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State capacity, Catholic missions and education in colonial Mozambique

Pablo Fernández Cebrián

PhD in Economic History

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Chapter 1. Introduction

Ensuring inclusive access to quality education for people around the world is one of the most important challenges of our time. As such, it has been listed by the United Nations as Goal 4 within its 2030 Agenda for Sustainable Development (United Nations, 2015). Following the framework proposed by Sen (1999), education has both intrinsic value, insofar as it adds directly to people's individual quality of life, as well as instrumental value, due to its effect on overall human and economic progress.[1] At the individual level, a vast literature has documented the positive relationship between education and earnings, "probably the second (after Engel's law) most well-established fact in economics" (Pritchett, 2001, p. 368). At a larger scale, investment in education, and the subsequent accumulation of "human capital", has been widely recognised as an essential element for economic development (Galor, 2011; Lucas Jr, 1988; Romer, 1990).[2] The study by Wantchekon et al. (2015) shows the positive effects of education at both individual and social scales. Higher levels of education have also been linked to improvements in other social outcomes, such as better democratic governance (Dreze & Sen, 1999; Glaeser et al., 2007), improved health (Conti & Heckman, 2010; Currie & Moretti, 2003), and reduced incidence of crime (Lochner & Moretti, 2004; Machin et al., 2011).

Over the last decades, women's education has increased for all countries in the world, but it still lags behind male outcomes in the majority of them (Evans et al., 2021). Ensuring equal access of women to education is a question of basic justice.[3] Beyond the intrinsic value of education, and its positive private returns for earnings, closing the educational gender gap can also yield broader benefits for women.

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[1] There is, however, vast room for improvement of systems of mass education as they are currently designed. In many times and places, these systems serve the purpose of reinforcing inequities rather than transforming society, and they do not foster the type of free and independent enquiry corresponding to the ideals of the Enlightenment (Chomsky, 1971, 1996). Indeed, many children find schooling to be an abhorrent experience. As Thomas (2021) contends, "there can be no doubt that for a great number of young people it (school) does little or nothing, providing a profoundly unenlightening experience which is recoiled from in a kind of desultory opposition."

[2] See Goldin (2014) for an overview.

[3] Goal 4.5 of the 2030 Agenda (United Nations, 2015) specifically targets the elimination of educational gender disparities.

Goldin (2006) shows the close relationship between education and the changing role of women in the job market and within the family, and Bertocchi & Bozzano point out (2020, p. 2) that "gender gaps in education are among the main factors that determine gender disparities in a broad set of socioeconomic realms, including work, family, and public life." On top of this, and similarly to increases in the overall levels of education, gender equality in education has positive effects on society as a whole (see Bertocchi & Bozzano, 2020, for a brief overview).[4]

In the 21st century, one of the main providers of education around the world is the state. In addition to the provision of public goods like education and healthcare, the apparatus of the state can play a positive role through activities like redistribution of wealth, or investment in infrastructure and scientific innovation (Hoffman, 2015). Certainly, greater state capabilities can facilitate the execution of policies that are detrimental to its citizens, and increases in state capacity should always be accompanied by the development of accountability mechanisms.[5] However, in low-income countries around the world today, the problem is more likely to be a lack of state capacity than an excess of power. Besley & Persson (2010, p. 27) indicate that "(i)n the development community, a lack of state capacity as manifested in weak states is often cited as a major obstacle to development." Thus, Hoffman (2015) points to the need for more analyses of how states develop the capacity to act effectively.

This dissertation consists of three independent chapters, focused on colonial Mozambique and tied together by the themes of state capacity and education. In Chapter 2, I study the allocation of state resources in the first stages of state building, with a particular focus on the role played by the financial and geopolitical strengths of the state, or lack thereof. These two characteristics of the state are important again in Chapter 3, in which I analyse the choice between the provision of education through state-run schools and its outsourcing to Christian missions. Finally, in Chapter 4, I study the determinants of educational gender gaps in colonial

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[4] Baten et al. (2021, p. 814) also provide a useful list of studies regarding the effects of educational gender parity.

[5] As Robinson (2002, p. 517) points out, "(h)istory suggests that there can be no guarantee that fiscal institutions and bureaucracies are necessarily used to promote social welfare".

missionary schools. Throughout the thesis, I combine quantitative and qualitative methods, contributing to the growing literature on African economic history.[6]

Consolidation of state authority and state capacity is one of the greatest challenges facing African countries in the 21st century (Herbst, 2014). This challenge has a spatial component because, from pre-colonial times until the present, the distribution of state capacity in Africa has been heterogeneous across space, and mostly concentrated in core areas (Boone, 2003; Herbst, 2014; McAlexander & Ricart-Huguet, 2022). Understanding the historical trajectories of the state in Africa is valuable for the development of solutions to the current challenges (Herbst, 2014), and there is a growing literature on the sub-national distribution of state activity in Africa during the colonial period. One strand of studies has focused on the regional allocation of investments (Huillery, 2009, 2010; McAlexander & Ricart-Huguet, 2022; Ricart-Huguet, 2022). These studies have found that colonial state investments were concentrated in core areas on the coast, and that they were lower in areas where Africans opposed higher resistance. These results fit with the model of distribution of power described by Herbst (2014) for Africa, in which power is concentrated in core areas and radiates from them in concentric circles. On the other hand, Pierskalla et al. (2019) highlight the supremacy of the hegemony imperative (Young, 1994) during the early stages of state building, and find that the state prioritised the location of resources in places that minimised the territory beyond its reach, as well as areas with higher prior resistance.

The goal of Chapter 2 is to contribute to our understanding of these early phases of state building, and the spatial allocation of state resources. To do so, I georeference the location of *sedes*, the headquarters of each administrative area in the colony of Mozambique, between 1889 and 1930, and I analyse the drivers behind their distribution. Mozambique is an interesting case study because of its particularly difficult political geography (Herbst, 2014), its historically-rooted regional cleavages (Newitt, 2017), and the way in which it can inform the applicability of the two models of governance described above. The model of 'concentric circles' is

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[6] For a historiography of the field over the last decades, see Hopkins (2019).

based, among other factors, on the large financial constraints faced by colonial states, which limited the degree of manpower they could deploy and made them favour the projection of authority in core areas. Financial constraints were larger for the Portuguese colonial state than for other imperial powers: this should have brought the spatial distribution of state resources in Mozambique closer to the 'concentric circles' model. On the other hand, the hegemony-centered model sees the control of territory as essential to the survival of the state in its initial phases. In this regard, the comparative geopolitical weakness of Portugal would have made hegemony a much more pressing imperative within its colonies, and may have pushed the colonial state in Mozambique to cover as much ground as possible.

To analyse which model fits better the distribution of state resources in colonial Mozambique, I first use maps to describe patterns of *sede* location in 1889, 1900, 1908, 1917, and 1930. The visual analysis shows that the state settled the territory progressively, advancing from the coast towards the interior, and substituting civil administration for military administration once each region was sufficiently under control. To test these patterns quantitatively, I then divide the territory of Mozambique into a grid of 50 x 50 km cells, and I run logistic regressions for those same benchmark years, analysing the factors influencing the likelihood of the colonial state establishing a *sede* in a cell. If the hegemony-centered model has explanatory value, the state in Mozambique should have prioritised areas that minimised the 'blank spots' far from its reach, as well as areas close to international borders. On the other hand, given the historical location of Portuguese power on the coast, if the 'concentric circles' model explains the spatial allocation of resources in Mozambique, distance to the coast should be a significant factor. The regression results show that the colonial state in Mozambique did not prioritise covering 'blank spots', but instead located *sedes* in regions close to pre-existing state infrastructure, while proximity to international borders shows no significant effects. On the other hand, proximity to the coast did increase the likelihood of the state locating a *sede* in a region. Overall, then, the spatial distribution of state resources in Mozambique fits the 'concentric circles' model better than the hegemony-centered model.

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I argue that even if Portuguese geopolitical insecurities may have inclined the state in Mozambique to try to cover as much ground as possible, as early as possible, this may have been unfeasible due to financial constraints and lack of military capacity. Thus, the work carried out in Chapter 2 contributes to the growing literature on the spatial reach of the state in colonial Africa, and suggests the need to take into account the particular geopolitical and financial characteristics of each state when analysing its spatial allocation of resources.

The revenue and hegemony imperatives (Young, 1994), at play in the early stages of state building, were also key factors in the choice of schooling provider in colonial Africa. Chapter 3 shows how both of these forces led to a comparatively high reliance of the Portuguese colonial state on Catholic missions for the provision of education to the African population.[7] In doing so, it contributes to a vast literature on the historical trajectories of schooling systems in Africa, and on the role played by Christian missions in the expansion of mass education on the continent.[8] This is an important area of study: expanding access to education is one of the key challenges for African countries in the 21st century, and educational outcomes in Africa today often have their roots in the colonial period.

For much of the 20th century, there was a large gap in primary enrolment rates between countries in sub-Saharan Africa (as well as other low-income regions) and the world average (Benavot & Riddle, 1988), but a catch-up by sub-Saharan Africa

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[7] The colonial state in Mozambique racially classified the population into two groups: *indígenas* (natives) and *civilizados* or *não indígenas* (the so-called civilised). This classification was codified under the *indigenato* legislation (see Chapter 3). The population of African descent was sub-divided into black people, who were considered *indígenas* (but could under some circumstances receive the status of *assimilado*), and people classified as "mixed race" known as *mistos*. As Alexopoulou (2018, pp. 13-14) describes, the use of the Portuguese terms, or English terms like "natives", "indigenous", and "mixed race", are fraught because they replicate colonial vocabulary. Therefore, I will mainly use the term "Africans" to refer to the majority of the local population, people classified as black *indígenas.* I have decided on this term in spite of the fact that it excludes communities of Asian and South Asian descent, and the so-called *mistos,* long established in Africa. Chapters 3 and 4 focus on the rudimentary education targeted at the *indígena* population. However, small numbers of children classified as *mistos* also attended this type of education, and I have therefore included them in the analysis: references to "African children" should be therefore understood to encompass both groups. Where it has been necessary for greater clarity, for example when referring to colonial statistics, I have distinguished between people (especially children) classified as black, and people classified as *misto*.

[8] For an overview of the literature on the expansion of schooling systems in Africa and the role of Christian missions, see Meier zu Selhausen (2019).

in primary gross enrolment rates had largely taken place by 2010 (Mitch, 2012).[9] However, significant gaps remain in other measures such as adjusted net primary school enrolment, which in 2018 was 78% for sub-Saharan Africa, and 90% for the world as a whole.[10] Additionally, growing enrolment rates should not mask the quality deficiencies that persist in many educational systems. In this regard, in sub-Saharan Africa "88% of all children and adolescents will not be able to read proficiently by the time they are of age to complete primary and lower secondary education" (UNESCO, 2017), and Nestour et al. (2021) find a decline in school quality for cohorts born in sub-Saharan Africa between 1955 and 1998.[11]

Addressing these challenges requires an understanding of the historical trajectories of national education systems. For one, "the study of human capital is inherently historical" (Goldin, 2014, p. 2). More specifically, Chaudhary & Garg (2015, p. 938) posit in their study of India that "(p)olicy prescriptions to improve education can be very different depending on whether historical factors are impeding progress or whether contemporary factors are at work." This is particularly relevant for Africa. Bolt & Bezemer (2009), for example, find that educational outcomes during the 1940s are correlated with enrolment rates in African countries, both at the primary and secondary levels. Similarly, Huillery (2009) finds that public investments in colonial West Africa are correlated with current educational outcomes. There is also a growing literature on the long-term effects of exposure to missionary activities in colonial Africa (see Jedwab et al., 2022, for an overview and critique), a large part of which has focused on educational outcomes.[12]

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[9] I avoid, wherever possible, the use of the term "sub-Saharan Africa". For a discussion of why its use is problematic, see Zeleza (2006). I use the term when reporting statistics from international organisations, and results from cross-country analyses, both of which use the category widely, to avoid confusion regarding the countries included.

[10] Data for adjusted net primary school enrolment comes from the UNESCO Institute for Statistics, retrieved from the World Bank database (https://data.worldbank.org/) on October 16th 2022. Adjusted net enrolment rate is defined as "the number of pupils of the school-age group for primary education, enrolled either in primary or secondary education, expressed as a percentage of the total population in that age group."

[11] Studies like the seminal article by Pritchett (2001) have shown that, in developing economies, increases in educational attainment have not resulted in positive externalities like economic growth. The recent analysis of skill-premiums in Africa and Asia by Frankema & van Waijenburg (2019) offers a more optimistic outlook.

[12] As Belinda Archibong (2022) has recently noted, the questions we ask, and the people that our focus highlights, are important. This is especially the case when analysing the long-term effects of colonialism, where there is the risk of disproportionately attributing positive associations with

It is understood that differing attitudes and policies towards missionary schools influenced levels of educational expansion (Cogneau & Moradi, 2014; Frankema, 2012). However, one natural area of research is yet unexplored: the differences in the long-term effects of providing education through state-run schools, compared to the provision by missionary schools. The first obstacle this kind of research would face is that the mix of state and missionary provision was neither exogenous nor static. Thus, a first step towards a better understanding of this topic is to analyse the reasons behind the choice of providers, and how these changed over time. In this regard, there is a consensus in the literature that the role of African colonial states in education increased after the Second World War, and that the importance of Christian missions in schooling diminished. However, to the best of my knowledge, there has been no analysis of the reasons for this process of secularisation, comparing trajectories across different African colonies.

Chapter 3 analyses the case of the Portuguese colonial state in Africa, which followed the opposite trajectory. During the 1930s, the state provided primary education to Africans directly, through state-run schools, and indirectly through the subsidisation of Catholic missions, which also ran primary schools. In 1941, however, the *Estatuto Missionário* signed between the Portuguese *Estado Novo* and the Catholic Church granted an almost monopolistic position over African education to the Catholic missions. The colonial state withdrew from the direct running of education for the African population, and began transferring its schools to Catholic missions, at a time when other European powers took a greater role in African education. The goal of the chapter is to understand the reasons why the Portuguese *Estado Novo* implemented this policy. To do so I focus on the case study of

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current outcomes to some of the supposedly "benign" features of European colonialism (to use the terminology used by Frankema, 2012, in his discussion of the literature on the British legacy in Africa). For example, we must always remember that public investments in the colonies were possible because of the taxation and exploitation of the African population. To cite only two examples for French Africa, Huillery (2009, p. 182) finds that "(t)he cost of colonization was endured by local populations rather than French taxpayers", while van Waijenburg (2018) has shown the large, implicit financial contributions that forced labour represented for African colonial states. Similarly, multiple studies have highlighted the fact that the expansion of Christian missions in Africa, and their role in the growth of educational supply, was only possible thanks to the "Africanisation" of the mission (Frankema, 2012; Meier zu Selhausen, 2019). On top of government subsidies, largely funded by African taxpayers, Christian missions and their schools relied heavily on funding from local parishes and school fees paid by parents, African teachers and general staff, and African demand for their services.

Mozambique, the most important Portuguese colony in Africa at the time together with Angola, and I analyse the most common form of education encountered by the African population. Under the system of racial discrimination operating in colonial Mozambique, the *indigenato*, the only educational experience for the vast majority of African children was *ensino primario rudimentar* (primary rudimentary education), a type of very low-quality schooling that was targeted exclusively at African children and served state interests by moulding them into a cheap labour force, and by indoctrinating them in the basic tenets of imperial ideology.

Focusing on *ensino primario rudimentar*, I analyse two hypotheses for the shift to a Catholic monopoly on African education. The first hypothesis focuses on the tension between the useful purposes that rudimentary schooling served for the Mozambican colonial state, and the constraints imposed on it by the austerity measures implemented under the *Estado Novo*. I construct measures of government expenditure per child enrolled in state-run rudimentary schools, and in Catholic mission schools, between 1936 and 1941. Combining these measures with a qualitative analysis of a wide range of sources, from colonial legislation and monographs to unpublished ecclesiastical reports, I show that granting a monopoly to Catholic missions was a cheaper way for the state to expand African education than directly running the schools itself. The alternative financing options available to missions, together with the structure of state subsidies set up under the 1941 *Estatuto Missionário*, allowed for the expansion of rudimentary education under Catholic missions while keeping state costs under control.

