast after the expulsion of the Portuguese by the Dutch in 1642, a large section of the coast came under the possession of the Dutch who had seized all Portuguese possessions on the coast in return for Holland to waive her claims of sovereignty in Brazil (Claridge, 1916; Gocking, 2005). Owing to the potency and vibrancy of the coastal trade, there was an intense competition among the Europeans for territorial ownership of the coast. Out of the about 110 European fortifications on the coast of West Africa around this period, at least a 100 of them were situated on the Gold Coast (Lawrence, 1963). The Gold Coast also experienced the highest number of European trade-posts in Africa and the first European outpost in sub-Saharan Africa, Castle Saõ Jorge da Mina, was also established on the Gold Coast (Decorse, 1992).

A new epoch in the history of the Gold Coast would begin when in 1872, the Dutch, who had dominated the trade and territorial space of the coast for about 274 years, officially sold all their possessions in West Africa to the British (Decorse, 1992; Migeod, 1916). It was the British who would explore and extend its sovereignty to the interior (Ashanti and the Northern Territories) at the close of the 19th century. It was at the close of the 19th century that the scramble for Africa had assumed full gear and the British, being surrounded by the Germans and the French, had no choice but to move further interior to 'discover' and acquire the NTs in addition to Ashanti.

It did not take long before the British started official proclamations of ownerships or annexation. The first came on 24th July 1874, when the British issued a proclamation that officially declared the coastal regions a British Colony (Addo-Fening, 2013). Although this proclamation formally marked the start of the British colonial administration in the coastal area, it should be noted that Britain had had immense influence in the coastal belt prior to the proclamation. For example, the Bond of 1844, signed between the British and some native chiefs in the coastal areas, allowed the British to try criminal cases which were formerly adjudicated in the chiefly courts (Addo-Fening, 2013). Decorse (1992) also argues that the onset of the colonial era in the Gold Coast Colony actually began in 1873 when discontent erupted in Elmina[6] in

[6] Elmina was the location where the first European fortress in sub-Saharan Africa called Sao Jorge de Mina was established

consequence of the British successful political manoeuvre in taking over the Gold Coast from the Dutch and their starting to get deeply involved in local affairs.

It was however in 1901 that the ordinances annexing Ashanti and the North was passed, but both regions were formally colonised in 1902. Just as the Gold Coast colony, these dates should be taken lightly because British influence had already gotten some considerable footing in these regions long before the official declarations. For example, in 1897 the British appointed a Commissioner for the Northern Territories, Col. Northcott (Brukum, 1997; Lentz, 2006). The power of the Commissioner was so sweeping that in 1898, barely a year after his appointment, he sacked a chief in Wa and ordered the installation of an easily amenable chief – a development that made the locals believe that they were now virtually under British rule (Lentz, 2006). Furthermore, by 1894 the British had already concluded treaties not only with the most centralised groups in the North – Dagbon, Mamprussi, Mossi, and Gonja – but also with other chiefs in the then disputed Neutral Zone[7] (Gocking, 2005). Also, in August 1897 the British made Kintampo, a trading town in the savannah zone, the headquarters of the British troops (Bening, 2001). The Asante had also faced the same fate. In 1896, for example, the Asantehene, the overlord of the Ashanti kingdom, was taken by a British expedition and exiled to Sierra Leone (Gocking, 2005).

Thus by the close of 1902, the annexation and colonisation of the three regions had completed and the whole country was thenceforth referred to as the Gold Coast. Map 4.1 shows the three colonial administrative regions during the colonial period. The Northern Territories has the largest area of about 107072.4 sq. km, while the Gold Coast Colony and Ashanti measure 69067.4 sq. km and 64181.1 sq. km respectively.

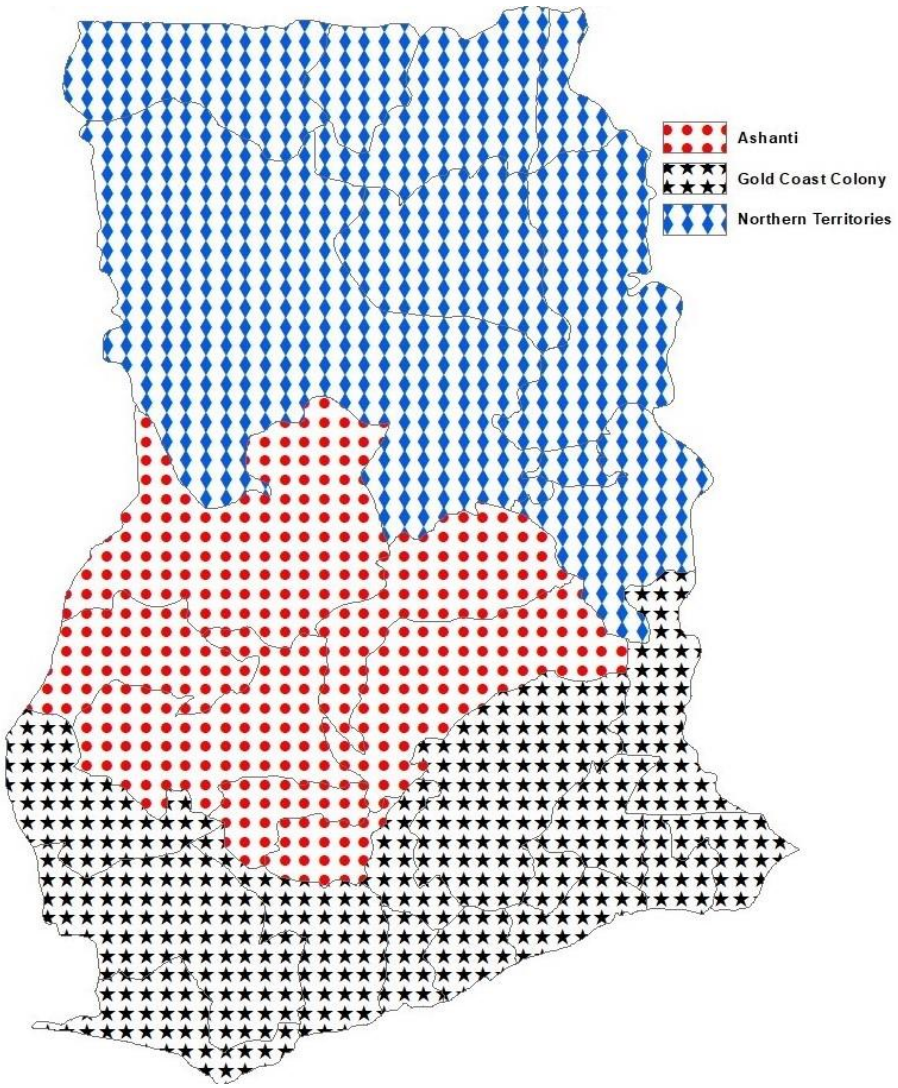
However, by this date some sections of modern Ghana were still under the control of the Germans. Between 1884-1914, German controlled Togoland (also known as the German Togoland), an elongated territory which extended from the coastal zone to the interior and stood between the Gold Coast and French Togo. At the beginning of the first World War the British and French joint forces captured the German Togoland and reallocated it between themselves (Cogneau & Moradi, 2014). The British controlled

[7]This was a region between the Gold Coast and the German territory that 'belonged' to none.

the Trans-Volta Togoland, the portion of German Togoland that was accorded Britain, till 1956 when the people of the Trans-Volta Togoland decided in a plebiscite to unite with the Gold Coast (Gocking, 2005) which would complete the borders of modern Ghana.

By this form, modern Ghana is slightly bigger than the United Kingdom and occupies an area of about 240,000 sq. km and shares borders with Burkina Faso to the north, Togo to the east and Cote d'Ivoire to the west; the southern border is covered by the Gulf of Guinea and the Atlantic Ocean. The extreme south is the Cape Three points at 4.5 degrees north of the equator and the most northern point also ends at 11 degrees north.

British rule ended in Ghana on 6th March 1957, when Dr. Kwame Nkrumah and members of his political party, the Convention People's Party (CPP), proclaimed the country independent from British rule.



Map 4.1. Colonial Administrative Regions

CHAPTER V

COLONIAL RULE IN GHANA

This chapter explores the various colonial policies that led to the collapse of the North and impeded its future economic development. The following points build upon the many works that have been undertaken by Brukum (1997, 1998); Der (2001); Grischow (1999); Oteng-Ababio et al. (2017); Plange (1979a, 1979b, 1984); (Saaka, 2001) and many others who have explored the historical and/or colonial origins of the underdeveloped status of Northern Ghana.

5.1.Lack of Colonial Investments

One channel which this study is able to prove empirically is the lack of colonial investments in the North. The discussion here, therefore, would infer from various anecdotal evidences and reports to buttress the claim that the colonial state intentionally refused to invest in the potential of the North.

Although the North lacked mineral resources – as in gold, diamond, manganese, bauxite, etc – that would have acted to induce colonial investments, it was a region of great potential in other important sectors. Prior to colonial rule, the region had specialised not only in the rearing of livestock but also in rice and shea nut cultivation (Brukum, 1998). Its savannah climate also allowed it to cultivate vast quantities of cotton, groundnut, maize, millet, guinea corn, and many other cereals and legumes. Many of the people were also specialists in crafts such as pottery and weaving. The strategic position of the region as far as the caravan trade was concerned allowed the people to exchange surpluses at the numerous markets that connected the South (Asante and the Coast) and the Sudanic empires. The region took control of this long-distance trade and the need to maintain orderly economic atmosphere and exact tax prodded polities in the region to develop strong political centralisation (Gocking, 2005).

The colonial state however claimed there was no worthy potential in the region that deserved massive colonial investments. The administration showed a complete lack of concern for the development of the region. One reason for the lack of concern is that the region was acquired by the British not for its economic viability but as a consequence of the exigencies of the Scramble for Africa (Brukum, 1998). As seen in Map 5.1, in the late 19th century, the British were completely surrounded by its main imperialist rivals, the French and the Germans. In an attempt to undercut further advancements of these rivals, the British quickly rushed to acquire the NTs through treaties they signed with the Northern chiefs. This period informally marked the start of colonial rule in the area.

After fortifying its hold on the region, the British at first developed a transient interest to expand the interior trade and invest in the region. An agent, Ekem Ferguson, was sent to survey the area and advise the administration on its economic potentials. After his survey, Ferguson noted the traditional importance of the region was inherently associated with markets, "which are the converging points of roads from the Coast as well as from the far interior, and to which Caravans and others resort for European commodities."(as cited in Thomas, 1972, p.198). He cited the Volta and Oti rivers as potential great sources of transport and also recommended the construction of a railway along the Volta Valley (Thomas, 1972) to help modernise the interior trade and spur economic development of the region. He cautioned that any secondary attempt to 'open up' the region to the South would prove futile except that which is couched on the framework of the pre-existing trade and industry in the region.

Interestingly, the administration suddenly lost interest in the potential of the region and, therefore, none of Ekem's recommendations was implemented. Subsequent recommendations to unearth the potentials of the region were equally trashed out. For example, Lt. Col. Northcott, who assumed office in 1897 as the first Commissioner of the NTs, also asked experts to survey the region's potentials and submit their reports. It was reported that the region had great commercial potential in the cultivation of shea nut, tobacco, rice, groundnut, indigo and rearing of livestock; and if utmost attention is accorded, such products, especially cattle, could be exported. It was also advised that chiefs should be encouraged into this venture; grants-in-aid be provided by the government; and European technical advice be sought. The reports also indicated that

cattle breeding in the Northern Territories was better than some cattle-rearing areas in Argentina, India, and South Africa. Also, the rice produced in the region could compete more favourably than the ones produced in Rangoon and imported into the Gold Coast. Furthermore, hides and skins were seen as a potential source of major income for the government if it received much attention.[8]

Although Northcott had the interest to pour government resources into these industries, his plans failed to materialise because they opposed those of the then Governor Hodgson who remarked, "I would not at present spend upon the Northern Territories – upon in fact the hinterland of the Colony – a single penny more than is absolutely necessary for their suitable administration and the encouragement of the transit trade." (as cited in Staniland, 1975, p.43).

The Governor's reason was that the region lacked any mineral resource or potential for cash crop cultivation. He made this clear as early as 1899:

> The region as far as I know is destitute of mineral wealth, it is destitute of valuable timbers, and does not produce either rubber or kola nuts or indeed any product of trade value. For the present, I cannot too strongly urge the employment of all available resources of the government upon the development of the country north of Kintampo. (as cited in Bening, 2005, p.40).

The situation became even more dismal when the London Chamber of Commerce, the same chamber that had lobbied the Colonial Office to acquire the area because of its trade potential, finally declared the region commercially inviable (Brukum, 1998). The Chamber, among other things, recommended that the expenditure on the region should be kept at only a bare minimum just enough to maintain its rights over the region until such a time that the region's net worth is fully established.

Notwithstanding, some of the subsequent Commissioners of the North, such as Lt. Col. Morris, and some officials in London such as Lewis Harcourt, the Secretary of State for the Colonies, still saw great potentials in the region and urged the Governors to invest in them. Harcourt personally ordered the then Governor Hugh Clifford to

[8] This discussion is taken from (Brukum, 1998).

consider special initiatives to develop the region (Brukum, 1998). However, the latter refused on the grounds that the two main British possessions in the South, the Colony and Ashanti, still had not had adequate transport infrastructure. So until the Colony and Ashanti receive adequate transport infrastructure the North must wait.

The two main exportable crops that could have 'opened up' the region and which needed sustained government support were cotton and shea nuts. Prior to colonial rule the region had absolute monopoly in the cultivation and marketing of these crops. However, colonial intervention had slowed down everything. Government support was therefore necessary to revamp these industries. In 1922, for example, a careful study was done to assess the economic viability of cotton and it was estimated that, conditional on government support, an annual production of 257,200 tons of cotton could be produced (Brukum, 1998).

Some private expatriate firms such as John Walkden & Company, African Merchants, W. Bartholomew & Company, Millers of Kumasi and British Cotton Growers Association actually entered into the shea nut and cotton industries. And when shea nuts from the region were finally exported to London, reports indicate that consumers were satisfied by the content and quality of the shea nuts from the Northern Territories and that they contained at least 10 percent more oil than shea nuts imported from other places. The reports also indicated that by 1915 cotton production in the area had increased by 33 percent following the entry of the British Cotton Growers Association in the industry in 1906. However, by the early 1930s the government had abandoned the exports of shea butter (Wardell & Fold, 2013). Subsequently, all the expatriate firms abandoned their operations in the region due to poor transport system and lack of government support (Brukum, 1998).

The need for the extension of a railway line to the region was also subsequently re-echoed by some officials and experts. In 1926, for example, Parliamentary Under-Secretary of State for the Colonies, Ormsby-Gore, on his trip to West Africa, underscored the need for the construction of a railway line in the Northern Territories. He argued that a fuller development of the whole of the Gold Coast was associated with the extension of a railway to the North, and until this was done the Gold Coast cannot be said to be developed. Lt. Col. Withal, Acting Commissioner of the Northern

Territories, also emphasised that the 350 mile railway line to the North would increase the production of shea nut, groundnut and livestock whose revenue would cover the cost of the construction and profits could be realised within a year of operation. His assertion was supported by the General Manager of the Sekondi Railway Line, Cozens-Hardy.[9]

By comparison, Kumasi, the capital city of Ashanti, where the official start of colonisation coincided with the Northern Territories, got connected to a railway line in 1903 (Dickson, 1971), barely a year after it was officially colonised. For the Gold Coast Colony, plans to build railway lines started as early as 1882 but intermittent disruptions and the Ashanti expedition in 1896 stalled the plans. But by 1898 a railway line that connected mining centres to the port at Sekondi had completed (Plange, 1979).

Being left out of the colonial investments picture, the NTs stagnated. Beside the lack of colonial railway lines, the road network in the region was also poor. Dickson (1971) observed that between 1912-1936 the road network in the region showed no noticeable improvements. No road in the region was built either to open up rural areas or to increase production or to promote trade (Dickson, 1968). For the colonial state, the interests of Ashanti and the Colony prevailed over the North's, as Governor Guggisberg lamented:

> The Northern Territories, have for so many years been deprived of sufficient funds to help them (Colony and Asante) along in that great progress which we expect them…. the career of the North as the Cinderella of the Gold Coast is nearing its end; as Cinderella she has done good and unobstructive work. Her reward for that and the gallantry of her soldiers is insight.(as cited in Brukum, 1998, pp. 121-122).

But the reward Guggisberg hinted never came to pass. By 1929, almost three decades of official colonial rule, reports and correspondences of colonial officers in the region show that the state of the NTs was just like it was in 1904 (Brukum, 1998).

[9] The paragraph is heavily drawn from (Brukum, 1998).

5.2.Exploitation of Human Resource

"The most damaging of the colonial policies of the British, as far as Northern Ghanaians are concerned, was the promotion of an interregional division of labor which systematically turned their region into a vast "labor reserve."" (Saaka, 2001, p.3).

The extensive search for waged labour in colonial Ghana started at the close of the 19th century when the government had granted mining concessions to expatriate firms. This was paralleled with the start of public works including the construction of ports, bungalows, roads, and railway lines in the southern province. The need for labourers became crucial and, therefore, schemes for labour recruitments commenced. Labour recruitments came in two stages.

The first stage, which extended from 1870s to 1910, involved the formation of 'Carrier Corps' that would transport equipment, work in the construction of roads and bungalows and take engagements in other provisions of Pax Britannica (Plange, 1979). However, in the South the call for people to engage in this heavy manual employment went unheeded (Kwaku, 1975; Plange, 1979b).

The refusal to accept manual jobs in the South was as a result of the emerging, profitable cash crop businesses like rubber, palm oil and cocoa cultivation. These businesses were largely in the hands of the natives because the expatriate firms were preoccupied with the mining business. The cash crop plantations absorbed the labour force in the South. This made the recruitment of 'idle' labour in the South difficult, hence attention was turned to the Northern Territories (Plange, 1979b). And by the close of 1908 some experiment had been carried out in the North for the dredging and mining works and it proved successful. Following this, expatriate private firms were encouraged to comb the area for labourers, as the 1908 Annual Colonial Report (ACR) shows:

> The labourers from the Northern Territories who arrived on the mines in 1907 were paid off in June. The experiment of introducing this labour was, for the most part, satisfactory, and the mining companies should be able to obtain a

> considerable amount of labour from this source (Government House, 1908, p.25).

After the call, many expatriate firms established their own private recruitment schemes and the first demand for northern labourers in that year came from railway contractors (Thomas, 1973). The Tarkwa-Prestea railway contractors, for example, requested 300-400 men while the Accra-Kumasi railway contractors requested 300 men from the NTs (Thomas, 1973).

The second stage, which covered the period 1910-1946, was marked by an intense demand for labour by both government and expatriate private firms from the NTs. Several developments made the labour demand issue crucial in this period. First, there was an increase in the award of concessions to mining companies which increased the demand for labourers from the North (Plange, 1979b). The second reason was the outbreak of the First World War and the discovery of manganese deposits in 1916 which was essential for the war efforts and whose geographic location was relatively closer to the NTs (Plange, 1979b; Thomas, 1973). In a drive to secure as many conscripts as possible from the NTs, the government opened the headquarters of the Gold Coast Regiment (GCR)[10] in Gambaga, a town right at the heart of the NTs. Also, in 1917 all forms of labour recruitments, except military recruiting, were banned in the region (Thomas, 1973). By 1918 about 90 percent of the rank and file of the (GCR) was filled by Northerners (Brukum, 1998; Saaka, 2001).

Another reason for the increase in demand for labour was as a result of the commissioning of another phase of public works in 1919 by the new Governor, Gordon Guggisberg. This was a 10-year development plan which mainly captured the expansion of the harbour, extension of railway lines and road networks, and the building of schools and hospitals. The Governor announced that about 27,000 men were need for these works, albeit no explicit mention was made regarding the potential source of recruitments. But according to Thomas (1973), shortly after the launch of the plan, Guggisberg suggested "organising a special recruiting scheme in the Northern Territories" and this recruiting process indeed commenced in December 1919. Plange,

[10] The GCR was the local wing of the Royal West African Frontier Force

(1979b) also argues that the Northern chiefs were threatened that they would not receive a share of the grand works if they refused to supply labourers.

The exploitation of the region's manpower left tremendous detrimental effects on the region. First of all the region lost its active, young population which led to an overall decrease in the population. So many of the recruits died, especially in the mines where death rates were considerably high. For the 1922-3 recruits from the North, for example, death rates ranged from 2.8 percent to as high as 12.8 percent across the mines (Thomas, 1973). These figures do not include those who died in their home villages upon return. Hilton (1968) reports that the period 1931-1960 saw the Northern population decrease by a quarter. Second, there was profound decline in local production and increase in imports (Plange, 1979b). The region's demographic composition and social division of labour also got distorted. Starting from the 1920s the general sight of the North was old-aged people working painstakingly on farmlands and women and children herding cattle (Plange, 1979b). In 1931 the ratio of male to female in the region was 95:100 in the productive age of 15-45 years, but dropped to 89:100 in 1948 and by 1960 it had come down to 75:100 (Hilton, 1968).

There was also the spread of infections and diseases in the North after the recruits returned. Amo-Adjei et al. (2015) report that the transmission of tuberculosis to the North, for example, was in consequence of return migration from the mines. The returnees were also completely emaciated and had lost all their productive capacities (Plange, 1979b).

5.3.Distortion of Pre-Existing Economic Order

Colonial intervention also reversed the economic fortune of the area. The 'pacification' of the area by the colonial state in an effort to introduce the region into, and create, "a colonised economic system" inherently involved "the domination over and distortion of pre-existing modes of production."(Plange, 1979a). Colonial intervention in the area disarticulated the pre-existing economic order in many ways. First, the old South-North trade flow was reversed to North-South direction. The British had to reverse the direction of trade flow because its continuation would necessitate that transit goods from British possessions be passed through the possessions of Germans and France.

To avert this tragedy, the administration hastened as quickly as possible to terminate all the north-western Sudan trade relations and configurations so as to redirect trade southwards (Plange, 1984).

Second, the administration abolished the caravan tax or tolls, the greatest source of revenue for the North (Brukum, 1998; Staniland, 1975). The scrapping of the tax actually benefitted the traders from the South because they were no more obliged to pay tax on their exports and imports via the North. It also compelled traders to desert the caravan trade routes (Oteng-Ababio et al., 2017). This was because traders who paid the caravan toll were entitled to guards who escorted them throughout the dangerous spots of the routes. The abolishing of the tax meant that the safety of traders – especially those that trooped from the old Sudanic empires – was no more guaranteed, hence they abandoned the routes. The abolishing of the tax also worsened the financial status of the region. To be sure, it took 20 years for the region to raise a revenue comparable to the one in 1907, the year the caravan tax was abolished (Staniland, 1975).

Another destruction to the economic landscape of the region came from the establishment of 'colonial' market centres and the introduction of British currency into the system. Traditional market centres like Salaga, Yendi, Nalerigu, Nyanga, among others, were replaced by colonial administrative centres such as Tamale, Gambaga, and Bole (Plange, 1984). Directives and warnings were given to local traders to sell their commodities only at the government centres. At the opening ceremony of one market centre in 1908, for example, the Colonial Secretary remarked:

> I have asked you to meet me all together …. so that you may all see the new town which we are making the centre of administration and which we have no doubt will very soon form the distribution centre of trade….. we are here to encourage trade in your midst…. From time to time your commissioner will tell you what is good for trade… and you must follow his advice (as cited in Plange, 1984, p.38).

Shortly European goods flooded the new markets and local artisans and entrepreneurs were driven out of the market. Soon the local currency, cowrie, became "legally untenable" when the British currency, pounds, was put into circulation. However, some local traders still preferred and continued to trade with the cowrie in the remotest

areas where daily interferences of colonial officers were almost non-existent. “But when the arm of the colonial state” finally “reached them” it was too late for them to convert their cowries to pounds and suddenly their cowrie wealth became utterly useless (Plange, 1984). This people would form the overnight poor in the rural areas.

5.4.Restrictions on Missionary Activities and Delay in the Introduction of Western Education

The contribution of missionaries in the spread of western education in the “New World” is an undisputed reality. Education was instrumental in their evangelisation work because schools did not only pull the natives closer to the missionaries, but also the new recruits could read the bible and acquire divine knowledge (Der, 2001). The colonial administration, on its part, assisted the mission schools by providing them grants-in-aid because the ‘products’ could understand the white man’s language and could be an indispensable asset to the colonial administration.

In Ghana, too, the pioneers of western education were the missionaries (Der, 2001). But there was a huge nuance in the degree of freedom accorded missionaries across the two regions in the era of colonialism. While missionaries were given absolute freedom to operate in the South, their activities were curtailed in the North for a very long time.

As early as 1905, the White Fathers, a Roman Catholic missionary, made the first request to the colonial administration to open a mission station in the Northern Territories. Their request was refused on grounds that the region was not sufficiently settled to allow for missionary works and the introduction of western education (Der, 2001). It was not until a year later that their request was granted, and in 1907 they opened the first school in the region. This marked the beginning of western education in the NTs. But in 1914 the school was forced to close down due to the exigencies of the First World War which necessitated the retrenchment of funds to schools (Der, 2001). It did not open until 1925. It was 1908, six years after formal colonial rule, that the government opened its first school in the region.

The other missionary society to open a mission school in the North was the Wesleyan Methodist Missionary. However the school, which started operating in 1914, was closed down in 1916 and the mission withdrew from the region. The short lifespan of the school and the missionary body in the region was as a result of the strained relation between the head of the school, Rev. Mr. Stormonth, and the Commissioner for the NTs, Hamilton Armitage, where the former was put under strict observance and monitoring of the latter (Der, 2001). The period 1916-1925 witnessed no missionary activity in the region. This void failed to incite the government to build new schools to meet the growing educational demands in the region. In 1930, roughly three decades of official colonial rule, the region had only five government primary schools (Der, 2001) and two technical schools (Staniland, 1975).