A second, concurrent hypothesis focuses on the role of Catholic missions in the Portuguese "civilising project". Through a qualitative analysis of sources, I show that within imperial circles Catholic missions and schools were seen as a better tool than state-run schools to counteract the purported "denationalising" effect of Protestant missions on the African population. Thus, I argue that granting a monopoly over African education to Catholic missions may have been a way to counteract perceived threats to Portuguese colonial hegemony. To provide further evidence for this hypothesis, I construct a georeferenced dataset of the expansion of Catholic missions in Mozambique between 1922 and 1971. Like in Chapter 2, I divide the

colony into a 50 x 50 km cell grid, and I run logistic regressions to analyse the factors driving the location of Catholic missions. I find that, after accounting for a complete set of variables that influenced missionary location in Africa (Jedwab et al., 2022), proximity to Protestant missions is associated with a higher extensive margin of Catholic missionary activity in the years prior to the monopoly, and a higher intensive margin for much of the colonial period. These results reinforce the idea that granting a monopoly over African education to Catholic missions was a further step in an ongoing process of using them to counteract perceived threats to Portuguese colonial security and hegemony.[13] Additionally, this exercise contributes to the literature on competition between Protestant and Catholic missionaries (Gallego & Woodberry, 2010; Woodberry, 2004), and the literature on the determinants of missionary location in Africa (Jedwab et al., 2022).

Ultimately, Chapter 3 shows how Portuguese economic and geopolitical weakness, together with imperial ideology, determined the comparatively outsized importance of Catholic missions in the educational system of Portuguese Africa. Chapter 4 zooms in closer, to analyse the determinants of educational gender gaps in the rudimentary schools run by Catholic missions.

The importance of this topic is highlighted, once again, by the large educational gender disparities that persist in Africa. Over the period between 1995 and 2019, sub-Saharan Africa saw an improvement in primary completion rates for girls from 41% to 66% (UNESCO, 2021), but it remains one of the areas of the world in which gender gaps are most significant (UNESCO, 2020). Eloundou-Enyegue et al. (2009), for example, argue that in spite of the educational gender convergence found in their sample of African countries, a policy shift away from gender equality was not warranted. Similarly, Psaki et al. (2018) work with a sample of mostly African countries and show that many of them still face obstacles to reducing educational gender disparities. Given the persistence of human capital accumulation, eradicating

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[13] The analysis of qualitative sources suggests that Catholic missions were also seen as tools to counteract the threats of Islam and foreign powers to the colonial state in Mozambique. However, in the regression analysis the prevalence of Islam in each region, and proximity to neighbouring colonies, do not show a significant effect on the likelihood of establishment of Catholic missions.

these disparities requires an understanding of the historical mechanisms that have led to their emergence (Bertocchi & Bozzano, 2020, p. 2).

Studying the evolution of educational gender gaps in colonial missionary schools is an important step towards building this understanding: colonialism is often studied as a "critical juncture" in history (De Juan & Pierskalla, 2017), and Christian missionaries were the main providers of education throughout Africa for much of the colonial period. Works such as that by Boserup (1970) or Akyeampong & Fofack (2014) have stressed the negative effects of missionary education on gender parity in Africa, whereas a more recent strand of quantitative studies has found long-term positive effects of exposure to Christian missions on educational gender parity (Baten et al., 2021; Baumert, 2022; Nunn, 2014; Montgomery, 2017).[14] An interesting example of this literature is the debate that has taken place over the last years focused on the effects of missionary education on socio-economic and educational gender parity through the case study of colonial Uganda (De Haas & Frankema, 2018; Meier zu Selhausen, 2014; Meier zu Selhausen & Weisdorf, 2016).

Thus, the goal of Chapter 4 is to further our understanding of the factors driving the evolution of educational gender gaps during colonial times. To do so, I build on the georeferenced dataset of Catholic missions introduced in Chapter 3. For 96 missions present in Mozambique in 1952, and 175 missions in 1962, I collect enrolment data for boys and girls in *ensino primario rudimentar* schools and I construct a Gender Parity Index (GPI), calculated as the ratio of female to male enrolment. The dataset also includes the number of male and female missionaries per mission, the number of male and female wage workers, the male congregation running each mission, and a large number of variables capturing the local and regional characteristics of the area in which each mission operated.[15]

The detail in the dataset allows me to contribute to filling several gaps in the literature. Though there are recent exceptions (Aboagye, 2021; Baten et al., 2021),

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[14] Jedwab et al. (2021), on the other hand, find no long-term effects of exposure to Christian missions on gender parity.

[15] Given that most wage workers were teachers in rudimentary schools, the number of wage workers is a good proxy for the number of teachers.

the literature on the expansion of schooling in colonial Africa and the associated gender gaps has mostly focused on the supply side, and the intersection between regional and gender differences in colonial educational outcomes has received little attention.[16] Thus, the first research question I examine is how the local political economy and mode of production influenced gender gaps, focusing on the three modes of production identified by Alexopoulou & Juif (2017) for colonial Mozambique: institutionalised circular migration, forced labour in cash crop plantations, and forced cultivation of cotton and rice. At the same time, in spite of the focus on the supply side, the differences between missionary societies in Africa, as well as the role of female missionaries and teachers in the evolution of educational gender gaps, have been largely overlooked. The second and third questions address these omissions.

To explain variations in GPI at the mission level, I carry out two sets of regressions. In the dataset, demand factors are mostly time-invariant, and change depending on the location of each mission, whereas the majority of supply factors at the mission level vary over time. Thus, in the first set of regressions, I estimate a linear regression model for two separate cross-sections of data in 1952 and 1962. On the demand side, I find that circular migration had a positive and robust effect on GPI by reducing the pool of boys that attended school. On the supply side, missions run by Jesuits in 1952 showed comparatively high levels of GPI, whereas missions run by the White Fathers had comparatively low GPI levels in 1962.[17] The presence of female missionaries or teachers showed no significant effects on educational gender parity. To leverage the variation over time in supply factors, I run a second set of regressions in which I estimate a fixed effects linear model for a panel of Catholic missions present in Mozambique in both 1952 and 1962. Here, I find no effects for the presence of female missionaries, but regression results show that the presence and number of female teachers was positively linked to increased gender parity in rudimentary education across specifications.

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[16] Multiple studies have called for the need to put greater emphasis on demand-side factors and the role of African agency (De Haas & Frankema, 2018; Frankema, 2012; Meier zu Selhausen, 2019).
[17] Given that these effects appear for only one of two benchmark years, the addition of data for more years is needed to check their robustness.

Overall, Chapter 4 shows the importance of taking into account the local and regional context, the correlative variations in African demand for education, and the nuances within the supply of schooling when analysing the evolution of educational gender gaps in colonial Africa.

Finally, Chapter 5 concludes, summarising the contributions and insights from the dissertation.

Chapter 2. The spatial allocation of state resources in colonial Mozambique, 1889-1930

2.1. Introduction

For people around the world, the strength and capabilities of the state which governs them, or state capacity, is a key factor influencing their well-being. States can play a positive role in the lives of their citizens by redistributing wealth, compensating for market failures, providing security, rule of law, and a means of exchange, by providing public goods and social insurance, and by investing in infrastructure and scientific innovation (Hoffman, 2015).[18] Quantitative studies have found state capacity to foster long-run growth (Dincecco & Katz, 2016; Johnson & Koyama, 2017) and exposure to strong administrative institutions can positively affect economic outcomes long after these institutions disappear, through the persistence of norms (Dell et al., 2018). On the other hand, the inability of the state to reach certain parts of its territory can have "severe consequences in terms of security, order, economic growth, and human well-being" (Lee, 2018).

The goal of this chapter is to understand the early stages of state capacity development. I do so through the study of colonial Mozambique. First, I trace the expansion and sub-national distribution of administrative infrastructure between 1889 and 1930. Then, I analyse the drivers behind the allocation of state power.

Why is this an important exercise? Let us start by examining the geographical scope. The weakness of states is a particularly salient issue for Africa. As Herbst (2014) pithily describes:

> "The failure of many African states to consolidate their authority has resulted in civil wars in some countries, the presence of millions of refugees

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[18] For an interesting discussion of the role of the state in the provision of public services, see Lee et al. (2014) and the ensuing discussion in the pages of *Governance*.

throughout the continent, and the adoption of highly dysfunctional policies by many leaders. [...] State consolidation in Africa is not merely an academic issue but is, instead, critical to the future of tens of millions of people who are at risk from the insecurity that is the inevitable by-product of state decline and failure."

(Herbst, 2014, pp. 3-4)

This issue is one that persists through time. In the first edition of his book, in 2000, Herbst (2014) described the question of ensuring the viability of states across Africa as "one of the great political and humanitarian challenges that the world faces in the twenty-first century." Two decades later, in 2022, Africa still represents 15 of the top 20 positions in the "Fragile States Index" developed by the Fund for Peace.[19]

The focus on colonial history is justified by the influence that the past has on African state capacity and governance. There is a long tradition in the literature which has analysed the persistent effects of colonialism and the colonial state on African politics (Herbst, 2014; Mamdani, 2018; Young, 1994).[20] Thus, as Herbst (2014, p. 251) points out, analysing the historical trajectories of the state in Africa is valuable, because it allows us to better grasp the politics of the region, and because "a deep understanding of how states have progressed in Africa allows for the development of alternatives that might address some of the pathologies from which Africa suffers."

This understanding must account for variations in the strength of states within the territory they purportedly govern. As Lee (2018) points out, complete state failure, like in Afghanistan and Somalia, is empirically rare. Instead, many countries nowadays have "reasonably functioning central institutions but nonetheless they do not exercise full authority over some parts of their territory." In Africa, specifically,

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[19] Data can be found at https://fragilestatesindex.org/global-data/. Higher positions represent a greater likelihood of state collapse. Herbst (2014) refers to this same indicator in the preface to his second edition, with African countries occupying most of the top positions in 2013.

[20] See Robinson (2019) for a recent review of the literature on the political legacies of colonialism in Africa. It must be noted that there are often overlaps in the periods analysed. Herbst (2014), for example, not only focuses on the colonial period, but stresses continuities in the African political geography since the pre-colonial period, while Cappelen & Sorens (2018) test the interaction between pre-colonial characteristics and colonial configurations.

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studies have shown that the distribution of state capacity has been heterogeneous from pre-colonial times until today, with state capabilities concentrated in core areas (Boone, 2003; Herbst, 2014; McAlexander & Ricart-Huguet, 2022). This has important implications because as Pierskalla et al. (2017) show in their global cross-country, cross-regional analysis, historical local exposure to state institutions influences economic development at the sub-national level. For Africa in particular, recent studies have shown the long-term effects of pre-colonial political centralisation and statehood for contemporary state performance (Wilfahrt, 2021) and economic development (Michalopoulos & Papaiannou, 2013), at the sub-national level.[21] There is a growing literature studying the sub-national distribution of state activity in colonial Africa from multiple perspectives (described in the next section), but more studies are needed to improve our understanding of the topic. Pierskalla et al (2019, p. 711) argue that, "(w)hile classic works of comparative politics and historical sociology have touched on the connection between the spatial unevenness of the state and the temporal patterns of its extension, little research has systematically explored the determinants of states' sub-national territorial expansion." Hence the spatial component of this chapter.

Finally, what can we learn from Mozambique, specifically? Like in many other African countries, the weakness of the state is one of the challenges in Mozambique, where governance has significantly worsened in recent years, from placing 80th in the "Fragile States Index" list for 2006, to 21st out of 179 countries in 2022. More specifically to the purposes of this chapter, one of the main challenges for governance in Mozambique is the spatial reach of the state across what Herbst (2014) describes as a "strikingly difficult political geography". In this regard, state control over the territory has been fragmented since independence, with recurrent violence between RENAMO and the ruling party of FRELIMO. After a civil war between both factions that lasted from 1977 to 1994, RENAMO joined political life in Mozambique as an organised party. However, since then RENAMO has gone back to armed violence in multiple occasions. In addition to this, the country has been facing a jihadi insurgency in its northern province of Cabo Delgado since October

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[21] Cappelen & Sorens (2018) link pre-colonial political centralisation to state capacity in current Africa, but take a cross-country approach.

2017 (see Morier-Genoud, 2020), with the state losing effective control over some of its areas.

In this regard, looking at the colonial past in Mozambique is important because, as Newitt (2017, pp. 21-22) argues, regional cleavages in contemporary Mozambique are more important than ethnic ones, and their roots can be found in the history of the country, particularly in patterns of fragmented colonial administration. Indeed, as described in section three, Portuguese rule was characterised by decades of only fragmented control of the state over the territory, and great regional differences in state presence and investment lasted deep into the twentieth century. Thus, studying colonial Mozambique has the potential to improve our understanding of the link between historical distribution of state capacity and current spatial challenges, both in Mozambique and in Africa in general.

Mozambique is also a particularly interesting case to analyse the tension between the two models of governance that can be identified within the budding literature on the spatial reach of the colonial state in Africa. The first model emphasises the large financial constraints faced by colonial states, which influenced the degree of manpower they could deploy, and the high costs of extending power over distance, resulting in a model of governance in which power was concentrated in certain loci, and radiated outwards in concentric circles. The second emphasises the idea that controlling territory was essential for the survival of the state in its initial phases, and that states would have sought to cover as much ground as possible. There are two differentiating characteristics of colonial Mozambique that may have played a role in the historical process of state building, and that are related to the dichotomy proposed above. Firstly, the Portuguese colonial state was more financially constrained than other imperial powers. Resources were scarce for all colonial states (Young, 1994), but Portugal was a comparatively weak colonial power when set against the likes of Britain, France, or Germany. This should have brought Mozambique closer to the 'concentric circles' model. On the other hand, geopolitical insecurity was a running theme for the Portuguese colonial state since the beginning of the Scramble for Africa (Young, 1994), which would have raised the importance

of territorial control. Thus, studying Mozambique provides insights into the applicability of both models.

The rest of the chapter is structured as follows: section two provides a brief literature review, focusing on the growing literature that incorporates spatial considerations in the study of the African colonial state. Section three provides an overview of state building in colonial Mozambique. Section four introduces the georeferenced dataset on state location between 1889-1930, and section five describes the patterns in state expansion. Section six analyses these patterns quantitatively. Section seven concludes.

2.2. Concentric circles or territorial control?

There is a vast amount of social science scholarship on the state.[22] In spite of this, the state has become undoubtedly a messy concept (Mann, 1984). Social scientists have often adopted a Weberian definition, characterising the state as an organisation which, within a given territory, successfully claims a monopoly over the legitimate use of violence. Recent research, however, increasingly employs a more expansive definition. For example, Hoffman (2015) suggests adopting a wider definition for the purposes of historical research, as a community which can employ violence, but not necessarily has a monopoly over it, and which can levy substantial taxation on a permanent basis. Similarly, Dincecco & Wang (2023) see the Weberian case "as a (somewhat idealized) endpoint of the state development process rather than a starting point for historical analysis".