After this period, the government relaxed the space for missionary works. But stringent conditions were still placed on the establishment of schools in the region. Applications for the establishment of mission posts and schools, for example, were thoroughly examined by the administration to ascertain that their activities would not pose any threat to the interests of the colonial state in the region (Plange, 1984).The 1927 Northern Territories Education Ordinance also warned that:

> No Mission Society, body, Corporation or individual shall open any station within the Northern Territories without the sanction of the Governor; and after the lapse of a period to be determined by the Governor, his further sanction in writing is necessary before any school or other educational establishment may be started in the station. (as cited in Der, 2001, p.114).

The ordinance also required that all bodies with the intention of opening school(s) in the region must satisfy the Superintendent of Education that, the proposed site, building and recreational facilities were suitable; they had enough and qualified staff; they had adequate equipment; the scheme of instruction, by its nature, is approvable ; and they would ensure sufficient supervision by a European (Der, 2001).

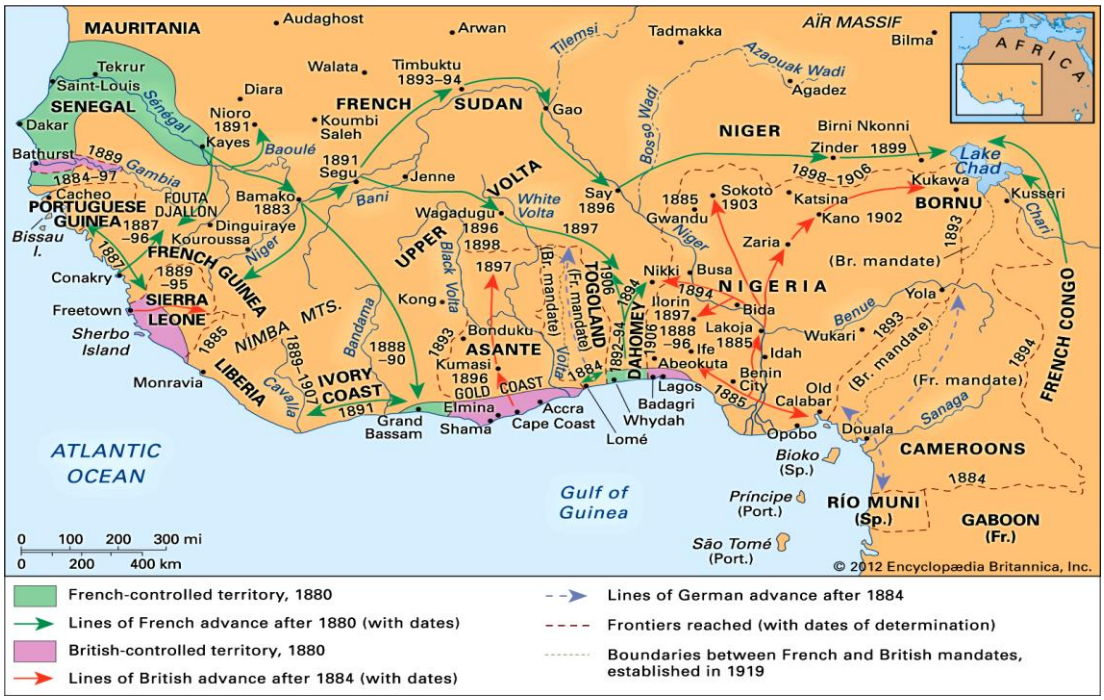
Most writers like Brukum (1997, 1998) and Plange (1984) argue that the negative disposition of the colonial administration against the activities of missionaries and the introduction of western education in the region was nothing but a main component of the efforts of the colonial state to completely transform and keep the region as a “labour

reserve" for the constabulary force, the mines and the public works in the South. The administration calculated that the introduction or extensive propagation of western education, which was an intrinsic component of missionary works, would, sooner or later, breed "educated" elites in the region who would demand white-collar positions in the administration.

This disposition was also in line with the implementation of the administration's "Isolationist" policy towards the North. The colonial administration aimed to isolate the administration of the NTs from that of the South. Under this policy, the 'simple' North would be completely insulated from the 'disruptive' and 'harmful' forces from the South. In the South, the British had experience strong opposition from the educated elites who considered themselves more prepared and enlightened to manage the affairs of the region than the illiterate traditional rulers who were mere stooges of the colonial state. The educated elites were also the propounders of the "self-government now" agenda and 'frontliners' of other nationalist movements in the South (Saaka, 2001). The British therefore feared that giving the missionaries unfettered freedom to carryout extensive educational work in the NTs would eventually breed such "detribalised", "westernised" youth who would equally disturb the peace of the North. The NTs was therefore to remain a clean slate for African type of development devoid of western or southern influences (Grischow, 1999).

It was also against this background that the education that was finally introduced in the North was also unusually peculiar. Initially, the main objective of education in the area was to strengthen traditional institutions of governance. At the start, education was a preserve of the wards of chiefs – or at least they were given paramount preference over others – for they would be future occupants of traditional positions that worked hand in hand with the colonial administration (Brukum, 1997, 1998). Besides, the education in the NTs was thoroughly "guided" so as to avert the possible breakdown of traditional system of governance as unguided education in the South had resulted in utmost resentment of the traditional system by the educated elites (Brukum, 1998). Also, in the educational scheme, no arrangements were made for higher education; the highest was standard 3 (primary 6). There was also practical proclivity in the educational curricular in the NTs. Pupils were taught such basic vocational and agricultural trainings as typing, brick laying, carpentry, book keeping, rope and mat

weaving, pottery, leather works, smithing, specialised agriculture and veterinary works (Brukum, 1997, 1998; Der, 2001). No space was provided for academic training and higher education that would have invigorated the pupils' intellectual capacity for the evolvement of progressive ideas and for higher positions in the public service. It is no wonder that by the time of Ghana's independence in 1957, only one Northern student had received a higher, formal education (Adu-Gyamfi et al., 2016).



Map 5.1. Penetration of European Imperialists in West Africa in the Late 19th Century. (Fage, 1958)

CHAPTER VI

DATA AND METHODOLOGY

6.1.Data Sources and Description

6.1.1. Current Development

I use light density at night (luminosity) to capture the current development differentials between the North and the South. [11] The light density at night data is sourced from the US Airforce Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS). Every night between 20.30 – 22.00 local time, satellite from the DMSP travels the earth and observes every location (Henderson et al., 2012). When the satellite orbits the earth, it sends images of locations between 65 degrees South and 75 degrees North latitudes at a fine resolution of 30 archseconds (Chen & Nordhaus, 2011; Henderson et al., 2012; Pinkovskiy, 2013). In order to produce finer images, the captured images are further processed to remove significant contaminations such as cloud cover, snow, and other ephemeral lights like forest fires, lightening and gas flaring. Then each pixel, approximately 1 sq. km, is assigned a digital number (DN) ranging from 0 to 63, with 63 representing the highest luminosity (Pinkovskiy, 2013).

Recent studies have identified a strong correlation between light density at night and various measures of development such as GDP, in both the national and subnational levels (see Doll et al., 2006; C. D. Elvidge et al., 1997; Sutton & Costanza, 2002). In their study of the potential use of luminosity data as a proxy for mapping global development, Christopher D. Elvidge et al. (2007, p.51) concluded, "Nighttime lights provide a useful proxy for development and have great potential for recording humanity's presence on earth's surface and for measuring important variables such as annual growth rates for development."

[11] For an in-depth discussion of the use of light density at night as a proxy for development, see (Chen & Nordhaus, 2011; Henderson et al., 2012a). Also the terms light density at night, luminosity and night-time light will be used interchangeably.

Consequently, it has been recently employed extensively in empirical studies. Chen & Nordhaus (2011) and Henderson et al. (2012) have used it to measure real output growth while Michalopoulos & Papaioannou (2012, 2013) employed it to measure differential developments at the national and subnational levels in Africa. Others include Pinkovskiy (2013) who used it to explore economic discontinuities at borders across the world.

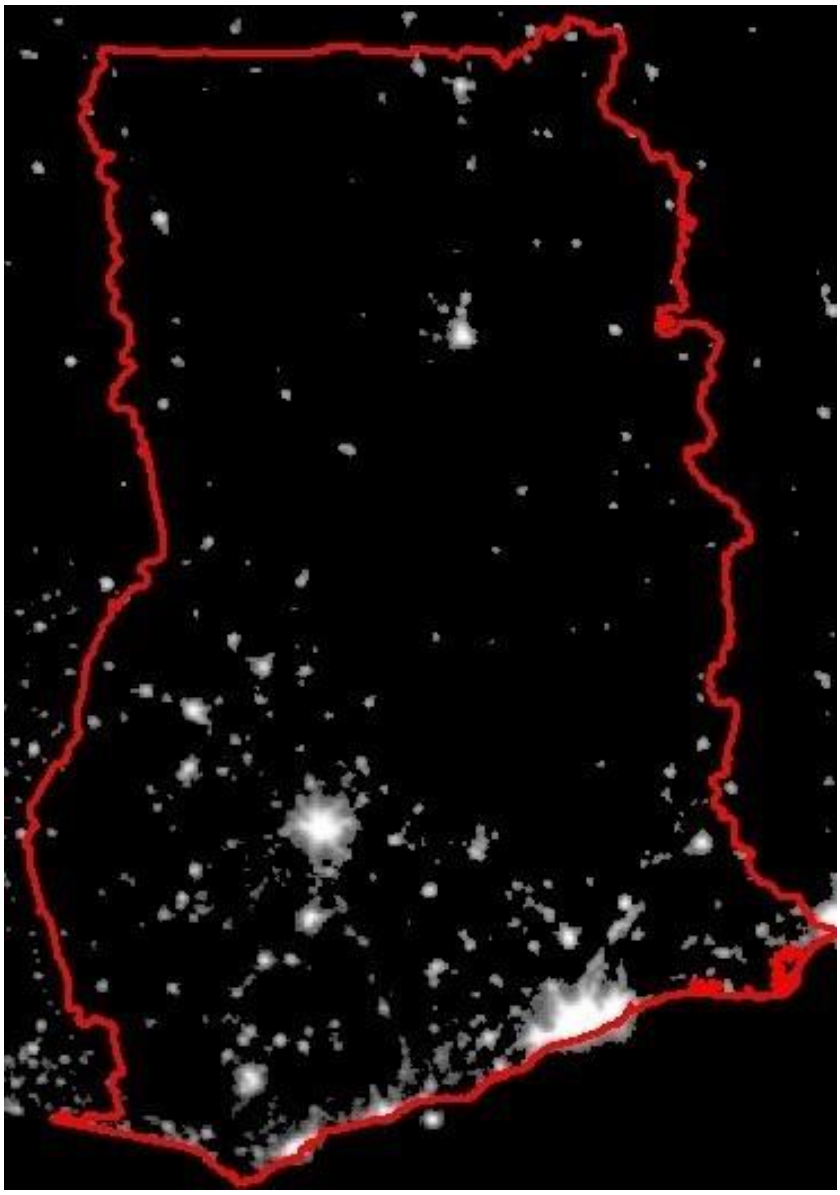
Aside its availability at a practically finer geographic level than any other standard measure of local economic activity (Henderson et al., 2012), luminosity data is also highly objectively measured as compared to the traditional measures of development (Chen & Nordhaus, 2011). The use of luminosity data is also recommended in instances where there exist poor and unreliable income statistics or where data is essentially unavailable at a certain geographic or political unit.[12] In Ghana, it is ordinarily difficult to obtain district-level or regional income data (or even national income statistics) and the available data is not consistently reliable, hence the use of light density data overcomes this challenge.