In this chapter, I focus on the early stages of the process of state building, which can be understood as "the process of creating new state institutions or strengthening existing ones" (Fukuyama, 2004, cited in Pierskalla et al., 2019). This process is linked to the development of state capacity. Similarly to the concept of the state

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[22] Wang (2021) provides a useful overview of three generations of studies dating back to the 1950s. The initial society-centred perspective saw the state as an arena where power was fought over. This was followed by a state-centred perspective that *brought the state back in*, emphasising its autonomy. Finally, a third generation known as the state-in-society perspective highlighted the linkages between state and society.

itself, state capacity has been conceptualised and measured in a wide variety of ways, but it can be broadly understood as the ability of a state to enact its will and fulfil its policy goals (Besley & Persson, 2010; Dincecco & Wang, 2023; Mann, 1984; McAlexander & Ricart-Huguet, 2022).[23]

Within the wide literature on the state, much has been written about the shape, functions, and long-term legacies of the colonial state as a distinct variety, with many works focusing on Africa (Boone, 2003; Herbst, 2014; Mamdani, 2018; Young, 1994). One of the features of African polities from the pre-colonial period until current times has been the unevenness of the spatial reach of the state (Boone, 2012; Herbst, 2014). Over the last decade, the quantitative literature on the African colonial state has incorporated this spatial dimension. Two strands can be distinguished, focusing on different proxies for state activity, and using data at different levels of aggregation.

The first are studies that have focused on the regional distribution of public investments by the colonial state in education, health, and infrastructures (Huillery, 2009, 2010; McAlexander & Ricart-Huguet, 2022; Ricart-Huguet, 2022). These studies use district data on French and British colonies to analyse the origins of investments, with particular attention to the role played by local resistance to colonial rule, as well as their long-term effects on contemporary African outcomes. The second strand of literature is composed by studies that have used point data to analyse the factors behind the location of colonial stations in German colonies, focusing on the early phases of state building (De Juan et al., 2017; Pierskalla et al., 2019).

The two sets of studies present diverging accounts of the subnational expansion of the state during the early phases of European colonialism in Africa. The analyses using investment data are largely consistent with the model of colonial state power described in Herbst (2014). In this model, the high costs of extending formal authority over distance, due to low population density and the features of African

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[23] See Berwick & Christia (2018) for a review of the many different ways in which state capacity has been conceptualized and measured.

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political geography, meant that polities in pre-colonial Africa often only controlled a small political core, with power radiating and diminishing in authority as a "series of concentric circles radiating out from the core" into the hinterland. Colonial powers were faced with the same cost structure, and being financially constrained, followed a similar model in which power was distributed as a "gradient" from core holdings in the cities into the rural hinterland. This model was made possible by the principles and international system established under the Berlin Conference. International boundaries were not challenged, and the obligations assumed under the famed principle of effective occupation were minimalist and did not, in reality, demand the establishment of "European hegemony on the ground", thus reducing the costs of state consolidation.

In concordance with this concentric circles model, Ricart-Huguet (2022) finds that colonial state investments in infrastructure, health, and education were concentrated in centers of pre-colonial coastal trade, and that distance to these centres explains the diffusion of investments. McAlexander & Ricart-Huguet (2022) find that, in French West Africa, when faced with non-violent disobedience colonial governments disengaged from low state capacity regions, reducing both public investments and taxation, but repressed regions in which state capacity was high, by reducing investments and increasing taxation.[24] They interpret this as consistent with the emphasis placed by Herbst (2014) on the costs of extending power over distance: "In the center, state disengagement would be tantamount to the collapse of the state. In the periphery, by contrast, consolidating the state in the face of resistance may not be worth the cost" (McAlexander & Ricart-Huguet, 2022, p. 4).

On the other hand, the important work by Pierskalla et al. (2019) stresses the importance of the hegemony imperative in the early phases of state builiding. This imperative required that no segment of society made a direct affront to the colonial state's right to rule (Young, 1994, pp. 35-36). Pierskalla et al. (2019, pp. 716-717) provide three reasons for the primacy of hegemony during these phases. The first

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[24] Although not as directly related with the focus of this chapter, Huillery (2010) finds a similar result: European settlers in French West Africa settled preferentially in regions less hostile to colonial power, which in turn received more colonial investments in education, health and infrastructure, because of the presence of European settlers.

one is that the weakness of the colonial state demanded that it quell any resistance and demonstrate constantly its resolve to do so, in order to avoid violent spillovers. The second is based on a different reading of the Berlin Conference than the one by Herbst (2014): the principle of effective occupation, and the damage to international prestige that not being able to control colonial subjects would cause, required the creation of a "state apparatus that maximized territorial control and security."[25] Finally, territorial control and security were pursued to allow the state to carry out the rest of its activities, such as extraction. This focus on hegemony and territorial control leads to two hypotheses.

The first one considers the location of state resources in remote locations. Pierskalla et al. (2019) explicitly address the argument by Herbst (2014) that higher costs of state penetration would lead to lower state presence in remote locations. Instead, they argue that in the phase of 'primitive state building' maximising territorial control and consolidating authority will be prioritised over cost considerations, because investing military and administrative resources in remote areas signals the state's resolve to quell resistance and thus "is a matter of survival, and cannot be compromised due to mere financial reasons" (Pierskalla, et al., 2019, p. 717). The resulting hypothesis is that the state will try to maximise its reach and, instead of avoiding remote locations, will try to close gaps in its territorial coverage.[26] The second hypothesis refers to state reactions to violence. In the early phases of state building, territorial order and control would have been a priority, but information was scarce and uncertain. Thus, Pierskalla et al. (2019) argue that states would have prioritised experience over theoretical knowledge and, with hegemony being threatened by resistance of any form, would have prioritised penetrating areas with higher levels of previous violence, instead of focusing on other structural features of each region, such as the characteristics of the local ethnic group. In both cases, the

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[25] Here, the fact that the Berlin Conference lessened the need to secure borders does not yield a concentric circles model. Instead, it is interpreted as allowing "rudimentary colonial state governments to focus on internal challengers."

[26] This reasoning is based on the argument by Young (1994, p. 100) that "The hegemony imperative, driven by the doctrine of effective occupation, immediately required a skeletal grid of regional administration. Its priorities were clear, its tasks minimal: the imposition of a basic order and the creation of a revenue flow".

hypotheses run counter to the expectations of the concentric circles model described above, and the results of the works focusing on investment.[27]

To test these hypotheses, Pierskalla et al. (2019) analyse the case of German East Africa. The measure of state presence they use is the "station", through which the German colonial state exercised state functions. They geolocate the expansion of said stations throughout the colony between 1890 and 1909, then divide the colony into grid cells to estimate the effect of multiple factors on the likelihood of a cell containing a station in a particular year. They find that, contrary to what the literature has emphasised for processes of state-building in other contexts, extractive potential of the regions within the colony did not drive the sub-national expansion of the state. Instead, the German colonial state prioritized locating new stations in areas which had previously offered violent resistance to colonial rule and in areas which minimised the 'blank spots' with no state presence, giving support to their thesis that resource allocation is guided by political stability and territorial control.

De Juan et al. (2017) use a very similar methodology to analyse the geographical distribution of the state repressive apparatus in the German colony of Southwest Africa (current day Namibia).[28] Interestingly, they find that police stations were more likely to be located in areas with higher economic extractive potential, areas with critical infrastructure, and areas with a greater history of conflict between German troops and local populations.[29] Thus, the importance of economic potential for state presence somewhat contradicts the results found in Pierskalla et al. (2019),

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[27] McAlexander & Ricart-Huguet (2022), however, focus on non-violent disobedience, using data from Huillery (2010).

[28] In addition to their analysis of infrastructure allocation, they analyse the distribution of personnel across police stations, but this micro-level analysis is not as relevant to the present research.

[29] Relatedly, De Juan (2016) analyses the inverse relationship, researching the effects of different forms of state extraction on intra-state conflict through the case-study of the "Maji-Maji" rebellion in the former colony of German East Africa, between 1905 and 1907. In this case, expansion of extractive authority into rubber producing areas was more responsible for anti-state violence than intensification of extraction in cotton areas. The author argues that expansion of extraction is more likely to lead to conflict than intensification because expansion into new territories negatively affects non-state elites, which mobilize and organize anti-state violence.

but this is not addressed in either paper.[30] Additionally, they do not address whether 'blank spots' with no prior state presence were prioritised.

Pierskalla et al. (2019) suggest that conditions present during this phase of "primitive accumulation of power" (Cohen et al., 1981) have been present in other contexts, regions, and periods of time, and call for further studies to test their findings and their transferability. In the present chapter I contribute to our understanding of the initial phases of state building by studying a context and time period similar to these earlier works, while changing one of the key components: the colonial power constructing the state apparatus. Focusing on Mozambique allows us to gauge the importance of the two models of state distribution of power described above. Threatened by other more powerful European empires, the Portuguese colonial state did not have a secure hold, in geopolitical terms, over its African territories. According to the arguments above, this should have led the colonial state in Mozambique to focus on maximising territorial control, regardless of cost. However, Portugal was also comparatively constrained in financial terms, and may have been unable to pursue this strategy. This lack of resources may have pushed the colonial state in Mozambique towards a model in which power was projected in concentric circles, instead. In order to determine which scenario took place, I ask:

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[30] There are multiple potential explanations for this discrepancy. One is that the goals of the colonial state in German East Africa and German Southwest Africa may have been different. Another is that the location of general administrative stations and police stations may have also been guided by different factors. Yet another may be that Pierskalla et al. (2019) look at the initial expansion of the state between 1890 and 1909, whereas De Juan et al. (2017) focus their analysis on a later period, between 1907 and 1912. The distribution of resources at an initial stage of state expansion could be guided by different factors than the distribution of resources within areas already controlled by the colonial state. De Juan et al. (2017) seem to hint at this in page 292: "Previous work has highlighted the massive resource constraints of colonial state-building projects. Whereas these studies emphasize how resource scarcity constrained the geographical extent of colonial state penetration, our own research demonstrates how the lack of resources also shaped the processes of resource allocation within colonial administrations. Scarcity of resources not only prevented the establishment of a meaningful presence across the colony but also fostered adverse allocation of resources within the limited territorial reach of the state." However, this excerpt does not cite their later work published in 2019, which was already forthcoming at the time, and there is no explicit explanation for the discrepancy in either paper.

Research Question: During the early phases of state building in Mozambique, did the spatial allocation of resources by the colonial state prioritise the maximisation of territorial coverage?[31]

To answer this question, I trace the expansion and sub-national distribution of administrative infrastructure between 1889 and 1930, and I analyse the factors guiding it. Before that, in the next section I present an overview of state building in colonial Mozambique.

2.3. State building in Mozambique

For centuries before the demise of their Third Empire in the 1970s, the Portuguese established themselves in different regions of Africa with varying degrees of influence and power. It was not until the turn of the 20th century, however, that an effective administration was put in place, spurred by the 1884 Berlin Conference. An outcome of this conference was the principle that, for any European power to legitimately lay claim to African territories, these had to be under their 'effective occupation'. However, in the world that emerged from the Berlin Conference, Portugal can be characterised as a comparatively weak imperial power, an imperial "jackal" among "lions" (Alexopoulou, 2018, Chapter 4), the so-called "sick man of Europe" (Herbst, 2014, p. 76). During the early years of colonial expansion in Africa, Young (1994, pp. 152, 158) describes the Portuguese metropolitan state as "singularly weak and underdeveloped", and argues that geopolitical insecurity "was an important factor propelling completion of the occupation and administrative organization of Angola and Mozambique, despite the slender power resources and instability of the Portuguese state, especially in the 1920s."[32]

Metropolitan weakness was reflected in the pace and the nature of Portuguese territorial expansion in Africa, and it was not until the 1910s that the Portuguese

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[31] The data available for Mozambique does not allow me to look at episodes of violence, so I focus on the value of each region in terms of territorial coverage.

[32] The importance attributed by Young (1994) to hegemony here is in line with the fact that Pierskalla et al. (2019) justify their model, among other things, on his insights.

began to establish themselves beyond the coastal regions, with protracted 'wars of "pacification"' lasting until the early 1920s (Havik, 2018).[33] According to Young (1994, p. 106), during these early phases the Portuguese "lacked both coercive and administrative resources to go beyond the minimal occupation required to prevent rival colonial encroachment."

Portugal's comparative lack of resources and its weak geopolitical standing also meant that "the autonomy of Portuguese rule in Mozambique was contingent, continually renegotiated within a broader southern African region dominated by British colonialism" (O'Laughlin, 2000). Portuguese ambitions of a unified territory linking Angola and Mozambique (illustrated in the famous *Mapa cor-de-rosa*) were thwarted by the British ultimatum of 1890, and in the Anglo-Portuguese treaty of 1891, which defined the borders of both Mozambique and Angola, Portugal was left with "two reasonably sized, but separated pieces of territory that were bound to be separately administered and secured" (Alexopoulou, 2018, p. 114). Moreover, in the context of the Scrambe for Africa, Portugal "required both British consent and military assistance to sustain its claims" (Alexopoulou, 2018, p. 114).

This dependence is perhaps best exemplified by the use of concession companies, the capital for which was primarily British. For decades the Portuguese relied on foreign capital to lay claim to large extensions of their colonial territory, and these companies governed vast regions of the north and centre of Mozambique receiving "almost unlimited sovereign rights" (Birmingham, 2015) which allowed them to extract labour and taxes from Africans living in their territories. The *Companhia de Niassa* administered the north of the colony, the *Companhia de Moçambique* did so in the central region of Manica e Sofala, and the centuries-old institution of *prazos*, royal concessions in the Zambesi region, were now leased as concessions to commercial companies (Newitt, 2017, p. 99). Both the sovereign companies and the largest *prazo* concession, Sena Sugar, were British owned (Newitt 2017 p. 119).[34]

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[33] For a broad overview of Portuguese colonialism in Africa, see Jerónimo (2018). For a discussion of the policies, realities and impact of Portuguese administration on its African continental colonies, centred specifically in the 20th century, see Havik (2018).

[34] In addition to the concession companies governing large territories, much of the plantation complex was British owned too (Alexopoulou, 2018, p. 115).

Although not formally a concession, the South of the colony also became dominated by a private company, as the Witwatersrand Native Labour Association "acquired an exclusive right to recruit mine labour, becoming, in the process, a kind of parallel administration with a more effective presence in the region than the Mozambique government itself" (Newitt, 2017, p. 99). As a result of this concession model, the colony was fragmented and it was not until 1942, with the non-renewal of *Companhia de Moçambique*'s charter in the central regions, that a single administration and set of laws and regulations applied to the whole colony (Newitt, 2017, pp. 21-22, 129).

The development of the colonial infrastructure network also reflected the Portuguese subordination to the interests of British colonialism, its dependence on foreign capital, and the fragmentation of the colonial state in Mozambique. The construction of colonial railways was mainly carried out by British companies (Alexopoulou, 2018, p. 115), and this geared the shape and function of the network towards the transport of goods and labour to and from neighbouring colonies (Cross, 1987, p. 562). This horizontal layout contrasts with the Portuguese failure to vertebrate the north and the south of the colony, whether by road or railway, until late in the colonial period, which resulted in a physical, cultural, and social division of the territory (Marcum, 2017, p. 18; Newitt, 2017, pp. 22, 117-128).[35] Overall, British ownership of many of the companies administering territory in Mozambique, as well as its infrastructures, and the mines and farms outside of Mozambique that recruited labour from it, lead Newitt (2017, pp. 119-120) to conclude that "it might seem that Mozambique had become to a very large extent an adjunct of the British Empire in Africa-almost itself a British colony."

Like much of colonial Africa, Mozambique was governed mostly through indirect rule. Though not an exclusive feature of Mozambique, in this colony indirect rule was made a necessity by the limits to state capacity. Thus, even though centralisation was the guiding principle of administration, control was limited, resources on the ground lacking and governance often *ad hoc*, with local powers

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[35] For an overview of the development of the railway network in Mozambique and Angola, see Alexopoulou (2018, Chapter 5).

wielding much influence and playing a key role (Jerónimo, 2018). For example, Alexopoulou (2020) describes how the tax system relied on native chiefs who were rewarded for their services. In contrast with the more elaborate and structured systems of indirect rule set up by other colonisers, throughout the initial stages of state building the Portuguese colonies "remained a series of patrimonial satrapies improvisationally run by an amalgam of settlers, renegades, and officials", with intermediation happening "through a more diverse net of Afro-Portuguese traders, settlers, and some chiefs" (Young, 1994, pp. 152-153). Even with the impulse given by the fascist dictatorship of the *Estado Novo* to centralisation and metropolitan control of the colonies, "(o)n many levels, indirect rule persisted in the Portuguese colonial empire, with centralization efforts frequently taking the form of policies of concession" (Jerónimo, 2018).[36]

Limits to colonial state capacity in Mozambique ran late into the twentieth century. In the 1930s and 1940s, the colonial apparatus faced great difficulties when surveying the local population, as described in the preambles to the 1930 and 1940 censuses.[37] These preambles provide interesting insights into the lack of colonial state capacity. In 1930, the division of statistical services in Mozambique had trouble finding enough qualified census takers because of low populations in the *distritos* and low pay for the job, and had to rely on general colonial administrative staff. In addition to the scarcity of census takers, villages concentrated only small numbers of people and were far from each other and, importantly for our picture of state capacity, generally far from lines of communication and administrative *sedes*. In 1940, difficulties in finding census takers persisted, and the preamble mentioned the lack of recruitable personnel and financial limitations. The statistical division had to rely again on general administrative staff from *Direcção dos Serviços de Adminsitração Civil*, but found problems with this approach too: administrative posts were often vacant, in some of the *circunscrições* there was only one civil servant, and some of the smaller *postos* had no *chefe* in charge.

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[36] Some decentralising initiatives were introduced during the First Republic, but the advent of the *Estado Novo* would bring back centralisation once again.
[37] *Censo da populaçao indígena em 1930. Colónia de Moçambique, Repartição de Estatística,* pp. 6-8; *Censo da populaçao em 1940. II. Populaçao indigena. Populaçao total por sexos, idades e estado civil, segundo a sua distribuiçao por divisoes administrativas. Colónia de Moçambique, Repartição Técnica de Estatística*, pp. 3-4.

Even later, the running of the forced cotton cultivation regime was hampered by lack of state capacity, as described by Isaacman (1992):

> "In many parts of the colony the only Portuguese presence was a local chefe de posto who administered vast areas with the assistance of loyalist chiefs, headmen and a bevy of African police or sepais. For example, as late as 1961 in the cotton region of Maconde four local officials were responsible for an area in excess of twenty-four thousand square kilometres. The lack of all-weather roads and mechanised transport cut off many local administrators from the rural population for several months a year. And in some regions local administrative positions remained vacant for long periods permitting 'the hostility to cotton production to be both open and extreme'. Because Lisbon's power was so thin on the ground, it had to rely on intense, if sporadic, violence, as an essential ingredient in the cotton regime." (Isaacman, 1992, p. 497)

Within these low levels, state capacity was distributed unevenly across the territory. The state was stronger in the south of the colony (Isaacman, 1992), and much weaker in the northern districts of Cabo Delgado and Niassa (especially the latter), which were considered backwaters and had undeveloped transportation and communication systems well into the colonial period (Isaacman et al., 1980). This was reflected in the heterogeneous development of fiscal or tax capacity, which was greater in the south than in the northern regions (Alexopoulou & Juif, 2017). The difficulties encountered by the colonial state to extend its presence and build its capacity had much to do with the shape of the territory and the distribution of the population. Herbst (2014) highlights Mozambique's "strikingly difficult political geography", and attributes much of it to the length of the territory, and the large distance between the two areas with relatively high population, one in the south around the capital, and another in the north-central regions. Conversely, other districts like Cabo Delgado and Niassa, in the north, had large unpopulated areas that allowed for the establishment of maroon communities beyond the reach of the state (Isaacman et al., 1980).

2.4. Georeferenced dataset

The goal of this chapter is to understand the factors guiding the spatial allocation of resources in the early stages of state building. To answer this question, I collect historical data on the location of colonial administrative infrastructure in Mozambique between 1889 and 1930, from a variety of sources.

The administrative division of the colony, and the types of regions it was divided in, changed through time. However, we can generally classify areas into three levels of administrative division: first level *distritos,* second level regions*,* and third level sub-regions.[38] Each region and sub-region, in turn, could be of civil, military, or merely fiscal administration. At a higher level of aggregation than *distritos*, *províncias* were very few in number and thus do not constitute a useful division to analyse.

I use *sedes*, the headquarters of each administrative area, as a proxy for the existence of colonial administrative infrastructure. Of course, this measure is not perfect, as there could be state presence prior to their establishment, but *sedes* represent a sufficient level of state presence to be officially recognised as a headquarter.[39] Locating *sedes* allows me to trace the expansion of state presence from the outset of the Scramble for Africa, when the colonial state in Mozambique was limited to a few coastal outposts, to a point beyond the wars of "pacification" when the state had a presence, if not complete control, across most of the territory. I collect the names of *sedes* for different benchmark years covering the period of interest (1889, 1900, 1908, 1917, 1930) from a combination of sources that include colonial budgets, colonial yearbooks, legislation, and the historical topographical dictionary created by Dias Rafael (2001) for Mozambique. I then georeference these locations by cross-checking their coordinates with multiple sources.[40]

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[38] Second level regions included civil *concelhos* (urban areas with greater European presence) and *circunscrições* (rural areas)*,* military *capitanias* and *commandos*, and fiscal *intendências*. Third level sub-regions included civil *postos administrativos, sub-circunscrições*, and *postos de policia,* military *postos militares*, and fiscal *postos fiscais*.

[39] On the other hand, as described in section three, some *sedes* could at times be severely lacking in personnel, but the information in the sources does not allow me to capture this level of detail.

[40] Most coordinates are cross-checked through a combination of the historical topographical dictionary produced by Dias Rafael (2001), the online directory found at Falling Rain (http://www.fallingrain.com/world/MZ/), and Google Maps. I am able to locate 21 out of 26 second

To analyse the factors guiding the spatial allocation of resources, I use two approaches: one descriptive, based on maps showing the expansion of *sedes* between 1889 and 1930, and one quantitative, based on logistic regressions.

2.5. Descriptive patterns

Figure 2.1 shows the distribution of state administrative infrastructure in Mozambique at the onset of the Scramble for Africa, in 1889.[41] State *sedes* were all of a military nature, except for the civil headquarters in Lourenço Marques, in the south, which would become the capital of the colony in 1898. Infrastructure was mostly located along the coast, and the only interior presence followed the Zambezi river into Tete. This replicated the pattern in existence for centuries before the expansion of the colonial state, in which the banks of the Zambezi had been occupied by the Portuguese through a model of royal concessions known as *prazos*. The concessionaries, or *prazeiros*, were originally delegates of the Portuguese Crown, but over centuries they became increasingly autonomous, marrying with the local population and raising armies, and were eventually major players in the resistance against Portuguese occupation (Newitt 1969, cited in Alexopoulou, 2020). Defeating the *prazo*-armies required the support of British forces, and was only achieved in the 1890s, after which *prazos* would continue to serve fiscal functions until the end of our period in the 1930s (ibid).

A decade later, state infrastructure had expanded (Figure 2.2), but remained mostly confined to the coast. In the southern tip of the colony, around the capital of Lourenço Marques, the military presence had been replaced by civil administration, but military posts were set up along the Limpopo to control the neighbouring territory later known as Gaza, which had seen anti-colonial resistance under

level *sedes* in 1889, 70/73 second level *sedes* and 30/35 third level *sedes* in 1900, 56/60 second level *sedes* and 104/121 third level *sedes* in 1908, 79/81 second level *sedes* and 122/134 third level *sedes* in 1917, and 87/88 second level *sedes* and 123/134 third level *sedes* in 1930.

[41] The internal borders shown in these figures corresponds to *distritos* in 1930. Throughout the early phases of state building, there were many changes to administrative borders, and to the number and name of large administrative divisions. Thus, the analysis of state presence focuses on point data for *sedes*: the internal divisions are shown as a rough visual guide to aid the description.

Emperor Gungunhana, as well as in the *distrito* of Inhambane. The two regions under private company control were also now under civil administration: the central region of Manica e Sofala, under governance of the *Companhia de Moçambique*, and the northern regions of Cabo Delgado and Niassa, under the *Companhia do Niassa.* Some fiscal *sedes* had been set up along natural trading routes on the Limpopo and Zambezi rivers, as well as Lake Nyassa, and administrative infrastructure also followed the railway connecting Southern Rhodesia to the coast along the territory of the *Companhia de Moçambique.*

Further expansion had taken place by 1908 (Figure 2.3), with third level *sedes* serving to cover more of the territory, especially into the interior. The southern *distritos* of Lourenço Marques and Inhambane were now fully under civil administration, and the distribution of state infrastructure in those regions would not see important changes until the end of our period of study, in 1930. In the north, a combination of civil second level *sedes* and a large number of third level military posts were used to control the territory. A similar trend continued until 1917 (Figure 2.4). Expansion in this period concentrated in the northern *distritos* of Quelimane, Moçambique, Cabo Delgado, and Niassa, still under a mostly military model: possibly a response to the German invasion from Tanganyika in the north (Alexopoulou, 2018, p. 119). Quelimane and Moçambique also saw a notable increase in the number of second level *sedes.* At the same time, in the northwestern *distrito* of Tete, military headquarters were substituted by fiscal administration.

By 1930 (Figure 2.5), the settling of the territory with a "rudimentary infrastructure of control and coercion", to use the terminology in Young (1994), was mostly completed, and all of the *sedes* were now of the civil type. However, Table 2.1 shows that throughout the period of study, and even in 1930, a large part of the administrative infrastructure of the state was located close to the coast. Around half of all secondary *sedes* in each benchmark year, and over one third of all tertiary *sedes* were located within 50 km of the coast of Mozambique. Interestingly, this was the case even in the southern *distritos* of Lourenço Marques and Inhambane, which were among the earlier regions to be settled. To put this in context, the mean distance to

the coast across the cells in the georeferenced dataset is 218 km, and the first quartile is 69 km (Table 2.2).

Table 2.1. Number of *sedes* within 50 km of the coast

	1889 sedes	1900 sedes	1908 sedes	1917 sedes	1930 sedes
Second level sedes	13	33	36	44	42
	(27)	(63)	(60)	(83)	(88)
Third level sedes		17	46	55	43
		(36)	(121)	(136)	(134)
Second/third level sedes	13	50	82	99	85
	(27)	(99)	(181)	(219)	(222)

Note: The number of *sedes* within 50 km of the coast refers to *sedes* I am able to georeference. Total number of sedes of each category, including those I am not able to georeference, are shown in parentheses.

Figure 2.1: State administrative infrastructure in Mozambique, 1889
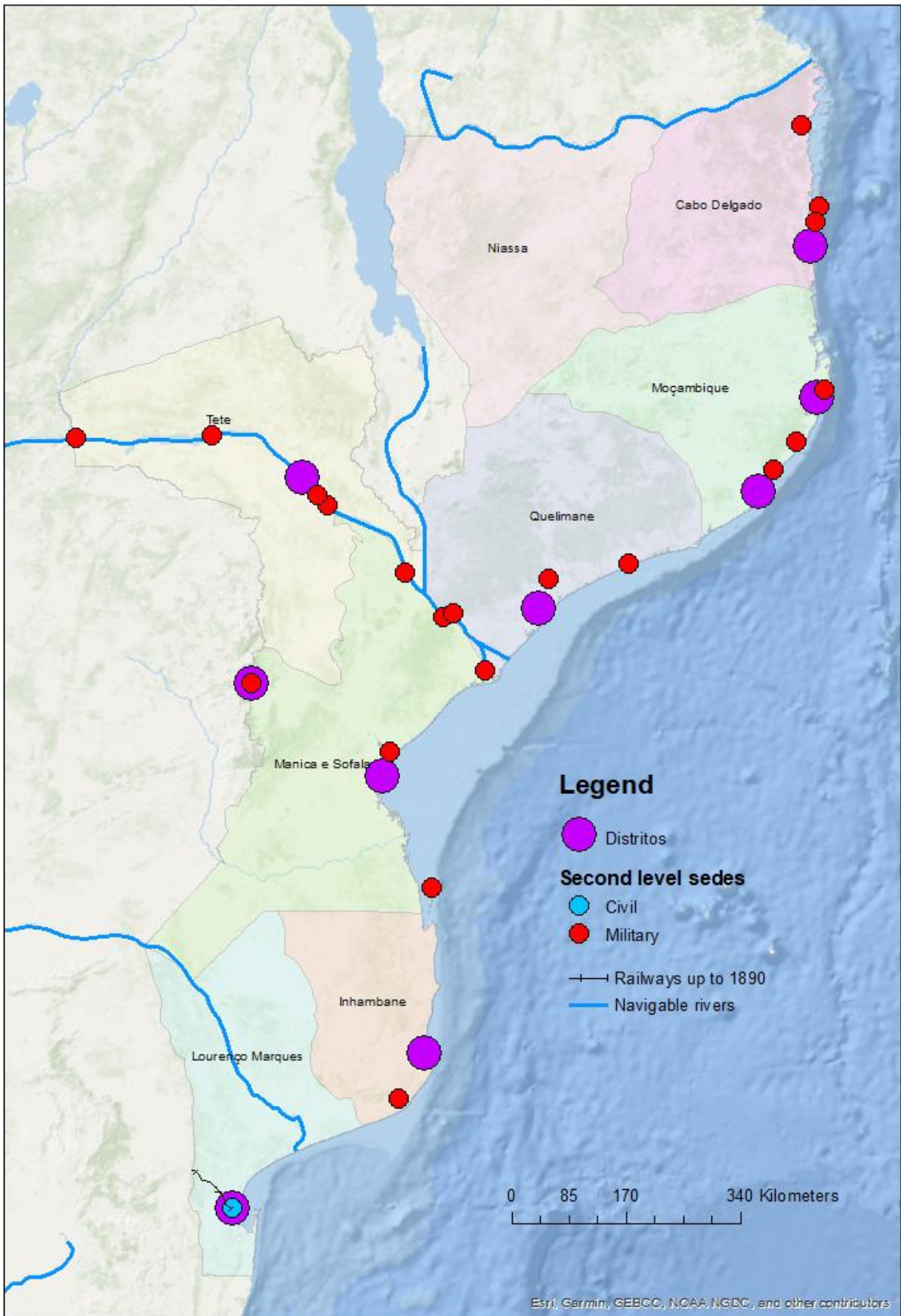
Source: Based on data for the location of state *sedes*.