Using light density data for the year 2013,[13] I constructed 2091 grid cells, each measuring 0.1x0.1 degrees (about 11kmx11km)[14] using Ghana's colonial map that divides the country broadly into three distinct colonial administrative regions: the Gold Coast Colony, Ashanti, and the Northern Territories, as seen in map 4.1.[15] The gridded map is provided in appendix Figure A.1. For each cell the light values of all the lit areas are summed and used as the outcome variable (level of development). By performing the analysis at such precise pixel level, the paper overcomes the confounding effects of aggregate income statistics that mask individual idiosyncrasies. This method also overcomes the confounding effects of extremely lit areas in a district or regional-level analysis. Jedwab & Moradi (2016) used a similar technique to study

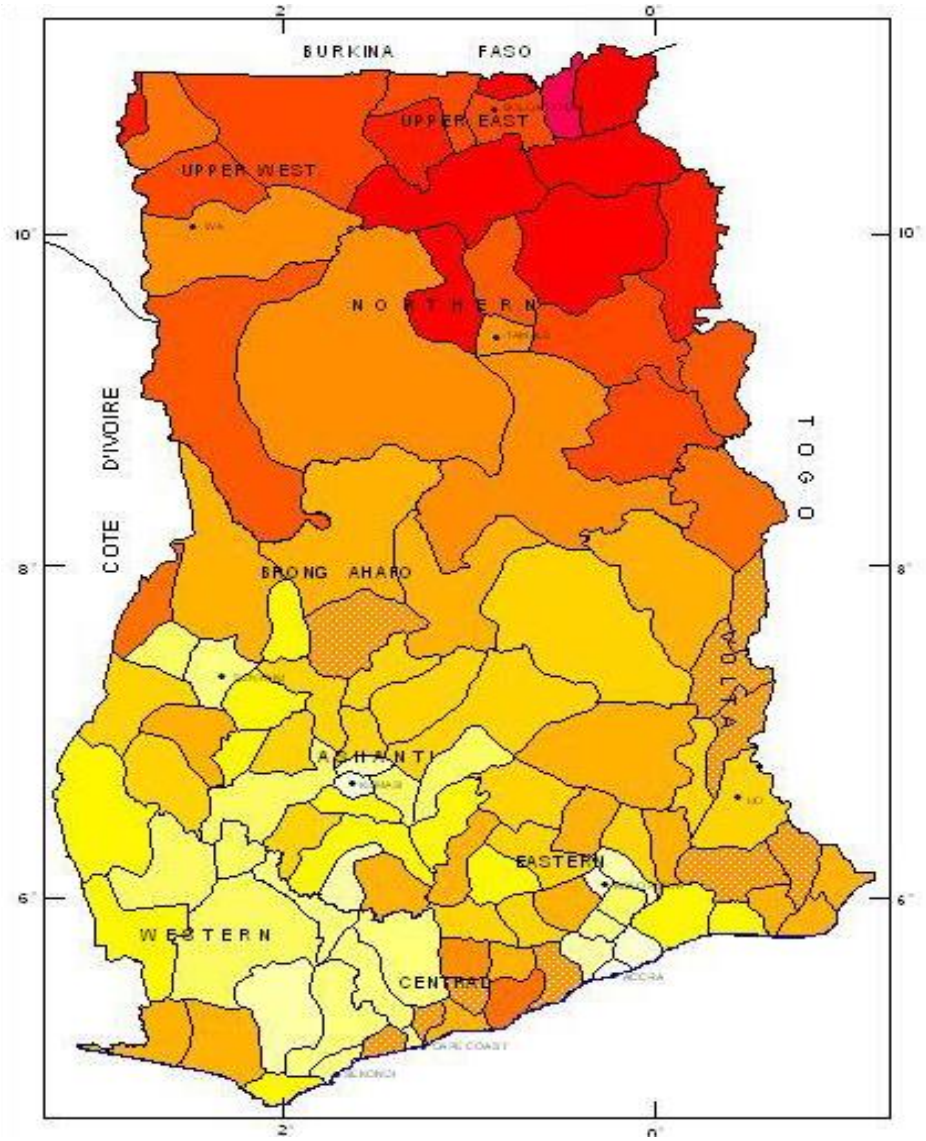
[12] Chen & Nordhaus (2011), for example, argue that the luminosity data has an informational value for countries that have poor quality statistical systems.
[13] To the best of the author's knowledge 2013 is the most recent year for which the light density data is available from the DMSP-OLS
[14] I followed Jedwab & Moradi (2016).
[15] The map is sourced from Map and Geospatial Spatial Information Centre, Lewis Library, Princeton University. The map can be accessed from https://earthworks.stanford.edu/catalog/princeton-b8515r88g . Date of access: 06/11/2019.

the permanent effects of railway construction on development outcomes in southern Ghana.

Map 6.1 provides a visual representation of the development differential in Ghana using luminosity data. The more light a place has, the more developed it is. Map 6.2 on the other hand is a district-level poverty map of Ghana sourced from the Ghana Statistical Service (GSS), prepared by Coulombe (2005). Coulombe constructed the map using data from the Ghana Living Standard Survey (GLSS) round 4 and the 2000 Population and Housing Census. It can be observed that the luminosity map strongly correlates with the poverty map: The amount of light decreases and poverty levels increase as one moves from South to the North.



Map 6.1. Light Density at Night in Ghana



Map 6.2. District-Level Poverty Map of Ghana. (GSS, 2005)

6.1.2. Precolonial or Historical Development

To measure historical development I use the Ancestral Characteristics Dataset sourced from Murdock's Ethnographic Atlas. This dataset provides detailed information on the political, cultural, geographical, social and economic characteristics of over 1200 ethnic groups across the world. The dataset describes the state of ethnic groups before their contacts with Europeans, hence it is devoid of the acculturative effects of European presence or colonisation. From this dataset I use "Jurisdictional Hierarchy Beyond the Local Community Level" variable as a measure of historical development.

This is an ordered index from 0 to 4 that describes the levels of political hierarchy beyond the local communities of each ethnic group. A value of 0 refers to stateless ethnic groups "lacking any form of centralised political organisation", while 1 refers to groups that had "petty chiefdoms". It assigns 2 to groups with "larger chiefdoms" and 3 and 4 to "states" and "larger states" respectively.

By intersecting the map of Ghana with Murdock's Ethnographic Atlas[16] I am able to identify 36 ethnic groups in Ghana and glean their individual ancestral characteristics. Information on precolonial political structure is available for 19 out of the 36 groups. In appendix Table B.1 a list of the 19 ethnic groups and their levels of jurisdictional hierarchies is provided. While no group is given a value of 4 (larger states), only the Dagombas in the North are assigned a value of 3 (states). The rest are between 1 and 2.

Political centralisation is a good measure of development because centralised political polities are not only able to monopolise power and enforce law and order to ensure the smooth flow of economic activities, but are also able to provide security and public services for their citizens (Acemoglu & Robinson, 2012). Also, societies without sufficiently centralised polities easily give birth to many actors who wilfully disrupt the state of affairs, causing the society to descend into chaos (Acemoglu & Robinson, 2012). A high degree of decentralisation also makes coordination among disparate jurisdictions difficult, which could hurt the effective functioning of the rule of law (Oates, 1972).

Furthermore, there was a high degree of political accountability in precolonial centralised African states (Herbst, 2000). Local chiefs were strictly monitored and those that performed badly could be removed and replaced by the kings (Ayittey, 2006; Michalopoulos & Papaioannou, 2013). Those who became too powerful and independent could easily be suppressed by the central authority (Fortes & Evans-Pritchard, 1940). It was not only the local chiefs that were expected to act in the interest of the public. The king also stood the chance to be removed from office by the Councils who were vested with the power of divestiture if he abused his office (Ayittey, 2006).

[16] I used the current version of this atlas as produced by J. Patrick Gray (1998) and digitised by Nathan Nunn (1999).

If this was not done, his subordinate chiefs could secede or stage a revolt against him (Fortes & Evans-Pritchard, 1940). Such degree of accountability and fear of being removed from office forced traditional rulers to execute policies that expanded productive inputs like education, health and infrastructure (Gennaioli & Rainer, 2007). Also, more centralised groups were better able to adopt modern technology and modernise faster than fragmented societies (Low, 1965; Pratt, 1965; Schapera, 1970). In centralised societies there were also established legal resolutions mechanisms and property rights laws (Herbst, 2000). Therefore, disputes over trade and properties could easily be resolved without having to disrupt the normal flow of everyday economic life. Lastly, societies with state organisations accommodated heterogenous groups (Fortes & Evans-Pritchard, 1940) and such cultural and economic heterogeneity or diversity promoted division of labour and economic specialisation (Depetris-Chauvin & Özak, 2017, 2018).

Recent empirical works also cite precolonial degree of centralisation as being strongly associated with contemporary development (Michalopoulos & Papaioannou, 2013) and the provision of public goods and better institution quality (Gennaioli & Rainer, 2006, 2007).

6.1.3. Other Measures of Historical Development

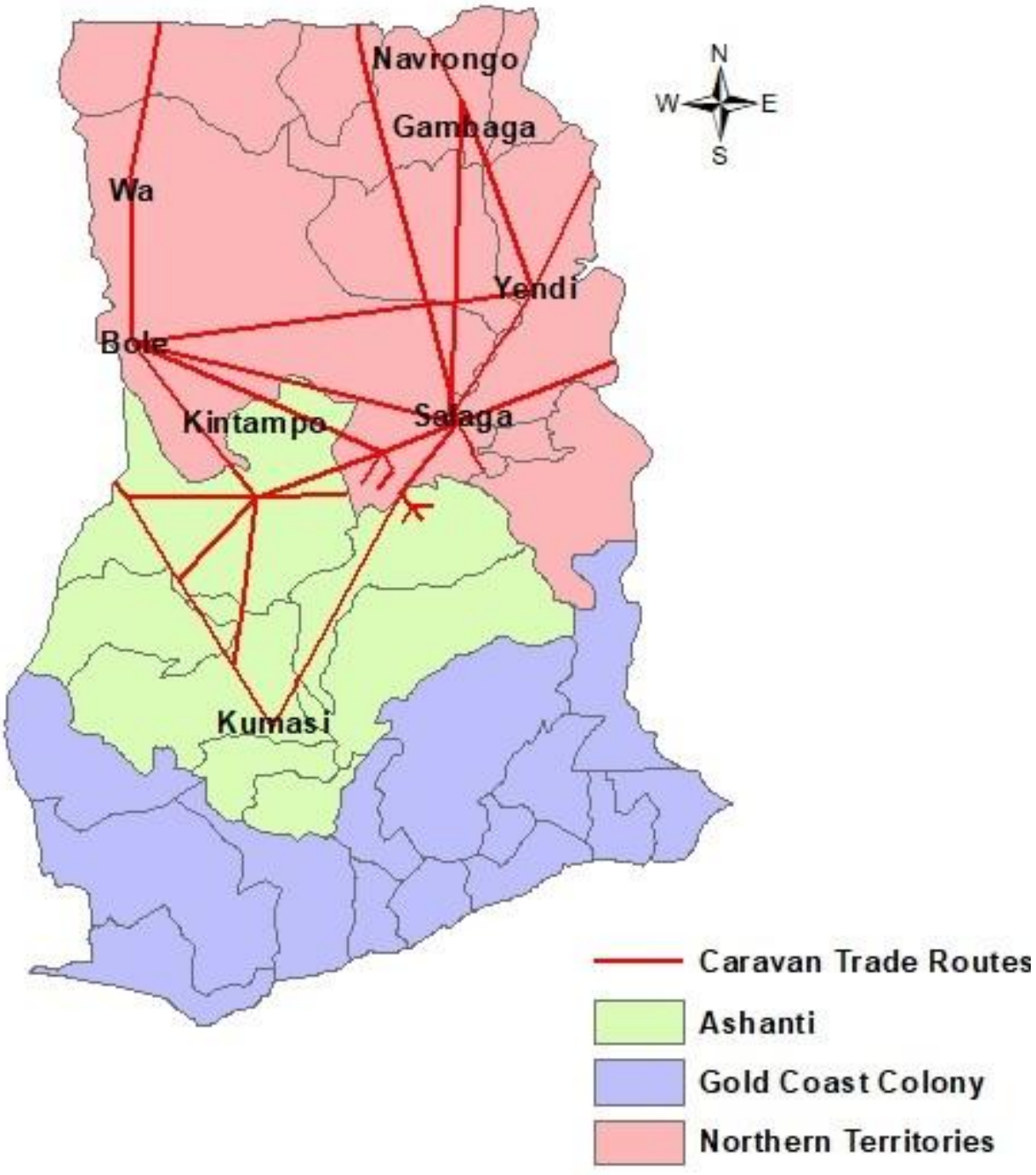
The study also employed economic specialisation, complex settlements, agriculture dependence, and distance to an old caravan trade route as alternative measures of precolonial development. The first three are sourced from Murdock's Ethnographic Atlas. For the latter, the study digitised the pictorial representation of the (caravan) trade routes in Hopkins (2020) and Lovejoy (1982) and measured the geodesic distance from the centroid of each cell to the nearest trade route. The caravan trade routes extended from modern Ghana and conjoined with the old Tran-Saharan trade routes. The caravan trade routes and some major old trade towns are shown in map 6.3.

Economic specialisation is an index that the study constructed, following (Depetris-Chauvin & Özak, 2018):

$$\mathcal{S}_e = \sum_a \mathcal{S}_{ea} \quad (1)$$

For each ethnic group e, I count the number of specialised economic activities, $\mathcal{S}_e$, and add them. If the activity was present and specialised then $\mathcal{S}_{ea}$ takes the value of one and zero otherwise. The economic activities used here include metal work, boat building, leather work, weaving, agriculture, pottery, house construction, hunting, fishing, animal husbandry, and gathering. The choice of selection is contingent on the availability of information on the variables.

Complex Settlements is an indicator variable which takes the value of 1 if the human settlement was either "Compact and relatively permanent" or "Complex settlements". It takes the value of zero if the settlement was "Neighbourhoods of dispersed family homesteads" or "Separated hamlets, forming a single community". The Agriculture Dependence variable is a 0-9 scale index that describes the intensity of agriculture for each group. 0 represents 0-5% percent dependence; 1 is 6-15% dependence; 2 is 16-25% dependence; 3 is 26-35% dependence; 4 is 36-45% dependence; 5 is 46-55% dependence; 6 is 56-65% dependence; 7 is 66-75% dependence; 8 is 76-85% dependence; and 9 is 86-100% dependence.



Map 6.3. Caravan Trade Routes in Ghana

6.1.4. Explanatory Variables

6.1.4.1. Northern Territory Dummy

To capture the "northern" effect on the development status of the unit of analysis, I used the colonial administrative map and assigned values to cells. A cell is assigned a value of one if it falls in the Northern Territories and zero otherwise.