Figure 2.2: State administrative infrastructure in Mozambique, 1900
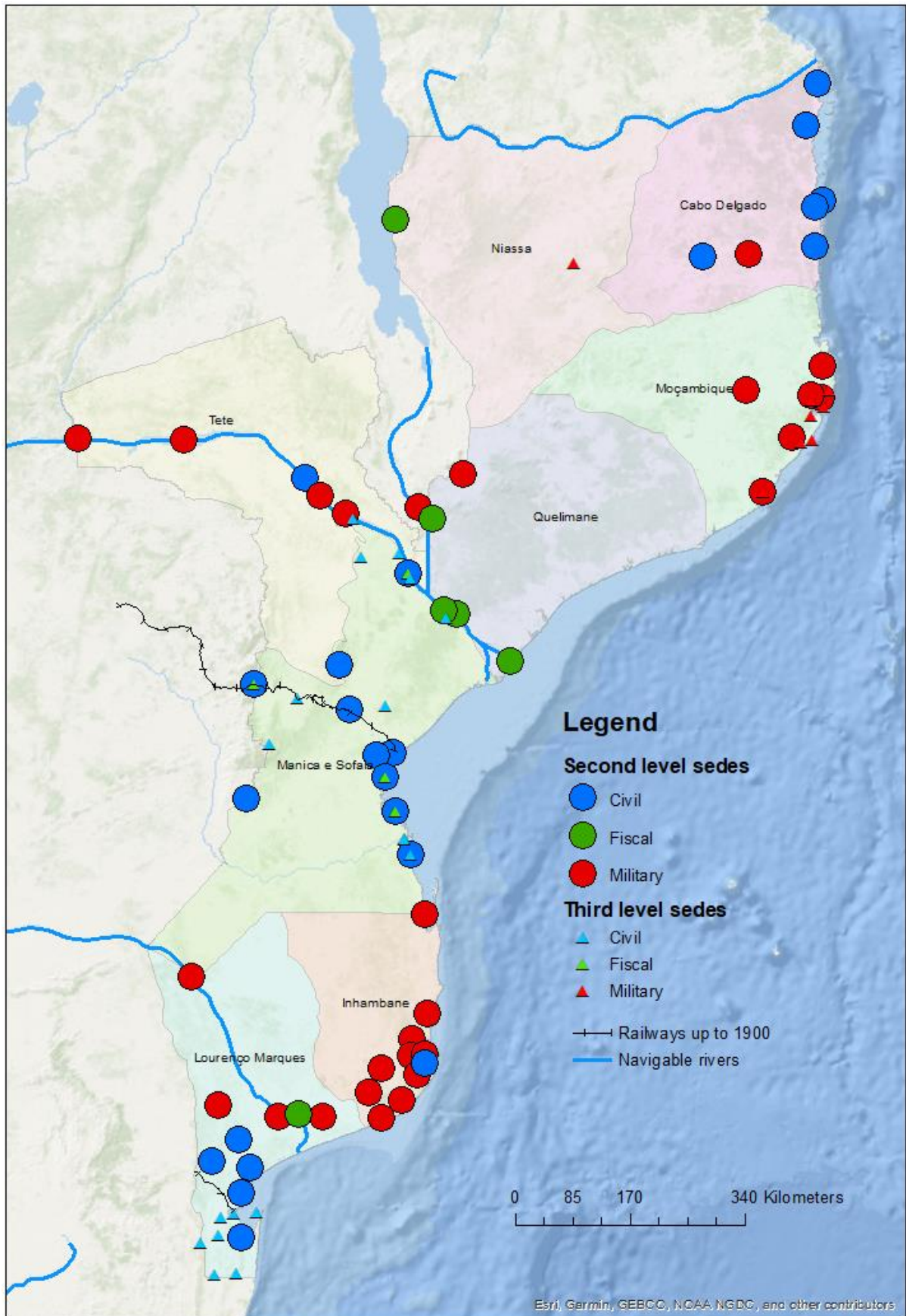
Source: Based on data for the location of state *sedes*.

Figure 2.3: State administrative infrastructure in Mozambique, 1908

Legend

Second level sedes
- Civil
- Fiscal
- Military

Third level sedes
- Civil
- Military

Railways up to 1908
Navigable rivers

0   85   170   340 Kilometers
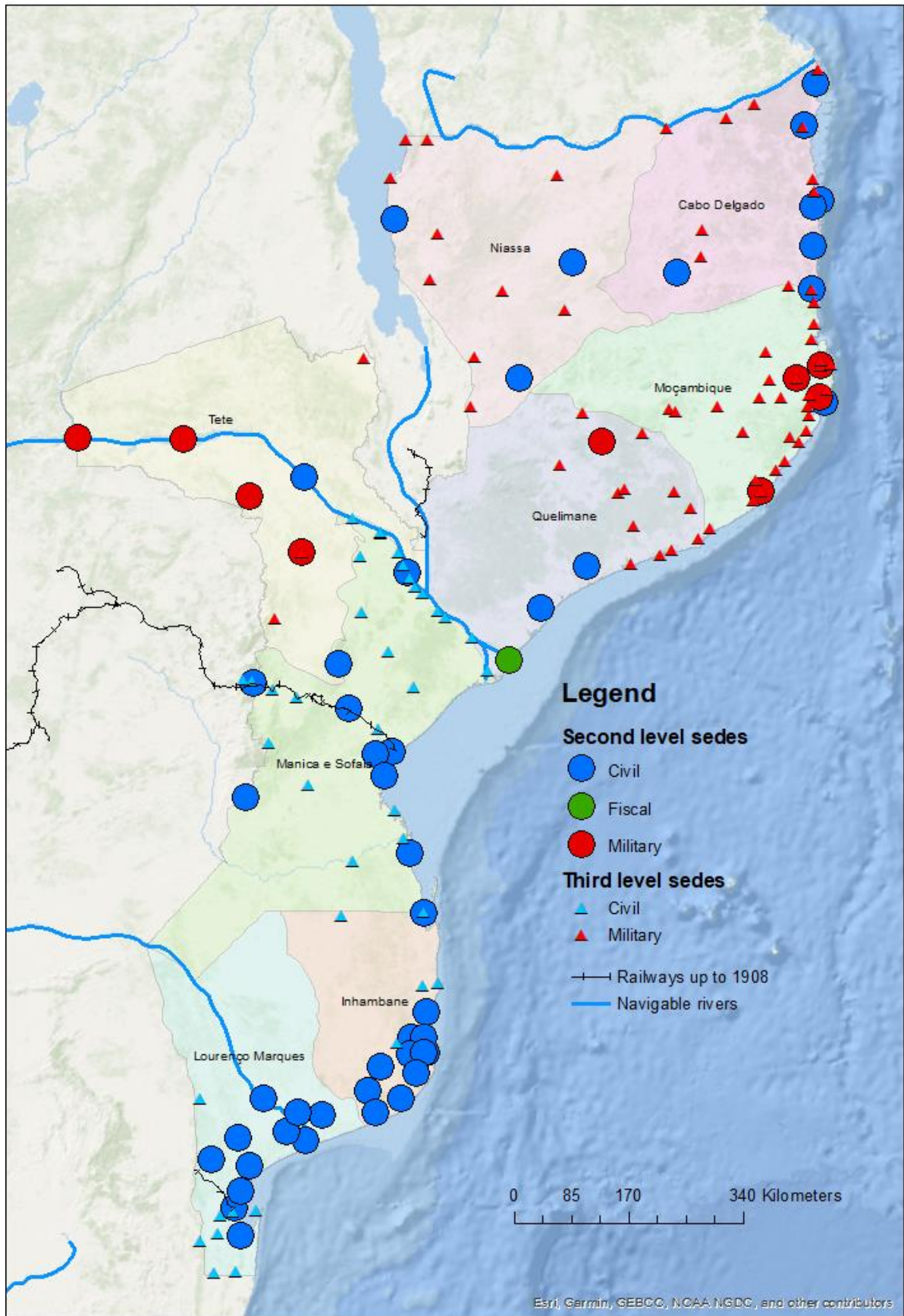
Source: Based on data for the location of state *sedes*.

Figure 2.4: State administrative infrastructure in Mozambique, 1917
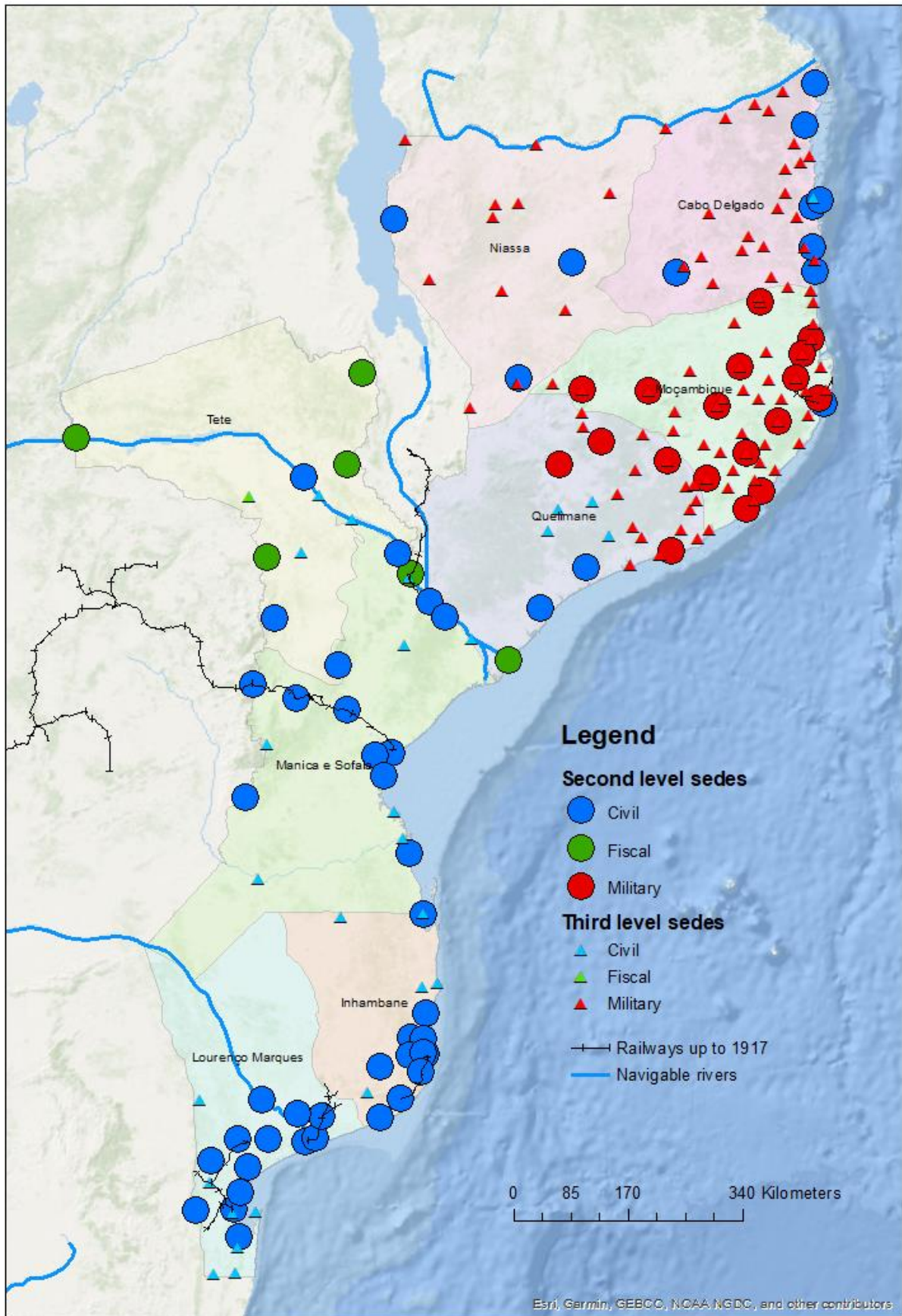
Source: Based on data for the location of state *sedes*.

Figure 2.5: State administrative infrastructure in Mozambique, 1930
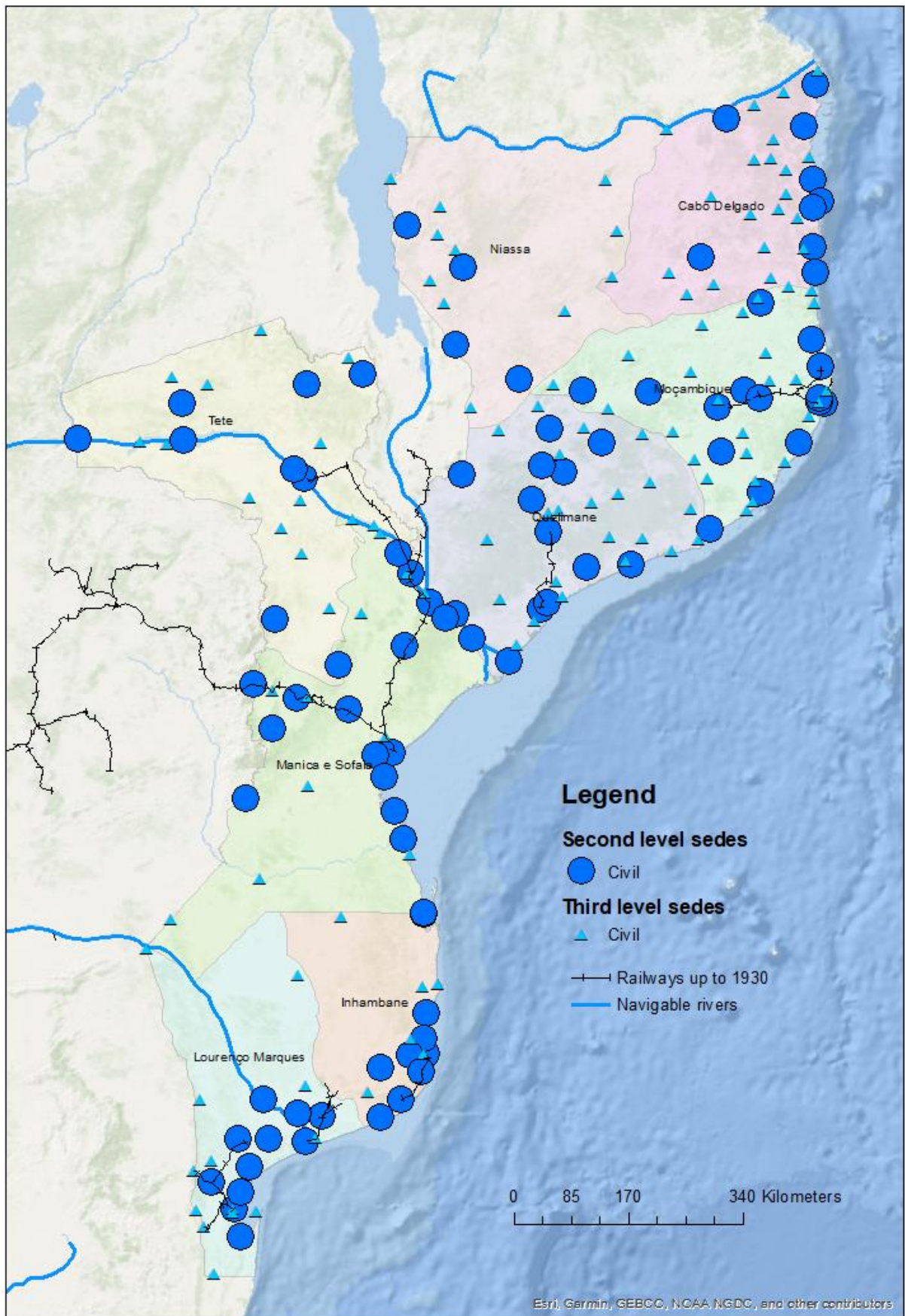
Source: Based on data for the location of state *sedes*.

Figure 2.6: Territorial Control Value for Mozambique, 1889
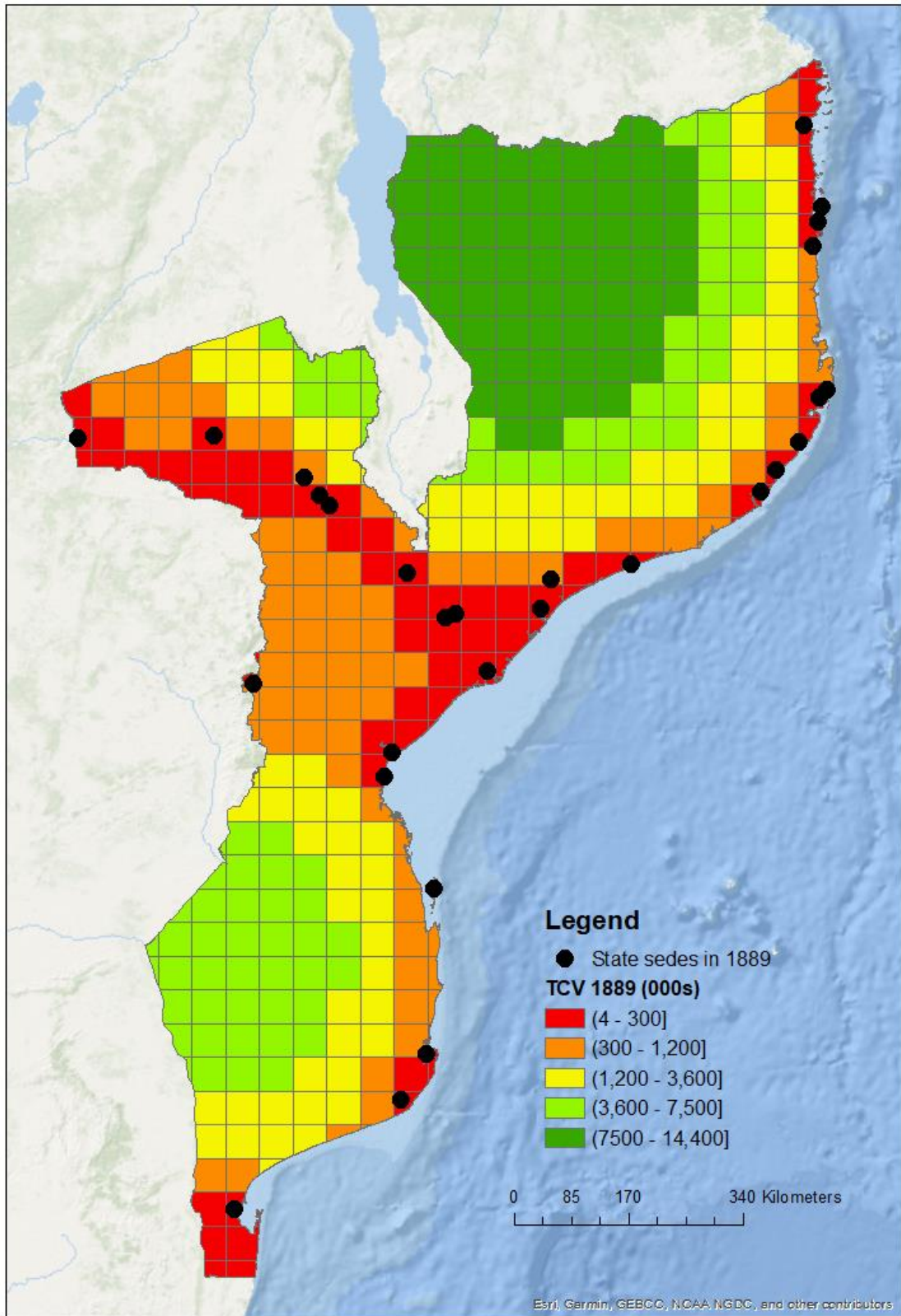
Source: Based on data for the location of state *sedes*.

Note: TCV is calculated in kilometers. Colour categories represent approximately quintiles in the data.

Table 2.2. Summary statistics per cell

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Dummy sedes 1889	360	0.07	0.25	0	0	0	0	1
Dummy sedes 1900	360	0.16	0.37	0	0	0	0	1
Dummy sedes 1908	360	0.30	0.46	0	0	0	1	1
Dummy sedes 1917	360	0.35	0.48	0	0	0	1	1
Dummy sedes 1930	360	0.42	0.50	0	0	0	1	1
Ln TCV 1889	360	14.29	1.63	8.29	13.02	14.67	15.50	16.48
Ln TCV 1900	360	12.44	1.44	8.00	11.47	12.69	13.67	14.35
Ln TCV 1908	360	11.30	1.35	7.41	10.41	11.11	12.15	14.30
Ln TCV 1917	360	11.20	1.40	7.41	10.15	11.04	12.02	14.13
HYDE population density (people/km2) 1930	360	6.13	4.30	0.32	3.72	4.90	8.13	22.21
African census population density 1930 (people/km2)	360	5.14	6.28	0.49	1.31	2.56	5.92	35.67
Soil fertility	360	8.04	1.47	4	7	8	9	10
Dist. to the coast (km)	360	218.45	178.56	4.39	69.07	181.18	336.03	677.31
Dist. to border (km)	360	133.78	112.14	3.40	38.59	107.27	204.86	487.51
Dist. railways 1900 (km)	360	432.26	270.23	5.54	218.89	344.85	697.06	967.69
Dist. railways 1908 (km)	360	278.46	170.61	5.54	148.10	256.13	375.41	718.10
Dist. railways 1917 (km)	360	187.77	116.96	0.14	94.64	179.02	264.15	497.63
Dist. railways 1930 (km)	360	156.96	116.60	0.14	60.79	136.55	226.88	471.71
Dist. to navigable river (km)	360	152.03	114.19	0.45	59.82	128.32	232.44	490.59
Dist. to interior water body (km)	360	132.00	82.73	0.66	61.07	123.50	198.49	334.89
Dist. to pre-colonial explorer route (km)	360	245.07	171.97	2.96	79.11	240.38	391.85	584.07
Malaria prevalence	360	0.02	0.02	0.004	0.01	0.02	0.03	0.06
Ln trade enslaved people	360	0.40	0.56	0	0	0.02	0.9	2

2.6. Quantitative analysis

2.6.1. Explanatory variables

I run logistic regressions analysing the likelihood of the colonial state establishing colonial administrative infrastructure in a region, between 1889 and 1930. To measure whether a region had a *sede* or not, I divide the territory of Mozambique into a grid of 50 x 50 km cells, which yields a base dataset of 360 cells.[42]

Table 2.2 provides summary statistics for the explanatory variables. The main variables of interest proxy for the importance of territorial control, and represent each of the models of power distribution described in section two. I calculate *Territorial Control Value* (TCV) in the same way as Pierskalla et al. (2019), to represent the value of each cell in minimising the 'blank spots' far from the reach of the state. The first step to calculate TCV is to measure the minimum distance of each cell centroid i to the closest *sede* in year t, and aggregate those distances. The second step is to calculate, for each cell centroid i, how much this aggregate distance is reduced if a hypothetical new *sede* is placed on that cell centroid. That reduction, which is positive by definition, is the TCV for cell i in year t (see Figure 2.6 for a visualisation of TCV). Additionally, I calculate the distance of each cell centroid to the closest international border, as a further proxy for the control value of territories: setting infrastructure close to the border may have been a way to ensure claims to territory within the context of the Scramble for Africa, and defend against the encroachment of foreign powers. If we find that the state sought to minimise 'blank spots', and locate resources close to the border, this would lend support to the hegemony-centered model proposed by Pierskalla et al. (2019). On the other hand, I measure distance to the coast to proxy for the model of concentric circles described by Herbst (2014).[43] The main hubs of colonial power in Mozambique were first located in the coast. If the model of concentric circles has explanatory power

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[42] The original dataset yields 398 cells, but includes small irregular-shaped cells around the contours of Mozambique. I drop cells with an area below 1% of the area of a 50 x 50 km cell, to avoid these outliers from skewing the analysis.

[43] I construct the coastline for Mozambique from a feature class for the whole country hosted by the United Nations Office for the Coordination of Humanitarian Affairs, Humanitarian Data Exchange website. The shape file is available from: https://data.humdata.org/dataset/cod-ab-moz.

for Mozambique, distance to the coast should be a significant factor in the placement of state resources during the early phases of state building.

To analyse the role of economic extraction, I use soil fertility as a general proxy for agricultural potential, which I retrieve from the latest version of the GAEZ dataset.[44] Given the lack of state capacity described in the literature on early colonial Mozambique, it is unlikely that the state was able to gather detailed information on the potential of each area, so this basic variable should suffice as a proxy.

I also control for African population density, for two reasons. The first is that population density can be related to economic extraction. Higher population densities should facilitate, and reduce the unitary costs of, taxing and conscripting population to forced labour, thus increasing economic potential. The second is that population density can be linked to territorial control. Pierskalla et al. (2019) rightly argue that, in the early phases of state building, states may have a "strategic motive" to target remote areas even if the costs are high: to signal authority. Remote areas will often have, by definition, the highest values of TCV. However, when a state seeks to exert control and signal power, it looks to do so over the population it rules, and population density may vary significantly across remote areas. Therefore, if a territory has a very high TCV but it is very sparsely populated, like some of the regions in Mozambique are, we should not expect the state to allocate significant resources to said territory, as this would essentially mean projecting power into the void. As McAlexander & Ricart-Huguet (2022, pp. 30-31) note, "(s)tate penetration into the hinterlands is a costly endeavor and less of a priority because resource extraction and <u>effective control over the primary population centers</u> can occur without consolidating territorial control over the entire state" (underlining is mine). Thus, in order to gauge the importance of the purely territorial TCV, we must account for the number of people each *sede* allowed the state to reach.

I use data on population density c. 1930 from the HYDE dataset (Klein Goldewijk et al., 2010). As Jedwab et al. (2022) point out, these population estimates are widely

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used but unreliable. For the purposes of this chapter, however, the spatial granularity of their data, with a resolution of 5 min longitude/latitude, may be a better option than estimates at a larger scale.[45]

Finally, I include additional control variables to proxy for accessibility, pre-colonial characteristics of an area, and its disease environment. The ease of transport may have influenced the ability of the state to locate resources in a region. Thus, I calculate the distance of each cell to the closest railway line, major navigable river, and interior water body.[46] Major navigable rivers and railways are available from Jedwab & Moradi (2016) (who digitise rivers from Johnston, 1915).[47] I use data on interior waterbodies from the Regional Centre For Mapping Of Resources For Development (RCMRD).[48] Early exposure to colonialism through explorers and slave trade may have influenced resistance to state penetration: I calculate the distance of each cell centroid to the closest pre-colonial explorer route, and use data on the number of enslaved people traded for each ethnic group, both from Nunn & Wantchekon (2011).[49] Other widely used proxies, such as pre-colonial political centralisation, are unavailable for Mozambique with enough consistency.[50] Malaria

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[45] As a robustness check, I calculate and use population density for the African population in 1930 at the level of regions (*concelhos* and *circunscrições*) by collecting data from the 1930 colonial census and digitising a map of colonial Mozambique in 1930 from the *Recenseamento Agrícola* of that same year. Results for regressions in Tables 2.3 and 2.4 are essentially unchanged, as expected given the similarity between both measures (Table 2.2) and their high correlation in the dataset (0.58). The only changes are that the coefficient for population density is no longer significant in regressions for 1900 and (barely) 1930 in Table 2.3, and 1900 in Table 2.4.

[46] In regressions, distance to the closest railway refers to the closest railway in existence in the benchmark year being analysed in the regression. Regressions for 1889 therefore do not include this variable, as the first railway in Mozambique was built in 1890.

[47] The georeferenced data on railways provided by Jedwab & Moradi (2016) for Mozambique matches exactly the country-specific analysis carried out by Alexopoulou (2018, Chapter 5).

[48] The shape file is available from:
https://rcmrd.africageoportal.com/datasets/africageoportal::africa-water-bodies/about.
I drop man-made waterbodies from the late colonial or post-colonial period, both in Mozambique and in the neighbouring countries.

[49] Results for explorer routes should be approached with caution, as Jedwab et al. (2019) indicate that this source may miss many of the routes.

[50] Studies of Africa that use variables for pre-colonial characteristics, such as pre-colonial political centralisation, mostly use data at the ethnic group level from the Ethnographic Atlas produced by Murdock (1967), matched to the ethnic group borders shown in the map produced by Murdock (1959), digitised by Nunn (2008). To match the data to the map, they use the procedure developed by Fenske (2013). However, there is not a perfect match between the ethnic groups shown in the map (Murdock, 1959), and the ethnic groups included in the atlas (Murdock, 1967). Therefore, variables for some of the ethnic groups are missing from the replication datasets provided by these types of studies. The issue is particularly salient for Mozambique, with many of the ethnic groups

may have affected mortality rates of European colonisers, in spite of the advent of quinine, and so I include data on malaria prevalence from Depetris-Chauvin and Weil (2018) as a further control.[51]

2.6.2. Logistic regressions

I estimate a general linear model, running logit regressions on the different benchmark years in the dataset (1889, 1900, 1908, 1917, 1930):

$$logit(y_{c,t}) = \beta_0 + \beta_1 Territorial_{c,t} + X_{c,t} + \Omega_{c,t-1} + \alpha_m + \varepsilon_{c,t}$$

where $y_{c,t}$ is a binary variable indicating whether a cell c contained at least one state *sede* in year t or not; $\beta_1 Territorial_{c,t}$ is a vector of our main variables of interest, proxying for the two models of projection of colonial power in Africa; $X_{c,t}$ is a vector of control variables; $\Omega_{c,t-1}$ is a dummy indicating whether a cell c contained at least one state *sede* in the previous benchmark year; α_m are fixed effects for each of three macro-regions in Mozambique (Alexopoulou & Juif, 2017), to capture any relevant characteristics of Mozambique's great regional heterogeneity not covered by the battery of controls; and $\varepsilon_{c,t}$ is the unobserved error term.[52] All regressions include standard errors accounting for spatial correlation within 100km (Conley, 1999).[53]

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shown for Mozambique in the Murdock (1959) map not included in replication datasets: 11 out of 23 groups, covering roughly 43% of the area of the country, are missing.

[51] Data from Depetris-Chauvin & Weil (2018) on the malaria burden are available publicly at the ethnic group level. The same issue as for pre-colonial political variables, described above, applies: 11 out of 23 groups shown for Mozambique in the Murdock (1959) map, covering around 43% of the area of the country, are missing from the public dataset. I thank Emilio Depetris-Chauvin for providing me with additional data for the malaria burden at the ethnic group level. This includes all groups mapped in Murdock (1959) that were present in Mozambique, except for the Manyika group: for that group, I calculate the simple average of malaria prevalence for the three adjacent ethnic groups in Mozambique.

[52] In each regression, I include the TCV calculated with the distribution of *sedes* in the previous benchmark, distance to international borders is calculated as a dummy indicating whether a cell is within 50 km of a border, and distance to the coast is also calculated as a dummy indicating whether a cell is within 50 km of a border.

[53] To determine the threshold for the application of Conley standard errors, I plot spatial correlograms of the residuals for the regressions in Table 2.3 and Table 2.4, showing Moran's I for distance bands of 52.5km. Across regressions, spatial correlation does not seem to be an issue: I pick 100km as a threshold which should provide conservative estimates of standard errors, following Jedwab et al (2022). The correlograms for regressions in Table 2.3 are presented in the Appendix, Figure A.2.1.

Regarding the analysis of TCV, my approach differs from that of Pierskalla et al. (2019). They use pooled logit models and, for grid cells that already have a station, assign the TCV corresponding to the previous year, arguing that "otherwise, grid-cell years with stations would receive a zero strategic value for all years past the initial year with a station, creating an artificial negative correlation between station presence and strategic value." However, I would argue that this contributes artificially to a positive correlation. Once a cell receives a *sede*, both the TCV for that cell and the TCV of surrounding cells will be lower in the subsequent periods. If only the cell with the *sede* is assigned the earlier TCV, its TCV will be artificially higher in all subsequent periods as compared to surrounding cells without a *sede*, thus contributing to a positive correlation between TCV and the existence of a *sede*. To avoid generating this artificially negative correlation between TCV and state location, I interact the TCV variable with the dummy indicating prior state presence: the interaction term should capture any artificially negative correlation, allowing us to interpret the coefficient for TCV cleanly. Given that TCV is essentially a distance variable, I follow the general approach in the literature and take logarithms of the variable, to avoid outliers driving results.