6.1.4.2. Colonial Investments

The study employed two major proxies of colonial investments to test differential colonial investments: number of colonial schools in 1931 and geodesic distance to colonial railway lines. The data on colonial schools comes from Cogneau & Moradi (2014). The authors collated and compiled the list of colonial schools and their locations using Government Education Reports and Statistical yearbooks. The schools are geocoded using GEONET. The schools comprise of government and mission schools. The mission schools are further divided into assisted schools and non-assisted schools. The assisted schools received grands-in-aid from the colonial governments on condition that they maintained a certain threshold of enrolment and proper school accounts in a given year.

There are minor challenges regarding the collation of the school data. First, the locations of a few of the mission schools are presumed to be at the mission posts or at the district capitals. Second, while the information on government schools is precise and accurate, that of mission schools is not always accurate and sometimes incomplete, especially the non-assisted mission schools. In the Gold Coast, not until 1945 non-assisted mission schools were not obliged to provide reports on pupil enrolments and school accounts to the government, so their information is largely incomplete. Hence, non-assisted mission schools are excluded here. In addition to government schools, however, the authors are able to correctly compile information on the assisted mission schools. Therefore the number of colonial schools in this study comprises government schools and assisted mission schools.

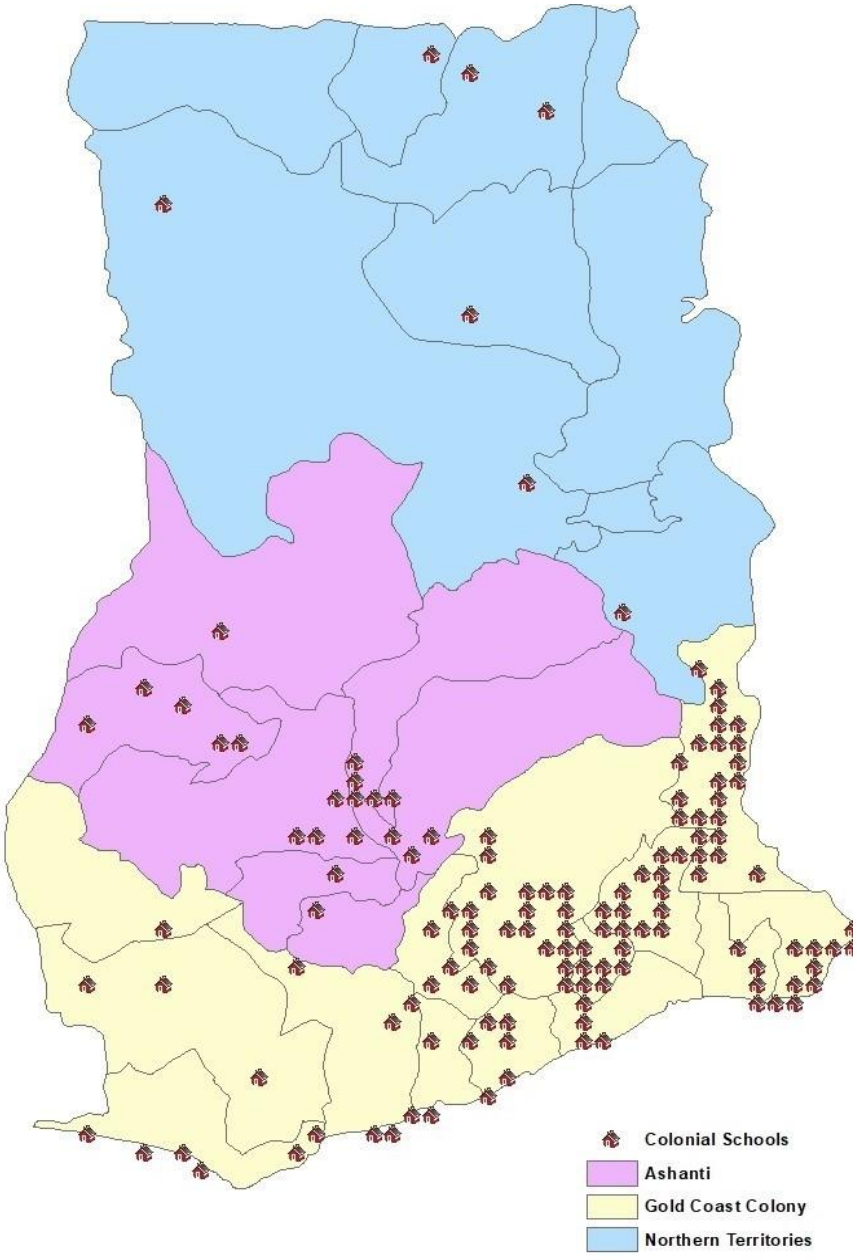
I added assisted schools to the number of colonial schools because they were heavily reliant on the government for their financial maintenance. The lack of government financial assistance could result in the collapse of a school. In 1914 for example, the first mission school in the NTs was closed down due to retrenchment of government funds. The government supported mission schools because they acted to reduce government education expenditure as there was no need to build new government schools. This explains why the number of government schools was always significantly lower than that of assisted mission schools throughout the colonial period. For example, while the number of government and assisted schools stood at 5 and 49, respectively in 1890, the ratio became 7 to 117 in 1903.[17]

Since the locations of the schools are geocoded, I am able to join and extract each school and its attributes to the closest grid cell on my map using Arcmap. I captured 305 colonial schools in Ghana in 1931. Map 6.3 depicts the regional distribution of colonial schools in 1931. Some cells may contain more than one school, however, the map only shows places that had at least one colonial school (government or assisted mission school).

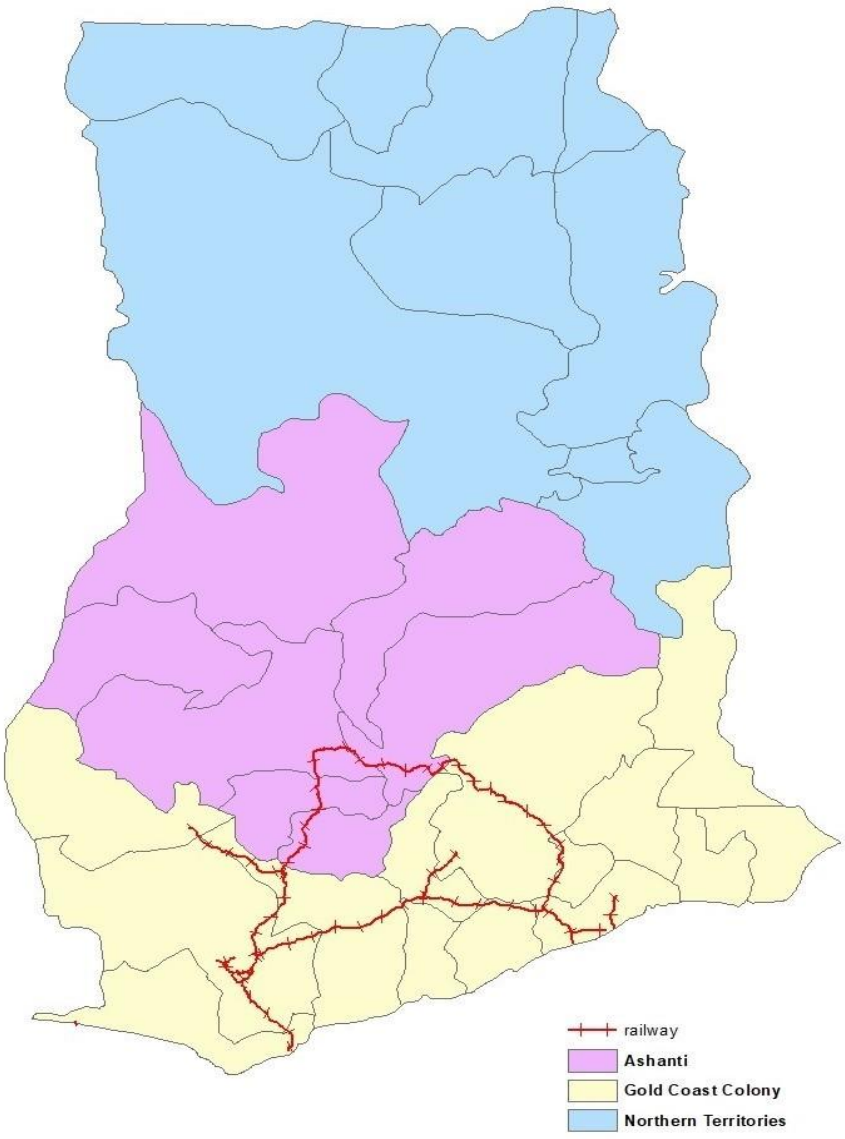
For the railway lines, I simply intersected the map of Ghana with the World Food Programme GeoNode's digitised global railway lines.[18] The global railway network is compiled on a country by country basis by the Emergency and Preparedness Geospatial Information Unit of the WFP. Then I measured the geodesic distance from the centroid of each cell to the closest railway line. The concern here is that since this railway map is regularly updated, it might have incorporated 'postcolonial' railway lines. However, in this study I used only railway lines that were constructed during the colonial period. Map 6.4 shows the colonial railway network in Ghana.

[17] Annual Colonial Reports

[18] The global railway lines can be obtained from
https://geonode.wfp.org/layers/geonode%3Awld_trs_railways_wfp#more
most recent date accessed: 06/04/2020



Map 6.4. Regional Distribution of Colonial Schools



Map 6.5. Colonial Railway Network

6.1.5. Controls

For each specification, I control for a rich set of geography, climate, minerals and location variables such as precipitation, temperature, elevation, ruggedness, soil quality, mineral dummy, distance to an old trade route, distance to the river, distance to the capital city and distance to the seacoast. Controlling for these variables is built on the assumption that any of them can affect the outcome variables: current and past development, and colonial public investments Development, for example, can be attributed to the presence and efficient utilisation of natural resources (Ross, 2006). It

can also be influenced by terrain ruggedness and elevation (Nunn & Puga, 2012). Most development efforts in African countries are also clustered in and around the capitals and seacoasts (Herbst, 2000). Early state formation was also influenced by climatic variability (Litina 2014) and geographic conditions (Petersen & Skaaning 2010). Fynn (1982), for instance, argues that the thick vegetation in the coastal zone of Ghana did not allow the groups in this area to form any centralised states and were only able to live in petty chiefdoms. The sources and definitions of these variables are provided in appendix Table B.2.

6.1.6. Summary Statistics

Table 6.1 provides summary statistics for the major variables used in the study. Panel A shows the regional distribution of colonial schools in 1931. Number of schools comprises the total number of government and assisted schools in each region. The table reveals a glaring gap between the North and the South in terms of number of colonial schools. In 1901 when the North had no school, the South had at least 103 colonial schools. Remember that non-assisted schools are not included in this list. So the number of schools in the South is underestimated. The North received its first mission school in 1907 which was opened by the White Fathers (Der, 2001). The first school in the South was opened in about 1644 by the Dutch West Indian Company in modern day Elmina (Bartels, 1949). From 1901 to 1931 the number of colonial schools increased from 103 to 288 in the South, but by 1931 the North had just 17 schools.

Panels B and C report summary statistics of historical measures of development, luminosity and distance to colonial railroads for the South and the North respectively. The average distance from the centroid of each cell to a colonial railroad is about 294 km and 59 km in the North and South respectively. Note that the standard deviation of distance to colonial railroad in the North is more than twice that in the South, which also indirectly depicts the lack of railways in the North. Log luminosity is higher in the South with an average value of about -0.02, maximum value of 9.1 and standard deviation of 5.0. The higher standard deviation of luminosity in the South implies that compared to the North, development differentials (or income inequalities) are relatively higher in the South.

With regards to the historical variables, the North leads the South in terms of distance to old trade routes and political centralisation. There are no noticeable differences between the two sides in terms of complex communities, economic specialisation, and agriculture dependence. But while both sides have the same maximum value of economic specialisation, the minimum in the South is lower than that in the North. However, the North was marginally more dependent on agriculture than South, as indicated by minimum values of 6 and 4 respectively.

Table 6.1. Summary Statistics: Colonial Schools

Panel A: Colonial Schools					
	South		North	Total	
Schools 1901	103		0	103	
Schools 1931	288		17	305	
Panel B: South	min	Max	mean	sd	N
Dist. to Col. Railroad	0.0168	249.3	58.97	49.78	943
Dist. to Trade Route	0.171	295.2	115.1	68.35	943
Political Centralisation	0	2	1.875	0.360	801
Econ. Specialisation	0	2	1.779	0.455	462
Complex Settlements	0	1	0.831	0.375	801
Agric. Dependence	4	8	7.280	0.707	801
Ln (0.01 + luminosity)	-4.605	9.113	-0.0193	5.005	943
Panel C: North					
Dist. to Col. Railroad	0.966	502.7	294.3	114.8	1,148
Dist. to Trade Route	0.0130	176.4	25.13	24.66	1,148
Political Centralisation	0	3	2.018	1.004	455
Econ. Specialisation	1	2	1.699	0.460	183
Complex Settlements	0	1	0.797	0.403	473
Agric. Dependence	6	8	7.362	0.606	473
Ln (0.01 + luminosity)	-4.605	8.449	-3.254	3.249	1,148

6.2. Methodology

The study has employed the following empirical frameworks to test various arguments put forward:

6.2.1 Current Development Levels: North vs. South

Specification (2) is used to show the current development differential between the North and the South:

$$\boldsymbol{y_c = \beta_0 + \beta_1 North_c + \chi_c' \Phi + \varepsilon_c} \quad \textbf{(2)}$$

The dependent variable y_c captures the level of local economic activity, as measured by light density at night, of cell c. The distribution of the luminosity data is not normal, as shown in appendix Figure A.2. There are confounding outliers as some pixels could lit as high as 63, while others, the majority, are completely zero. Also, the total sum of lights in some cells could be as high as 9000 while others are as low as 0. Hence I added 0.01 to luminosity and took its log ($y_c \equiv ln(0.01 + luminosity)$, as has been done by Michalopoulos & Papaioannou (2012, 2013). This transformation minimises the confounding effects of the outliers and also allows me to be able to use the whole sample. Nevertheless, the results, albeit not reported, do not change even if I limit the analysis to only lit areas. Appendix Figure A.3 shows the distribution of log luminosity when 0.01 is added while appendix Figure A.4 shows the distribution of log luminosity for only lit areas.