The results are displayed in Table 2.3. In the first column, I present results for a regression with all periods pooled together: higher population density, as well as proximity to the coast, railways (measured in 1930), and interior water bodies, increase the likelihood of a cell containing a state *sede* during any of the benchmark years. The rest of the columns show the importance of factors for different periods. The dummy for earlier state presence is only positive and significant for the period between 1900 and 1908, indicating lack of persistence in the location of *sedes* over the years.[54]

Moving on to our main variables of interest, the effects of TCV are significant for the periods between 1889-1900, and 1908-1917, but with a negative sign: cells with a higher value of TCV were less likely to receive a *sede*, indicating that the colonial

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[54] These results should be taken carefully, however: the dummy for earlier state presence is positive and significant across most regressions if the interaction between earlier state presence and TCV is removed.

state was prioritising areas close to pre-existing infrastructure, instead of closing 'blank spots' in its territorial coverage of the colony. Given Portugal's weak geopolitical standing, we may expect distance to neighbouring colonies to play a role, with the state prioritising locations close to international borders as a show of force and of effective control of the territory, one of the requirements under the Berlin Conference. However, regressions in Table 2.3 do not show a significant effect of this variable for any of the periods. These results, together with the positive effect of proximity to the coast, suggests the alignment of state expansion in Mozambique with the concentric circles model, rather than a hegemony-centered model prioritising territorial coverage.

I run alternative regressions as a robustness check, also avoiding generating an artificially negative correlation between TCV and state location. In this case, I carry out regressions for different benchmark years, but dropping those cells that contained a *sede* in the previous benchmark year. Results are shown in Table 2.4. Again, the column for the regression on all periods pooled together shows the importance of population density, proximity to the coast, railways, and interior water bodies.[55] Mirroring results in Table 2.3, TCV has a negative effect in the periods between 1889-1900, and 1908-1917, proximity to the border has no effects, but proximity to the coast has positive effects for multiple periods. In Table 2.4, areas close to a railway were less likely to receive new *sedes* in the period between 1908 and 1917. Interestingly, soil fertility does not yield significant results for any of the periods in either specification, perhaps indicating that the state did not target more fertile regions. Additionally, the regression design in Table 2.4 serves to confirm the visual impression that colonial infrastructure in the southern *distritos* of Lourenço Marques and Inhambane did not see important changes between 1908 and 1930: no new *sedes* were created, or changed location between 1908 and 1917.[56]

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[55] Proximity to navigable rivers was also important for state location between 1889 and 1908, however.

[56] In the regressions shown in Table 2.4, I drop cells with state *sedes* in the prior benchmark, and I include macro region fixed effects. In the regression for the period between 1908-1917, the southern macro region (Lourenço Marques and Inhambane) is dropped: the fixed effect for the southern region would have perfect explanatory power, because there were no new state *sedes* in the south between 1908-1917.

Overall, then, regressions results show that the expansion of the colonial state in the early stages of state building in Mozambique resembled more closely a 'concentric circles' model, with state presence concentrated mostly along the coast, than a hegemony-centered model focusing on covering as much territory as possible.

Table 2.3: State expansion in Mozambique 1889-1930. Logit regressions, controlling for earlier state presence

Predictors	Dependent variable: dummy if cell contains a state sede in year					
	Pooled	1889	1900	1908	1917	1930
Dummy if state sede 1889/1900/1908/1917/1930			−4.3055	**12.5081***	3.6347	−1.6665
			(6.4200)	(5.2867)	(5.5046)	(4.1378)
Ln TCV 1889/1900/1908/1917			**−0.4996***	0.0979	**−0.7029***	−0.1437
			(0.1775)	(0.2452)	(0.2643)	(0.1893)
Interaction binary sedes-TCV			0.6038	**−0.8205**˙	−0.0547	0.4400
			(0.5589)	(0.4610)	(0.5302)	(0.4032)
HYDE pop. density 1930	**0.1735***	0.0460	**0.1061***	0.0709	**0.1916***	**0.0922***
	(0.0500)	(0.0693)	(0.0312)	(0.0445)	(0.0376)	(0.0448)
Soil fertility	0.0445	0.0038	−0.0140	0.1395	−0.0537	−0.0042
	(0.0748)	(0.1867)	(0.0954)	(0.1102)	(0.0902)	(0.0931)
Dummy if coast 50km	**1.1027***	**2.3122***	−0.4805	**1.1879***	−0.2400	0.6033
	(0.4920)	(0.6471)	(0.5511)	(0.4379)	(0.7044)	(0.5158)
Dummy if border 50km	−0.2115	−0.7949	0.4718	−0.1231	**−0.8631***	−0.2009
	(0.2919)	(0.7604)	(0.4610)	(0.4938)	(0.3604)	(0.2872)
Dummy if railway 50km (1900/1908/1917/1930)	**0.5371***		**1.7889***	−1.3596	−0.4732	−0.1374
	(0.2495)		(0.6603)	(1.0935)	(0.3739)	(0.3296)
Dummy if navigable river 50km	0.2982	**0.8841**˙	**0.7226**˙	0.5197	−0.6337	−0.0782
	(0.2644)	(0.4662)	(0.4217)	(0.5454)	(0.3879)	(0.2220)
Dummy if water body 50km	**0.5938**˙	0.8011	**0.9796***	0.1688	**1.0980***	0.4615
	(0.3125)	(0.5530)	(0.4224)	(0.2541)	(0.3593)	(0.4405)
Dummy if explorer route 50km	−0.2018	**1.5074***	0.0165	−0.4469	−0.5880	0.1086
	(0.3219)	(0.7563)	(0.5375)	(0.5077)	(0.5000)	(0.4405)
Malaria prevalence	8.1068	11.4776	**−53.4790***	−23.3192	**45.6795***	26.8601
	(13.2464)	(19.5276)	(20.4970)	(25.9150)	(17.4508)	(17.5970)
Ln (trade of enslaved/ethnic group area)	0.0297	−0.3994	**1.0662***	0.6229	**−0.9489***	−0.3953
	(0.3303)	(0.4809)	(0.2794)	(0.4846)	(0.3387)	(0.4089)
Cell area	0.0000	−0.0000	0.0000	−0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Num. obs.	360	360	360	360	360	360
Macro-region FE. Num. groups	3	3	3	3	3	3
Deviance	414.3008	130.3472	202.8650	294.2451	234.6213	322.1007
Log Likelihood	−207.1504	−65.1736	−101.4325	−147.1225	−117.3106	−161.0504
Pseudo R^2	0.1160	0.1234	0.2670	0.2542	0.4277	0.2776

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; $^{cdot}p < 0.1$. I run Logit regressions in which the dependent variable is a binary variable indicating whether a cell contained a state sede in a particular year or not. The regression shown in the first column analyses locational determinants for state sedes during the whole period of 1889-1930. The second column shown analyses locational determinants for state sedes in the first year of the dataset. Subsequent regressions analyse the locational determinants of the spread of state sedes in regular intervals, controlling for presence in the earlier benchmark. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the macro-region level.

Table 2.4: State expansion in Mozambique 1889-1930. Logit regressions, dropping cells with earlier state presence

Predictors	Dependent variable: dummy if cell contains a state sede in year					
	Pooled	1889	1900	1908	1917	1930
Ln TCV 1889/1900/1908/1917			−0.4649*	0.1690	−0.7324*	0.0310
			(0.1844)	(0.2267)	(0.3005)	(0.2140)
HYDE pop. density 1930	**0.1735***	0.0460	**0.1211***	**0.0827**	**0.2035**	**0.1483**
	(0.0500)	(0.0693)	(0.0320)	(0.0442)	(0.0631)	(0.0556)
Soil fertility	0.0445	0.0038	−0.0123	0.0941	0.0706	0.0103
	(0.0748)	(0.1867)	(0.1128)	(0.1116)	(0.1397)	(0.1060)
Dummy if coast 50km	**1.1027***	**2.3122***	−0.1023	**1.0560***	0.1920	0.7322
	(0.4920)	(0.6471)	(0.6142)	(0.4723)	(0.8426)	(0.8037)
Dummy if border 50km	−0.2115	−0.7949	0.5198	−0.0672	−0.6438	−0.0760
	(0.2919)	(0.7604)	(0.4998)	(0.5663)	(0.7014)	(0.4020)
Dummy if railway 50km (1900/1908/1917/1930)	**0.5371***		**1.4643***	−1.0685	**−15.2247***	0.0498
	(0.2495)		(0.7316)	(1.3378)	(0.5295)	(0.5570)
Dummy if navigable river 50km	0.2982	**0.8841**	**0.8450**	**1.0131***	0.1702	−0.3759
	(0.2644)	(0.4662)	(0.4793)	(0.4836)	(0.6472)	(0.3476)
Dummy if water body 50km	**0.5938**	0.8011	**0.8251**	0.2700	0.6511	−0.3060
	(0.3125)	(0.5530)	(0.4471)	(0.3189)	(0.5108)	(0.6109)
Dummy if explorer route 50km	−0.2018	**1.5074***	−0.5851	−0.3957	**−1.5363**	0.2029
	(0.3219)	(0.7563)	(0.7695)	(0.5296)	(0.9224)	(0.5591)
Malaria prevalence	8.1068	11.4776	**−55.9659***	−37.8250	35.1769	**36.2770**
	(13.2464)	(19.5276)	(26.5708)	(26.7330)	(21.9403)	(22.0461)
Ln (trade of enslaved/ethnic group area)	0.0297	−0.3994	**1.2290***	**0.9485***	−0.1559	−0.4365
	(0.3303)	(0.4809)	(0.3022)	(0.4096)	(0.6011)	(0.6487)
Cell area	0.0000	−0.0000	0.0000	−0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Num. obs.	360	360	336	301	211	233
Macro-region FE. Num. groups	3	3	3	3	2	3
Deviance	414.3008	130.3472	181.2890	251.0342	147.9542	211.8479
Log Likelihood	−207.1504	−65.1736	−90.6445	−125.5171	−73.9771	−105.9239
Pseudo R²	0.1160	0.1234	0.1456	0.0350	0.1246	−0.0357

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; $^{cdot}p < 0.1$. I run Logit regressions in which the dependent variable is a binary variable indicating whether a cell contained a state sede in a particular year or not. The regression shown in the first column analyses locational determinants for state sedes during the whole period of 1889-1930. The second column shown analyses locational determinants for state sedes in the first year of the dataset. Subsequent regressions analyse the locational determinants of the spread of state sedes in regular intervals, dropping cells which had state presence in the previous benchmark year. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the macro-region level.

2.7. Conclusions

This chapter traces the expansion of state administrative resources in Mozambique between 1889 and 1930, and analyses the factors behind their sub-national allocation. In doing so, it contributes to our understanding of the earliest stages of state building. The colonial state in Mozambique expanded progressively from coastal hubs into the interior, transitioning from military posts to civil administration once each region was sufficiently under colonial control. This transition was staggered across regions, taking place in the southern *distritos* first.

Unlike earlier works for similar contexts in colonial Africa, I find that the territorial control value of a region, or the goal of minimising territorial 'blank spots' far from state infrastructure, was not one of the priorities for the colonial state in Mozambique when allocating resources. Also, other control objectives, like areas close to international border, did not seem to guide investment of resources. In fact, a large portion of state administrative infrastructure was concentrated along the coast, even at the end of the period of study in 1930. This pattern of expansion is closer to the 'concentric circles' model described by Herbst (2014) than the hegemony-centered model proposed by Pierskalla et al. (2019). As shown in Figures 2.1-2.5 and in the econometric analysis, the settlement of the territory advanced progressively from the coast towards the interior.

There are different potential explanations for this. One of them is the long shape of Mozambique and the historical concentration of population along the coast. The state may not have needed to venture far from the coast to control much of the colonised population, one of the greatest assets for imperial powers. However, regressions showing the negative effects of TCV, and the positive effects of proximity to the coast, control for population density. Alternatively, then, the relative lack of resources of the Portuguese colonial state may have made it unfeasible to pursue a more comprehensive coverage of the territory in the first stages of state building. Portuguese geopolitical insecurities may have warranted a prioritisation of territorial control, settling the farthest locations with the highest control value first. However, this may have been unfeasible in the short term due to metropolitan lack

of resources and military capacity. Alexopoulou (2018, Chapter 4) shows that in Angola and Mozambique permanent colonial armed forces, and public spending on military forces per capita, were larger than in British Africa, precisely because they could not rely on the economies of scale, imperial cross-subsidies, and credible deterrence available to the British.[57] Herbst (2014) reflects on Mozambique's "strikingly difficult political geography", caused in great part by its vertical length and elongated shape. This may have interacted with low military capacity to play a role in early expansion, if it meant isolated military outposts in the farthest locations could be easily cut off from the rest of the state infrastructure.

Overall, then, this chapter suggests the importance of taking into account the geopolitical and financial circumstances of each state when analysing the spatial allocation of resources during the early stages of state building, tempering important arguments like that by Pierskalla et al. (2019) on the primacy of hegemony. Given the challenges faced by low income states like Mozambique to extend their authority and ensure stability throughout their territories, more research is warranted to better understand the earliest phases of state building, how the different models of state projection of power translate to different contexts, and how both of these aspects may influence the heterogeneity of state capacity within states around the world.

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[57] Alexopoulou (2018, Chapter 4, Table 4.3) also shows that in 1910 and 1930 there were less soldiers per 1000 inhabitants in Mozambique (though not in Angola) than in the Belgian Congo and roughly on par with French West Africa.

Appendix

A. Spatial correlograms

Figure A.2.1: Spatial correlogram of residuals from Table 2.3
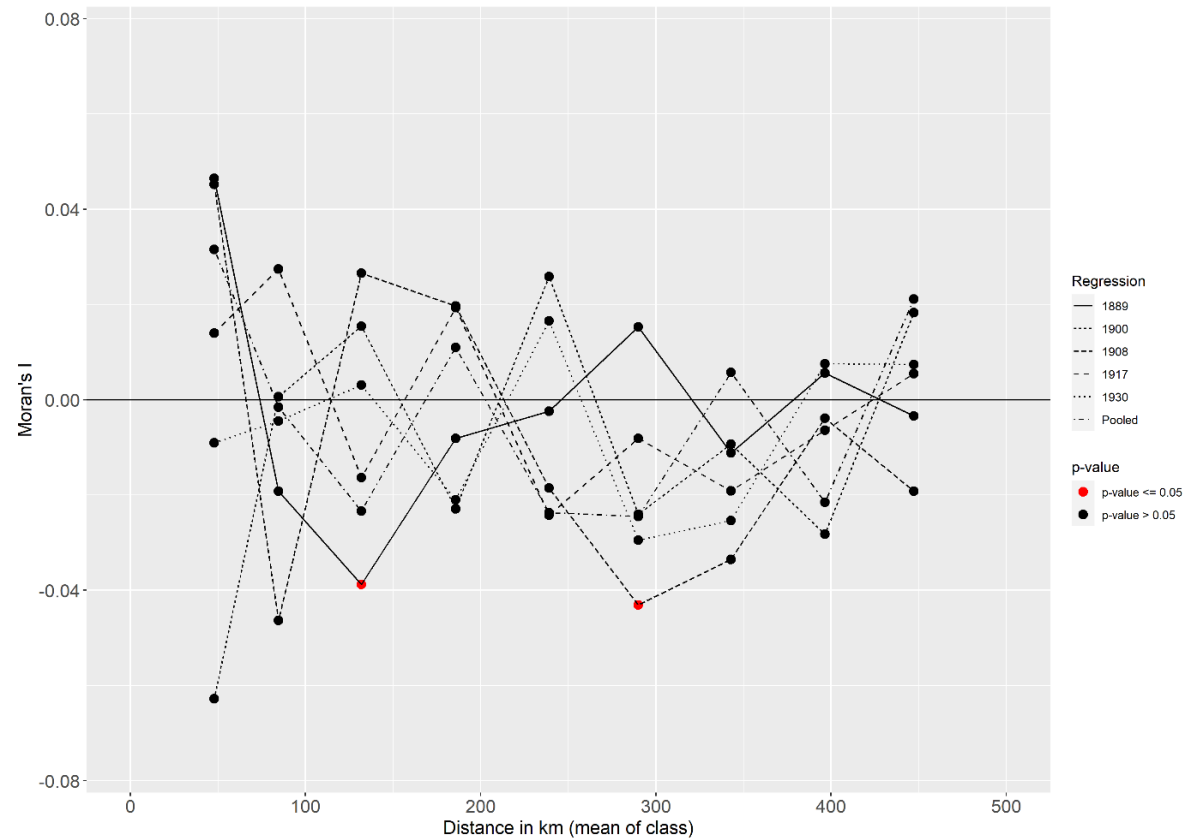
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 2.3, at 52.5 km distance bands (cells are 50 x 50 km), to determine the threshold for the application of Conley (1999) standard errors. Across regressions, Moran's I is mostly not significant. Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Chapter 3. Withdrawal of the state: the provision of primary schooling in Mozambique under the *indigenato*

3.1. Introduction

After the Second World War, there was a generalised move among colonial states in Africa towards greater intervention in the provision of schooling. The Portuguese colonial state, by contrast, withdrew from the direct running of schools for the African population and granted an almost exclusive monopoly to the Catholic missions, transferring the previously state-run schools to them. This chapter examines why, looking at the case of Mozambique in the context of the racial discrimination regime known as the *indigenato*, which shaped educational policies in the Portuguese colonies. I present evidence supporting two potential, mutually non-exclusive reasons behind the shift.