North is a dummy variable which takes a value of 1 if the cell lies in the North and zero otherwise. χ is a vector of controls which includes temperature, precipitation, soil quality, ruggedness, elevation, distance to the capital city, distance to the seacoast and the presence of minerals (the cell is given 1 if there is a mineral and 0 otherwise). Previous studies have associated the underdevelopment of the North to its harsh geographic and climate conditions such as poor soil quality, irregular rainfall pattern,

and lack of mineral resources .[19] Terrain ruggedness and elevation have also been empirically proven to affect development outcomes (Nunn & Puga, 2012). Distance to capital city and seacoast generally reflects the penetration of the state and national institutions in remote areas. Since the study seeks to determine the magnitude of the underdevelopment status of the region in consequence of colonial intervention, all the aforementioned potential contaminators are controlled for.

ε is the error term which is assumed to be uncorrelated with all the regressors. The coefficient of North, β_1, would show the development gap between the North and South. It is expected that statistically $\beta_1 < 0$, to mean that the North lags behind the South. The magnitude of β_1 is also important as it depicts the extent of the development gap.

6.2.2 Precolonial or Historical Development

To establish the historical development levels of the North and the South, specification (3) is used:

$$\boldsymbol{y_c = \beta_0 + \beta_1 North_c + \chi_c' \Phi + \varepsilon_c} \qquad \textbf{(3)}$$

y_c represents the level of development – as proxied by political centralisation, economic specialisation, agriculture dependence, complex settlements and distance to an old caravan trade route – of cell c in the precolonial period. Political Centralisation, Economic Specialisation and Agriculture Dependence are ordinal variables that take more than two mutually exclusive outcomes. Therefore, the Ordered Probit estimator is used rather than the usual OLS. The latter would yield biased and incorrect standard errors. Complex settlements, on the other hand, is a binary outcome variable which takes the value of one if cell c had complex settlements and zero otherwise. In this case the logistic estimator is used. The usual OLS is used in the case of geodesic distance to an old caravan trade route.

[19] Shaffer (2015, 2017), for example, cites the region's irregular rainfall pattern, lack of experience in cash crop production and poor soil quality as main contribution factors for the perpetual seasonal hunger and poverty in the region.

6.2.3. Colonial Investments: North vs. South

Specification (4) is employed to test the hypothesis that the North received scant colonial investments compared to the South:

$$\boldsymbol{CI_c = \beta_0 + \beta_1 North_c + \chi_c' \Phi + \varepsilon_c} \quad \textbf{(4)}$$

Here the only new variable is CI_c which measures the level of colonial investments in cell c, as proxied by the number of colonial schools and geodesic distance to the closest colonial railway line. For the study's hypothesis to be true, $\beta_1 < 0$ to show that the North received less colonial investment relative to the South.

6.2.4. Colonial Investments and Contemporary Development

The following empirical framework is employed to determine the importance of colonial investments for contemporary economic development in Ghana:

$$\boldsymbol{y_c = \beta_0 + \beta_1 CI_c + \chi_c' \Phi + \varepsilon_c} \quad \textbf{(5)}$$

All variables maintain their definitions. Since the economic effects of railway lines on surrounding areas diminish as distance increases (Jedwab & Moradi, 2016), I created a dummy where a cell is given a value of 1 if it lies within 200 kilometres of a railway line and it is given a value of 0 if it lies beyond 200 kilometres to a railway line. If the coefficient of CI is still statistically significant after controlling for many related observable variables, then it would be that regions that received scant colonial investments are relatively less developed today.

6.2.5. Mediating Channels

To understand the extent to which colonial investments explain the North-South divide, I included colonial schools and railroad lines to the baseline regression model in specification (2). Since I argue that the lack of colonial investments constitutes one of the main causes of the current underdeveloped status of Northern Ghana, it should be the case that in an ideal world when all colonial investments are controlled for, the

North-South divide tremendously diminishes or vanishes. However, since it is practically impossible to control for all colonial investments, it is expected that once colonial railroads and schools are individually controlled for, the coefficient of North should diminish compared to that in the baseline specification (2). Specification (6) below is used to test the magnitude of the mediators.

$$\boldsymbol{y_c = \beta_0 + \beta_1 North_c + \beta_2 CI_c + \chi_c' \Phi + \varepsilon_c} \qquad \mathbf{6}$$

All variables retain their initial definitions.

CHAPTER VII

EMPIRICAL RESULTS AND ANALYSIS

This chapter reports the empirical results from the empirical specifications and discusses the inferences that can be drawn therein. Robust standard errors are reported in parenthesis below the estimates in all specifications.

7.1. Current Development Differentials

Table 7.1 shows the current development differential between the North and the South. Since the outcome variable is log-transformed, percentage changes that result when the predictor variables record a one unit increase can be calculated as [exp(B1) – 1]*100 (Wooldridge, 2018, p.227). Column (1) shows that if a cell crosses from South to North its light (level of development) reduces by about 96 percent. In other words, the level of development of an average cell in the North is about 96 percent less than its counterpart in the South. This coefficient is not necessarily meaningful since it might have picked up the effects of other unobserved characteristics or may suffer from the issue of omitted variable bias. So in column (2) I controlled for a series of local geographic characteristics including elevation, ruggedness, temperature, precipitation and soil quality. I also included a dummy for the presence of mineral resource in a cell. After the controls, there is substantial reduction in the coefficient of North. Now crossing from South to North reduces an average cell's local activity by approximately 82 percent.

In column (3) I controlled for distance to the capital city and distance to the seacoast. Again the coefficient of North observed another substantial reduction, nevertheless it is still economically and statistically significant. Now a cell's light reduces by about 52 percent if it crosses from South to North. Both the coefficients of distance to the seacoast and distance to the capital have the expected negative sign: a one kilometre increase in distance away from the coast and capital city decreases a cell's level of

development by approximately 0.43 percent and 0.40 percent, respectively. Thus, the effects of distance to seacoast and distance to the capital city on development outcomes are almost the same. This is so because the most developed parts in Ghana are actually the areas along the coast, where the capital city itself is located. The substantial reduction in the coefficient of North also implies that distances to the capital city and seacoast are one of the important indicators of development in Ghana.

Since there still exists significant development gap between the North and the South upon conditioning on a plethora of observable characteristics, it means that the underdevelopment tragedy of the North cannot be completely attributed to its seemingly growth-inhabiting climate and geography or its lack of mineral wealth or its further distance away from the capital and the coast. This further alludes to the conclusion that other 'unnatural' phenomenon might have engineered this development gap. This study argues that the roots of the remaining development gap between the two regions can be traced to the dynamics of colonial rule.

Table 7.1. Current Development Differentials: North vs. South

	(1) luminosity	(2) luminosity	(3) luminosity
North	-3.235***	-1.753***	-0.743**
	(0.189)	(0.306)	(0.316)
Soil quality		0.0771***	0.130***
		(0.0152)	(0.0168)
Elevation		0.00243**	0.00417***
		(0.00113)	(0.00114)
Ruggedness		-0.00546	-0.0236
		(0.0927)	(0.0915)
Precipitation		0.0237	0.0394*
		(0.0238)	(0.0237)
Temperature		0.0783*	0.00512
		(0.0435)	(0.0454)
Mineral (1/0)		3.955***	4.145***
		(0.870)	(0.870)
Dist. to Seacoast			-0.00427*
			(0.00243)
Dist. to Capital			-0.00382*
			(0.00215)
Observations	2,091	2,085	2,085
R-squared	0.132	0.174	0.194

7.2. Precolonial or Historical Development

Table 7.2 compares the historical development of the North and the South. Here the main variable of interest is political centralisation. The four cut-off intercepts (not reported) of the political centralisation index are significantly different from each other. This means that there are significant differences among the groups in terms of their precolonial political centralisations. Conditioning on all observable characteristics, a cell in the North is more likely to be occupied by a group that had a more centralised precolonial political structure than a cell in the South. In appendix Table B.3 the marginal effects for each category of the political centralisation index is computed. The table shows that if a cell crosses from South to North its probability of being in a group without any form of government decreases by 4.2 percent and its probability of living in a polity with just one level of jurisdictional hierarchy beyond the local community decreases by about 9 percent. A cell's probability of living in a group with two levels of hierarchy if it crosses from South to North decreases by 0.5 percent, although it is not statistically significant. Lastly, its probability of living in a State increases significantly by about 14 percent. Putting all the results together, it can be adduced that a cell's probability of living in a higher level of political organisation increases as it moves from South to North. Therefore, in terms of political organisation, the North was far more advanced than the South in precolonial times. Considering that a wide range of other socioeconomic conditions largely depend on the political structure, it is enough to argue that if the North was politically more centralised than the South then it follows that the former was generally more developed than the latter.

Columns (2)-(5) test other precolonial socioeconomic variables to further pin down the argument that the North was relatively more developed than the South in the precolonial past. We see that apart from Agriculture Dependence, the other variables economically and statistically show a strong case for the North being relatively more developed than the South in precolonial times. In the column (5) the negative coefficient of North should be seen as 'positive' for the North because it actually means that a cell's distance to an old caravan trade route decreases as it moves from South to North.

Table 7.2. Precolonial or Historical Development: North vs. South

	(1) Political centralisation	(2) Econ. specialisation	(3) Agric. dependence	(4) Complex settlements	(5) Dist. trade route
North	0.711***	0.546**	0.111	9.158***	-21.67***
	(0.0982)	(0.214)	(0.0942)	(2.712)	(2.496)
Soil quality	0.123***	-0.105***	0.0588***	0.0995*	1.859***
	(0.0113)	(0.0195)	(0.00844)	(0.0521)	(0.195)
Elevation	0.00115***	-0.000489	-0.000194	0.000708	-0.0556***
	(0.000353)	(0.00104)	(0.000430)	(0.00280)	(0.00935)
Ruggedness	-0.0649**	-0.0687	0.115***	0.563***	1.448*
	(0.0301)	(0.0569)	(0.0303)	(0.215)	(0.790)
Precipitation	0.0709***	0.167***	0.0294***	0.211***	-2.850***
	(0.00718)	(0.0203)	(0.0108)	(0.0443)	(0.405)
Temperature	-0.155***	-0.337***	-0.0383**	-0.766***	8.305***
	(0.0133)	(0.0367)	(0.0170)	(0.111)	(0.656)
DSC	-0.00736***	-0.0119***	-0.00297***	0.0213***	-0.0824***
	(0.00101)	(0.00282)	(0.00105)	(0.00760)	(0.0138)
DR	-0.00401*	-0.0232***	0.00980***	0.0517***	0.343***
	(0.00235)	(0.00424)	(0.00207)	(0.0194)	(0.0408)
DOTR	-0.00152*	-0.00770**	-0.00303***	0.0939***	
	(0.000789)	(0.00301)	(0.000998)	(0.00758)	
Observations	1,256	645	1,274	1,274	2,085
R-squared					0.731

7.3. Differential Colonial Investments

Table 7.3 compares the levels of colonial investments between the North and the South. The coefficients of North in columns (1) and (2) are economically and statistically significant and they both suggest that the North received scant colonial investments. Being in the North significantly increases a cell's distance away from a colonial railroad and decreases its access to a colonial school. The huge magnitude of the coefficient of North in column (1) reveals the lack of any colonial railroad in the North.

The mineral dummy in the two specifications yield very interesting results. While in model (1) its coefficient is statistically significant, in model (2) the coefficient is insignificant. This implies that colonial railroad constructions were heavily influenced by the presence of mineral resources. It conforms with a general notion that minerally

endowed regions were highly likely to select into colonial investments in the form of railroad construction.

In contrast, having a mineral resource makes no difference in a cell's chances of having a colonial school. These schools were generally built to educate the 'illiterate' masses who would later serve the colonial administration (Ocheni & Nwankwo, 2012), hence there was no profound discrimination on grounds of presence of minerals when it came to building colonial schools. The other reason is that most of these colonial schools were built or spearheaded by the missionaries who arguably had no material interest in the mineral endowments of the regions.

These results however contradict the general conjecture that colonial capitalists invested in relatively more developed areas since the political and economic atmosphere in relatively developed areas was conducive for investments. Relatively more developed areas also had some basic infrastructure network in place which reduced the costs of investments. The empirical results here suggest that these arguments are invalid in the case of Ghana because the relatively more developed North received scant colonial investments compared to the relatively less developed South in precolonial times.

Table 7.3. Differential Colonial Investments: North vs. South

	(1) Distance to Col. Railway Line	(2) Number of Col. Schools
North	15.82***	-0.107***
	(3.335)	(0.0388)
Ruggedness	0.0747	0.0749***
	(0.806)	(0.0208)
Elevation	-0.113***	0.000126
	(0.0172)	(0.000310)
Temperature	8.575***	0.0266***
	(0.550)	(0.00818)
Precipitation	-3.694***	-0.0169***
	(0.337)	(0.00531)
Dist. to River	0.596***	4.64e-06
	(0.0556)	(0.00109)
Dist. to Old Trade Route	-0.302***	0.00210***
	(0.0217)	(0.000515)
Dist. to Seacoast	0.621***	0.00110**
	(0.0216)	(0.000526)
Mineral (1/0)	-23.48**	0.129
	(9.774)	(0.237)
Observations	2,086	2,086
R-squared	0.934	0.074

7.4. Colonial Investments and Contemporary Development

Table 7.4 reports the importance of past colonial investments for contemporary development in Ghana. In columns (1) and (2) number of colonial schools and geodesic distance to colonial railroad lines are used as proxies for colonial investments, respectively. It is important to remind that in column (2) distance to colonial railway line is a dummy which assigns a value of 1 to cells that are within 200km of a railway line and 0 to cells that lie beyond 200km.

It can be observed that both proxies of colonial public investments exert strong statistical impact on contemporary development outcomes at the 1 percent significant level. Specifically, one additional colonial schools increases the level of development of a gridcell by about 115 percent whereas the level of development of a cell that lies within 200km of a railway line is about 87 percent higher than a cell that lies beyond 200km.

The long-term impact of various kinds of colonial investments is very high and those past colonial investments, especially education, health and infrastructure, do continue to explain a considerable proportion of their current respective performances (Huillery, 2009). Among those past colonial investments railways have probably exerted the strongest economic impact on nearby communities during the colonial era. Jedwab & Moradi (2016), for example, found that colonial railroad lines engineered the urbanisation and economic development of the surrounding areas in Africa. The reason is that economic growth and globalisation in the second half of the 19th century was mostly driven by railway lines (Herranz-Loncán & Fourie, 2018). The effect was particularly felt in the newly discovered colonies were such infrastructure was non-existing. Therefore, regions that had dense, interconnected railway lines benefitted from the economic effects of globalisation in this period. Although for various reasons some of the railway lines might have collapsed in the post-independence era, their earlier effects had long been established and persisted (Herranz-Loncán & Fourie, 2018; Jedwab & Moradi, 2016).

To summarise, colonial public investments strongly determine today's development outcomes in Ghana. Accordingly, areas that witnessed little colonial investments stand to be relatively underdeveloped today compared to those that had substantial colonial investments. In broad terms, if the North was the only colonial administrative region that was destitute of colonial investments, it follows that it is or should be doing worse today than the other two administrative regions, Ashanti and the Gold Coast Colony.

Table 7.4. Colonial Investments and Current Development Outcomes

	(1) luminosity	(2) luminosity
Schools	1.146***	
	(0.131)	
Railway_200km		0.871***
		(0.303)
Observations	2,085	2,085
R-squared	0.229	0.194
Controls	YES	YES

7.5. Mediating Channnels

Table 7.5 reports the mediating effects of colonial railroads and schools. In column (1) the baseline results from specification (2) are repeated , while in columns (2) and (3) distance to colonial railroads and number of colonial schools are controlled for, respectively. From columns (2) and (3) we observe significant drops in the magnitude of the coefficient of North. In column (2) when distance to colonial railroads are conditioned, the magnitude of the negative "Northern" effect on luminosity reduces by about 20 percent (from -0.743 to -0.597) and the coefficient of North is now only marginally statistically significant. This suggests that colonial railroads alone could have reduced the development gap from 52 percent (column 1) to about 45 percent (column 2). In column (3) the negative impact of North on luminosity reduces by about 13 percent when colonial schools are conditioned. Hence colonial schools have the potential to reduce the current development gap from 52 percent to 48 percent. As indicated earlier, colonial railroads had a great economic effect on surrounding communities during the colonial era. The larger mediating effect of colonial railroads on the development gap reflects this reality.

To summarise, about 13 percent of the current underdeveloped status of Northern Ghana is explained by the lack of colonial schools, whereas 20 percent of it is due to the lack of colonial railroads. These results suggest that if it were possible to control for all or at least a wide range of colonial investments, the development gap between the two regions would vanish. If the North had a fair share of colonial investments, it

would have maintained its precolonial, higher development pace and would have been relatively more developed today.

Table 7.5. Mediating Effects of Colonial Schools and Railroads

	(1) luminosity	(2) luminosity	(3) luminosity
North	-0.743**	-0.597*	-0.648**
	(0.316)	(0.325)	(0.312)
Railway_200km		0.694**	
		(0.313)	
School 1931			1.139***
			(0.132)
Observations	2,085	2,085	2,085
R-squared	0.194	0.196	0.230
Controls	Yes	Yes	Yes

CHAPTER VIII

CONCLUSION

One aspect of colonialism that is largely ignored in the literature is the manner in which it engineered stark development differences within countries. In this study I analysed the role of colonial rule in the development divergence between Northern and Southern Ghana. In colonial Ghana, the dynamics of colonialism worked to stagnate, and eventually hamstrung the future development of the North while promoting the interests and development of the South.

Using a wide range of historical socioeconomic and political variables from the Murdock's Ethnographic Atlas, I found that the North had been relatively more developed than the South in precolonial times. Prior to colonial rule the North, in fact, "had been at the heart of 19th century trade routes and food production." (Plange, 1979a). Its geographic position allowed it to control the long-distance trade between the rainforest and the trading centres in the interior north around the Niger River or Hausaland (Gocking, 2005). The necessity of controlling the interior trade and exacting taxes prodded the region to also develop high centralised polities (Gocking, 2005). All this made it a prosperous region (Oteng-Ababio et al., 2017). However, the region's fortune reversed at the onset of colonial rule. The long-established economic landscape and order, that had worked efficiently for the region and made it prosperous, was terminated and destroyed during the colonial era.

Furthermore, the region's manpower resource was siphoned to serve in the colonial state's war efforts and in the public works and mines in the southern province. This experiment left tremendous detrimental effects on the region. Besides the loss of manpower, the war veterans and the returnees from the mines and the public works brought with them various respiratory and pulmonary diseases. This was how the first cases of tuberculosis, for example, occurred in the region (Amo-Adjei et al., 2015). The experiment also increased the number of dependents in the region because the war

veterans and returnees had either lost all their productive capacities or were above the active productive age (Plange, 1979b). Starting from the 1920s the common sight of the North was elderly men and women laboriously working on farms and women and children herding cattle (Plange, 1979b). This led to a decrease in production and increase in imports. The demographic composition of the region was also distorted: while the ratio of men to women in the active working age of 15-45 was 95:100 in 1931, by 1960 it had felt to 75:100 (Hilton, 1968).

The colonial administration also restricted missionary activities which led to delay in the introduction of western education in the region. Missionary activities were deemed detrimental to the interests of the colonial state in the North because the kind of education they pioneered produced half-baked, westernised, educated Africans who opposed the interests of the colonial state, as had happened in the South. The North therefore was to remain "uncontaminated" and an 'indigenous' development approach, devoid of western influences, was to be instituted into the fabric of the region.

The North was also completely deprived of any meaningful colonial investments. To empirically prove that the fortune of the North was reversed in the colonial era, I relied on colonial public investments to show the discriminatory nature of colonial policies across the two regions. I found that the North received comparatively scant colonial investments. I also found a robust positive, permanent impact of past colonial public investments on contemporary development in Ghana. This implies that places that received substantial colonial investments are relatively economically more developed today than places that received scant colonial investments. The study also found strong mediating effects of past colonial investments on the current development gap between the North and the South. Conditioned on past colonial public investments, the size of the development gap between the two regions reduces considerably. Specifically, the lack of colonial railroads and schools respectively explain about 20 and 13 percent of the current development gap between the two regions. The study argues that if the North had received as much colonial investments as did the South, it would have maintained its precolonial development pace and would have been relatively more developed today.

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APPENDIXES

APPENDIX A

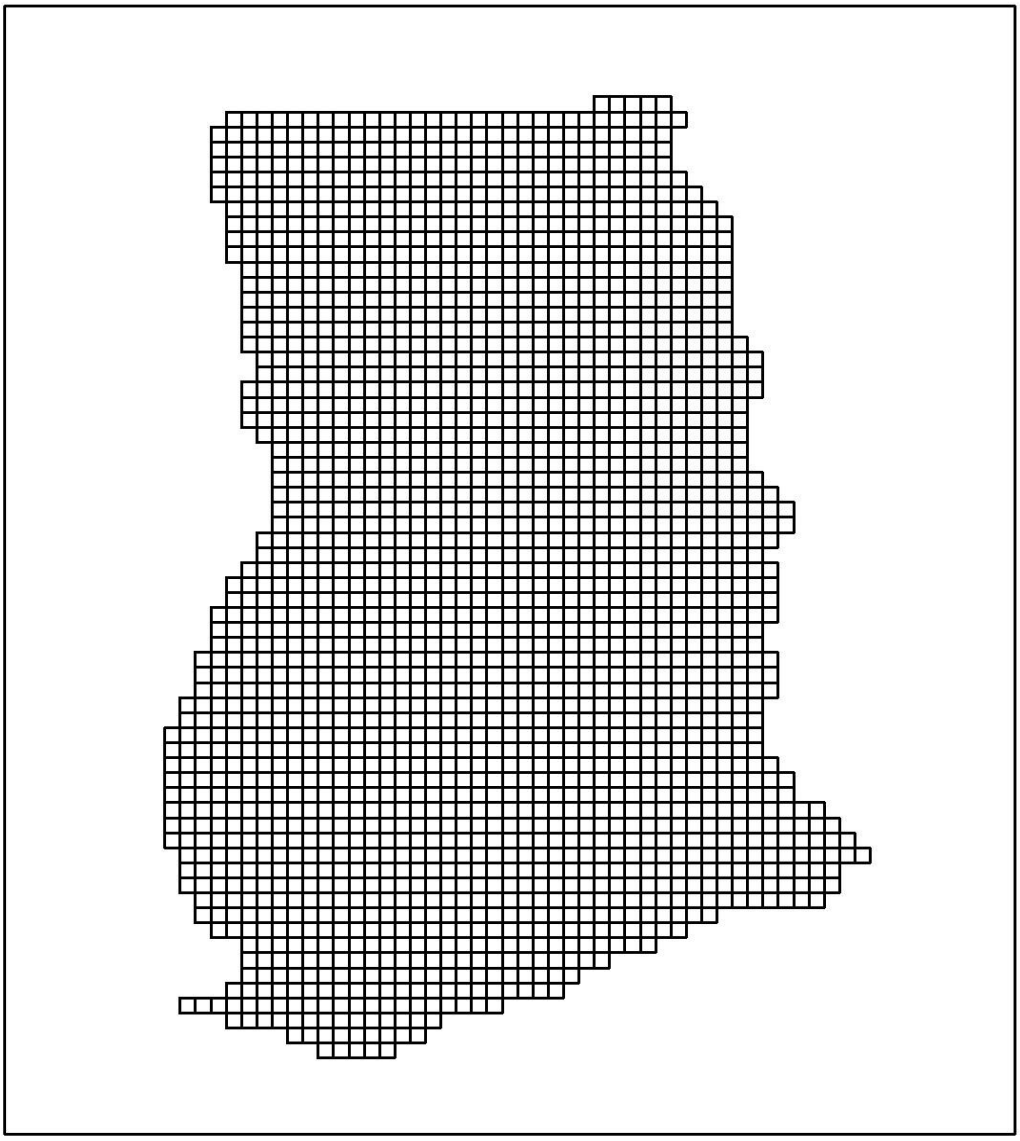

Figure A.1. Gridded Map

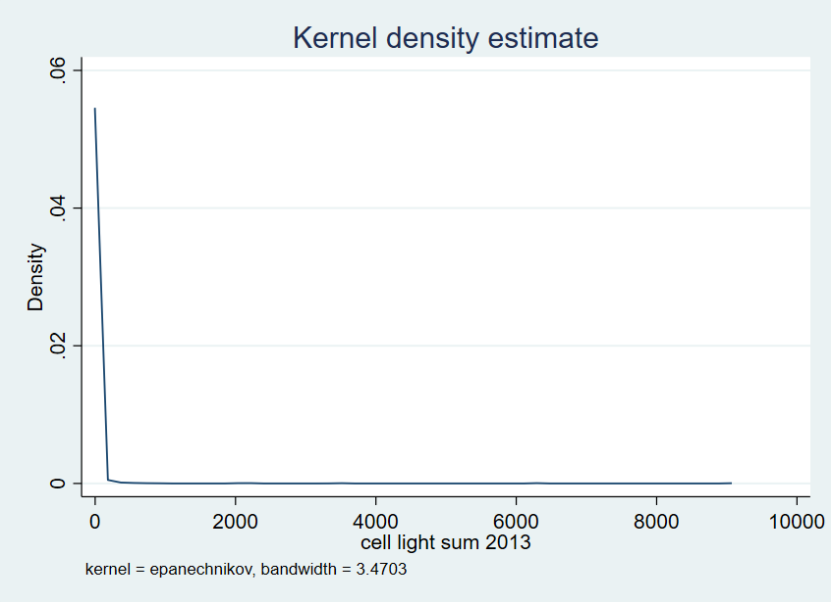

Figure A.2. Distribution of light density at night

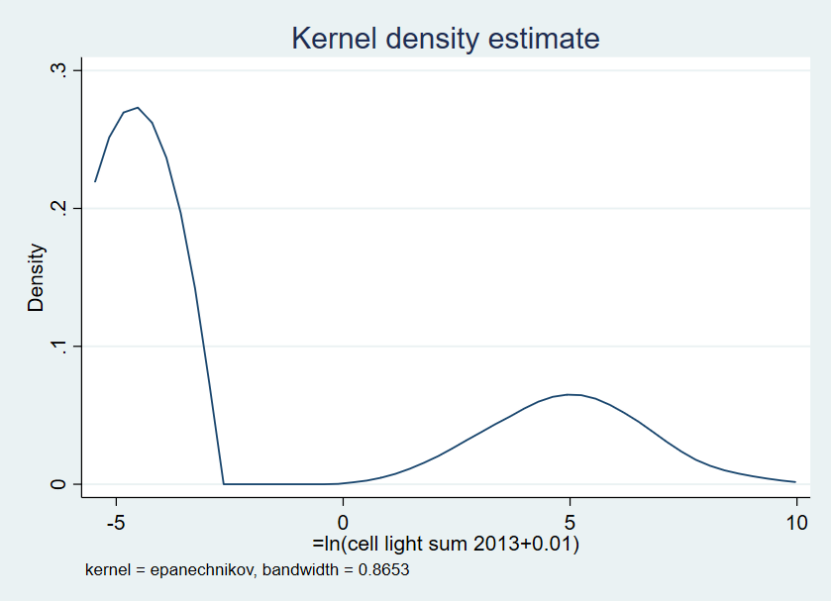

Figure A.3. Distribution of ln (0.01+light density at night)

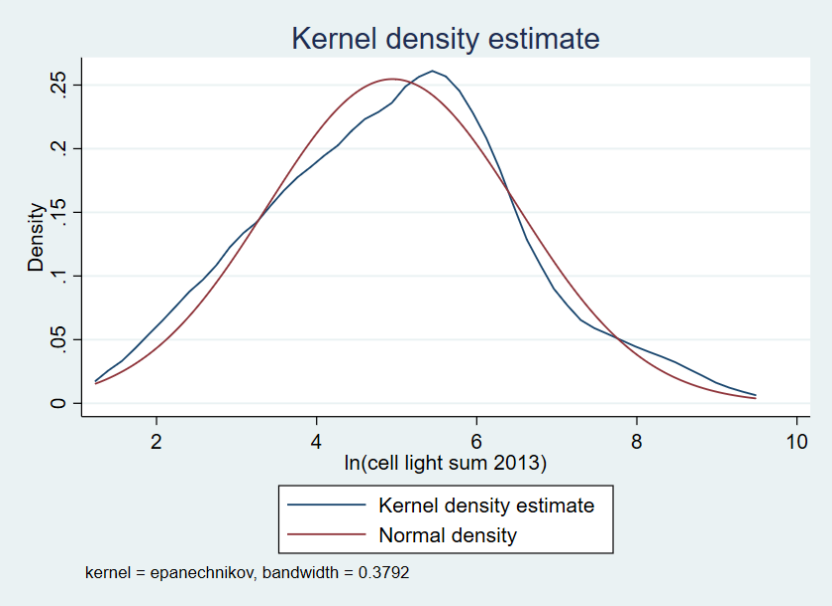

Figure A.4. Distribution of ln (light density at night)

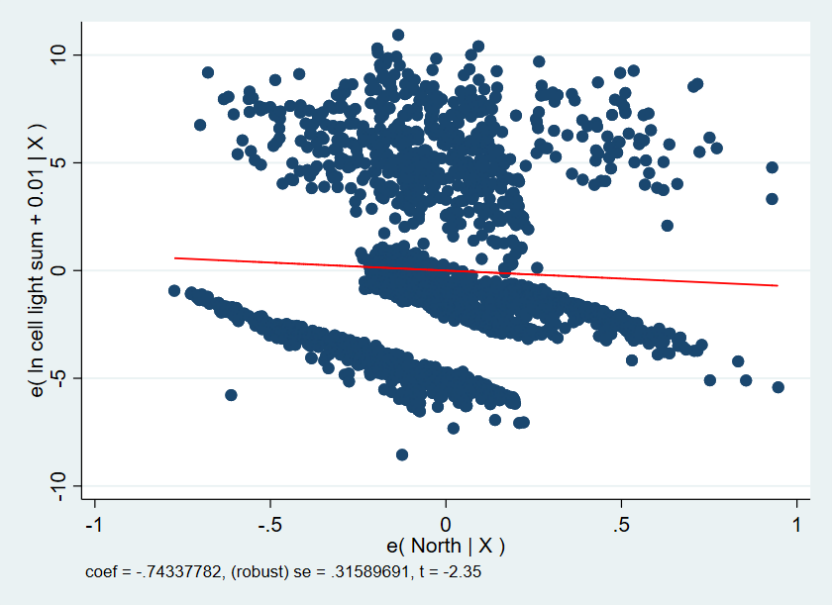

Figure A.5. Current Development Differentials

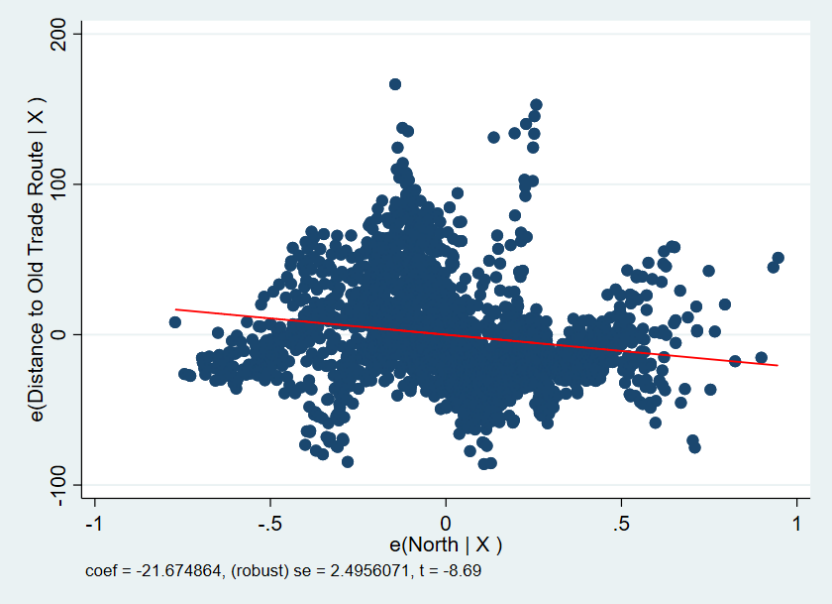

Figure A.6. Historical Development: Distance to Old Trade Route

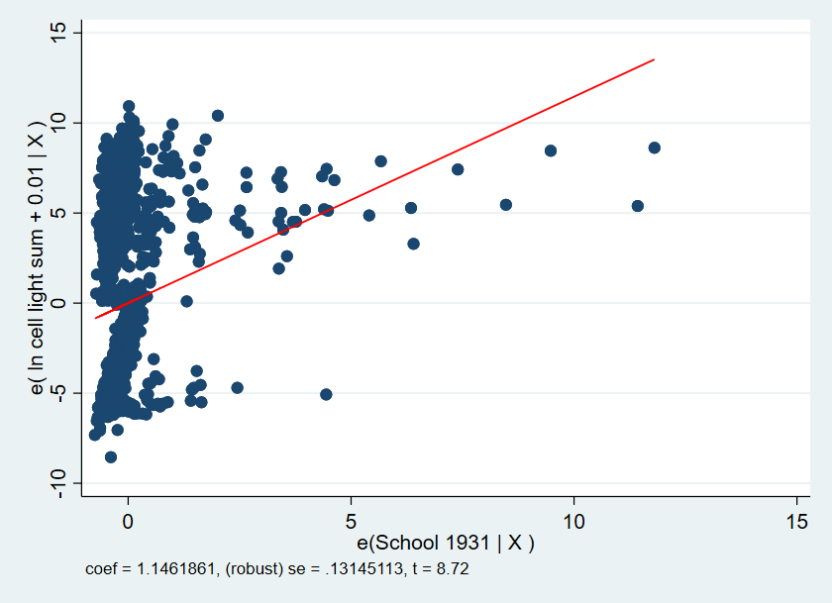

Figure A.7. Colonial Schools and Current Development

APPENDIX B

Table B.1. Ethnic Groups and Political Centralisation

ETHNIC GROUP	POLITICAL CENTRALISATION INDEX
ADANGME	1
AKYEM	2
ANYI	2
ASHANTI	2
ASSINI	2
BASARI	1
BUEM	1
BUILSA	0
DAGARI	1
DAGOMBA	3
EWE	2
FANTI	1
GA	0
KONKOMBA	0
KULANGO	0
LOBI	0
MAMPRUSI	2
MOBA	1
NUNUMA	1

Table B.2. Variable Definitions and Sources

Variable	Definition	Source
Elevation	Average elevation across each gridcell	National Oceanic and Atmospheric Administration (NOAA) and U.S. National Geophysical Data Center, TerrainBase, release 1.0 (CD-ROM), Boulder, Colo. Available at: https://nelson.wisc.edu/sage/data-and-models/atlas/data.php?incdataset=Topography
Soil Quality	Soil nutrients averaged for each gridcell	ISRIC World Soil Information. Available at: https://www.isric.org/projects/africa-soilgrids-soil-nutrient-maps-sub-saharan-africa-250-m-resolution
Ruggedness	Terrain ruggedness averaged for each gridcell	Review of Economics and Statistics. Available at: https://diegopuga.org/data/rugged/
Distance to River	Geodesic distance from the centroid of each gridcell to the closest river (km)	World Bank. River map available at: https://datacatalog.worldbank.org/dataset/ghana-rivers
Distance to Capital City	Geodesic distance from the centroid of each gridcell to the administrative boundaries of Accra, the capital city (km)	Lincoln Institute of Land Policy. Map of Accra administrative boundaries available at: https://earthworks.stanford.edu/catalog/stanford-sh681sw5018

Table B.2. Variable Definitions and Sources (Continued)

Variable	Definition	Source
Distance to the Seacoast	geodesic distance from the centroid of each gridcell to the closest seacoast	Natural Earth. Coastline map available at: https://www.naturalearthdata.com/downloads/10m-physical-vectors/10m-coastline/
Temperature	Annual mean temperature for 1970-2000 averaged across cells	WorldClim. Data available at: https://www.worldclim.org/data/worldclim21.html#
Precipitation	Annual mean precipitatio for 1970-2000 averaged across cells	WorldClim. Data available at: https://www.worldclim.org/data/worldclim21.html#
Mineral	Dummy for the presence of minerals.	USGS Mineral Resource Data System. Data available at: https://mrdata.usgs.gov/mrds/

Table B.3. Marginal Effects of Political Centralisation

	(1)	(2)	(3)	(4)
	No form of govt	One level	Two levels	States
North	-0.0421***	-0.0899***	-0.00467	0.137***
	(0.00696)	(0.0130)	(0.0117)	(0.0224)
Soil quality	-0.00832***	-0.0171***	0.00472***	0.0207***
	(0.00110)	(0.00163)	(0.00168)	(0.00188)
Elevation	-7.73e-05***	-0.000159***	4.38e-05**	0.000193***
	(2.68e-05)	(4.98e-05)	(2.23e-05)	(5.87e-05)
Ruggedness	0.00438**	0.00903**	-0.00249*	-0.0109**
	(0.00213)	(0.00425)	(0.00149)	(0.00510)
Precipitation	-0.00478***	-0.00986***	0.00271**	0.0119***
	(0.000752)	(0.00128)	(0.00108)	(0.00121)
Temperature	0.0104***	0.0215***	-0.00591**	-0.0260***
	(0.00143)	(0.00257)	(0.00231)	(0.00219)
Dist. to Seacoast	0.000496***	0.00102***	-0.000281**	-0.00124***
	(7.76e-05)	(0.000161)	(0.000112)	(0.000160)
Dist. to River	0.000271*	0.000558*	-0.000154	-0.000675*
	(0.000157)	(0.000332)	(0.000108)	(0.000392)
Dist. to Trade Route	0.000103*	0.000212*	-5.83e-05	-0.000256*
	(5.28e-05)	(0.000112)	(3.82e-05)	(0.000131)
Observations	1,256	1,256	1,256	1,256

CURRICULUM VITAE

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Conferences and Presentations:
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