On the one hand, the primary schooling of the African population may have been made a monopoly of the Catholic missions in order to expand the school network while keeping expenditure of the colonial government low. To test this hypothesis, I construct measures of state expenditure per child enrolled in schools run by the state and in schools run by the Catholic missions, and find that funding Catholic missions could have been a more efficient route for the state to expand the network of primary schools for the African population than directly running the schools itself.

On the other hand, the goal of the shift may also have been to counteract perceived threats to state hegemony and security by using Catholic missions and mission schools. To test this explanation, I make a qualitative analysis of the colonial discourse, and I build a new geo-referenced dataset of the expansion of Catholic missions in Mozambique between 1922–1971. In the quantitative analysis I find that, after controlling for an array of variables that have been found to influence

mission location in Africa (Jedwab et al., 2022), the location of Protestant missions was an important factor in explaining the location decisions of Catholic missions. Thus, the eventual transfer of state-run schools could have been another step in a previous, ongoing process of counteracting Protestant mission influence through Catholic missions.

By explaining the shift in the provision of schooling in colonial Mozambique, I make several contributions. Firstly, much of the literature analysing the evolution of primary schooling in colonial and post-colonial Africa focuses on differences in educational outcomes between territories historically under British and French domination, attributing these differences to opposing colonial models and education policies by the two European powers (Brown, 2000; Cogneau & Moradi 2014; Dupraz 2019; Garnier & Schafer 2006). This chapter does not measure the effects of different metropolitan blueprints on educational outcomes. Rather, it contributes to the literature by helping us understand the conformation of one such blueprint, the Portuguese one, and its uniqueness within the broader setting of European colonialism in Africa.

Secondly, the macro focus taken by many quantitative studies of colonial systems of education in Africa, focusing on the role of metropolitan blueprints and educational outcomes at the colony level, risks overlooking important cleavages in said systems. The discriminatory nature of colonial regimes resulted in great disparities in the access to education of different population groups. Consequently, if we are to capture the main features of education systems under such regimes we must look at historical variation across regions, gender and racial classifications. A growing literature looks at the historical dynamics of schooling in colonial Africa across gender lines (eg. Baten et al., 2021; De Haas & Frankema 2018; Meier zu Selhausen & Weisdorf, 2016), including studies of long-term effects of missionary presence on gender gaps today (Montgomery, 2017; Nunn 2014). Chapter 4 contributes to this literature. In this chapter, I highlight a different cleavage in schooling systems: the agents providing education to the different population groups in colonial society. Under the Mozambican *indigenato*, being classified under a particular racial category determined not only levels of investment and the quality of education

received, but even the agents responsible for the provision of education. While the African children, the focus of the present chapter, received low quality primary education known as *ensino primario rudimentar* at Catholic missionary schools, the white children attended mostly state-run schools providing higher quality education. Although the literature has described the differing attitudes towards missions of the British and the French and how this influenced educational expansion (see, for example, Cogneau & Moradi, 2014; Frankema, 2012), there has been little focus on how the providers of education varied with the target population group.

Relatedly, there is a consensus in the literature that European colonial powers in Africa took a greater role in education after the Second World War, with the importance of religious missions diminishing. This process of secularisation is mentioned in works such as the extensive survey of missions and education in colonial Africa by Meier zu Selhausen (2019). However, to the best of my knowledge, there has been no specific treatment explaining the reasons for it from a quantitative perspective, comparing trajectories across different African colonies, or analysing the consequences of the choice of schooling provider.[58] This is in spite of a veritable explosion of studies focusing on the long-term effects of historical Christian missions around the world (see the appendix in Jedwab et al. 2022, for an overview of this literature), many of which have focused on Africa, and which have emphasised education as one of the modern development outcomes influenced by missions. No study has compared the colonial performance of state-run schools to that of missionary schools, or their long-term effects on modern educational outcomes, but the choice of provider of schooling can potentially influence educational outcomes, especially through its interaction with local demand.[59] A first step towards understanding these dynamics is to analyse the reasons behind the choice of provider. I thus contribute to the literature by explaining the Portuguese case, which runs counter to the rest of African colonial experience.

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[58] Windel (2009) discusses the rationale behind a greater involvement of the British colonial state in pursuing programs of "adapted education" during the interwar period, but does not discuss in detail any changes in the agents ultimately responsible for the running of schools.
[59] Chapter 4 shows that the characteristics of the provider, in interaction with local demand factors, can influence the evolution of educational outcomes.

In the process of explaining the shift in policy, I contribute to the literature that studies the role of missionaries in the development of education systems in colonial Africa (see Meier zu Selhausen, 2019, for a survey), the literature on the interaction and competition between Protestant and Catholic missionaries (Gallego & Woodberry, 2010; Woodberry, 2004), and the recent literature on the determinants of missionary expansion and their locational decisions in Africa (Jedwab et al., 2022). Additionally, I make a contribution by testing an idea present in the literature that analyses Portuguese colonial and imperial thought; namely, that foreign Protestant missions were seen as a danger to Portuguese interests, and Catholic missions considered a tool to counteract said danger (Dores, 2019). Finally, this chapter bridges two vast bodies of literature: that on state building and state capacity, particularly in colonial settings, and that on historical educational development. What were the state imperatives (Young, 1994) driving educational policy in colonial Portuguese Africa? Did the revenue imperative lead the colonial state to outsource the expansion of the school network to Catholic missions? Was it the hegemony and security imperatives, and purported threats like the influence of Protestant missions, that made Catholic missions the best option for the provision of schooling to the African population?

The remainder of the chapter is structured as follows: section two gives an overview of metropolitan educational blueprints in Africa, and shows the shift in providers of schooling for the African population between 1930 and 1962 in Mozambique. Section three describes the characteristics of education under the regime of *indigenato*. Section four examines the hypothesis that the shift responded to financial reasons, while section five considers the hypothesis that ideological reasons were also behind the change. Section six concludes.

3.2. Models of primary education in colonial Africa

3.2.1. Taxonomy of state involvement

Even though educational policies varied greatly across African territories under the same coloniser, we can broadly categorise European powers depending on the degree of state involvement in the regulation of the educational system (issues such as curricula design and teacher hiring), the funding of schools, and their day-to-day running. Metropolitan attitudes towards missions greatly influenced positions across these categories.

The British model of primary schooling was designed to outsource its costs, allowing for the free establishment of missions in its colonies, which became the main providers of schooling (Meier zu Selhausen, 2019, p. 31). Indeed, Frankema (2012) points out the link between the environment created by the British for missionary work, open to denominational competition, and a higher supply of missionary schooling.[60] Characterised by the literature as a decentralised, *laissez-faire* model, state involvement in regulation was comparatively low too, as missions had freedom in the running of the schools, the hiring of teachers and curricula design, including issues of religion teaching (Cogneau & Moradi, 2014, p. 695; Frankema 2012; Garnier and Schafer 2006; Juif 2019). Brown (2000) characterises the British approach to primary education as "adaptionist" and flexible, tailored to the local realities and needs, with literacy efforts conducted in the vernacular languages, the objective being the dissemination of basic skills to a wide population. The financial burden was borne largely by Africans: the British retained some influence through the allocation of grants-in-aid to schools that followed government standards, but these subsidies were financed through taxes on Africans, while fees, labour, and resources from African congregations shouldered the majority of the building and financing of mission schools (Williamson, 1952, and Summers 2016, p. 322, cited in Meier zu Selhausen, 2019, p. 31).[61]

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[60] Gallego & Woodberry (2010) make a similar argument but, as Frankema (2012) argues, they place too much emphasis on the supply side, and do not take into account factors such as the prevalence of Islam for the level of African demand for formal Western and or Christian education.

[61] We must differentiate efficiency from total spending. For example, at the same time that it followed a "cost effective policy of mission schools subsidisation", the British Government in the Gold Coast

By contrast, state involvement was higher in the French model. The attitude towards missions was much more hostile than the British, and the activities of mission schools were limited by the 1905 Law on the Separation between the State and the Churches (Cogneau & Moradi, 2014, p. 695). Consequently, schools were mainly run by the state through a highly centralised system with regulated curricula, teacher assignment procedures and reduced autonomy granted to local communities and schools (Cogneau & Moradi 2014; Frankema 2012; Garnier & Schafer 2006; Juif 2019). Contrary to the British model, the French approach was designed to train and assimilate into French culture a narrower segment of the population (Brown, 2000; Cogneau & Moradi, 2014, p. 695). As part of this assimilationist goal, primary education was only delivered in French (White, 1996); this limited the number of qualified teachers, restricting the number of classes and increasing the costs of education (Berg, 1965, cited in Brown, 2000). The costs of these public schools were financed by the colonial government, which subsidised only small numbers of Catholic mission schools (Meier zu Selhausen, 2019, p. 31).

The case of Belgian Africa draws a middle ground between the British and French models. The Belgian colonial administration was interested in spreading elementary schooling, and thus followed an open-door policy which led to a large number of both Catholic and Protestant mission schools set up, but only Catholic mission schools were subsidised (Meier zu Selhausen, 2019, p. 32). In the Belgian Congo, the state was heavily involved, even controlling teaching content, but cooperated with Christian missions which in practice organised and provided education (Juif, 2019). There was a third major actor involved in the Belgian Congo: industry. The Union Minière du Haut Katanga mining company and other concessionary companies introduced paternalistic policies of "stabilisation", which included high investments in primary schooling.

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and British Trans-Volta Togoland had greater expenditure per primary school child than the government in French Togo (Cogneau and Moradi, 2014, p. 725 and Table 1). Such cases of a more efficient policy, with a greater per capita expenditure at the same time, may be explained by quality outcomes: student to teacher ratio in the Gold Coast and British Trans-Volta Togoland was lower than in French Togo (Cogneau and Moradi, 2014, p. 701). See Cogneau and Moradi (2014, p. 702).

Despite the differences in the blueprints described above, after the Second World War European powers would start converging on one aspect: the secularisation of education.[62] The supply of public state schools expanded and replaced mission schools, which lost their monopoly (Cogneau & Moradi, 2014, p. 724; Jedwab et al., 2022, p. 28 of online version; Meier zu Selhausen, 2019, pp. 28, 39, 40). This process of replacement would have been more pronounced in British Africa (Meier zu Selhausen, 2019, p. 37), given the greater role of missions beforehand, but colonial governments in French Africa also became more developmental and increased their spending on education, hoping to preserve their imperial dominance (Cogneau et al., 2021, pp. 475-476). Cogneau et al. (2018, p. 17 and Figure 7) find that, in both British and French colonies in West Africa, there was a "great increase in expenditure per head in the late colonial period", and the share of education in net civilian public expenditure increased for both colonisers in the area. Similarly, in the Belgian Congo the alliance between the Catholic church and the state began to fall apart in the 1950s (Juif, 2019), and the government took entire control of education and increased investment, extending subsidies to include Protestant mission schools (Meier zu Selhausen, 2019, pp. 32, 38, citing Frankema, 2013, and Juif, 2019).

3.2.2. Bucking the trend in colonial Africa

Like the Belgian, the Portuguese colonial model of education was a hybrid of state and mission participation in which curricula were regulated by the colonial state, but both the government and Christian missions ran schools. As described in detail in the next section, institutionalised racism in Portuguese Africa defined a dual system which separated the so-called *civilizados*, essentially the white settler population, from the so-called *indígenas*, essentially the African black population. This system received the name of *indigenato* in Mozambique, and it structured all public life in the colony, including education. Not only was investment and the

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[62] Of course, this does not preclude the existence of exceptions for individual colonies. However, as pointed out in the Introduction, I am not aware of other studies analysing specifically the transition in educational model, or lack thereof. Adding further case studies to the present one, on colonies beyond Portuguese Africa, would open up the scope for interesting comparisons on the reasons behind the choice of education provider in colonial Africa.

quality of education different for both groups, but also the agent in charge of the running of schools changed. Schools providing *ensino elementar e complementar* for the white population were primarily a state endeavour, and the majority of schools throughout the period 1930–1962 were run by the state (see Table 3.1). On the other hand, schools providing the *ensino primario rudimentar* targeted at the African population were an almost exclusive domain of the Catholic church towards the end of the colonial period (Table 3.2).

However, this had not always been the case. During the 1930s, Catholic missions were the most important provider of *ensino primario rudimentar*, but enrolment for the African children was divided more equally between schools run by the state, Catholic missions, and Protestant missions. Table 3.2 shows total enrolment numbers for the whole of Mozambique, collected from the colonial statistical yearbooks. In 1930, Catholic mission schools represented 49% of total enrolment of black children in rudimentary schooling, but Protestant mission schools enrolled 24%, and the colonial state provided schooling to 27% of black children. By 1941, despite higher absolute enrolment numbers, the relative importance of state-run schools had declined to 15.3%, while enrolment in Catholic mission schools had grown to represent 78%. The real turning point, however, came in 1942, when absolute enrolment numbers in state schools dropped by 75%. The relative importance of state provision thus decreased to 3.4%. The drop in enrolment in state-run schools between 1941 and 1942 coincided with a jump in enrolment in Catholic mission schools, which by 1942 represented 91.2% of total enrolment. The trend continued in the following decades: by 1955 the relative importance of the state was negligible and in 1962 it only provided rudimentary schooling to 266 children in the district of Tete. On the other hand, the period after 1945 saw great increases in absolute enrolment numbers in Catholic mission schools, even if at a lower relative pace.

Table 3.1. Enrolment numbers for white children in elementary schooling, 1930-1962

Year	Total enrolment	State Enrolment	State % total	Portuguese Catholic Enrolment	Portuguese Catholic % total	Protestant missions Enrolment	Protestant missions % total	Particular Enrolment	Particular % total
1930	1,568	1,107	70.6	257	16.4	1	0.1	203	12.9
1935	2,252	1,711	76.0	266	11.8		-	275	12.2
1941	2,879	2,022	70.2	372	12.9		-	485	16.8
1942	2,809	2,245	79.9	332	11.8		-	232	8.3
1945	2,761	2,078	75.3	359	13.0		-	324	11.7
1950	3,358	2,738	81.5	377	11.2		-	243	7.2
1955	6,163	5,012	81.3	816	13.2		-	335	5.4
1960	9,339	7,671	82.1	1,167	12.5	1	0.0	500	5.4
1962	11,086	9,544	86.1	823	7.4		-	719	6.5

The header spans: *Enrolment of white children (male and female) in ensino primario elementar e complementar*

Source: Based on data from *Anuários Estatísticos da Colónia de Moçambique* (yearbooks), 1930–1962

Table 3.2: Enrolment numbers for black children in rudimentary schooling, 1930-1962

Year	Total enrolment	Enrolment	% total	Enrolment	% total	Enrolment	% total	Enrolment	% total
		State		Portuguese Catholic		Protestant missions		*Particular*	
		Enrolment of black children (male and female) in ensino primario rudimentar							
1930	32,080	8,674	27.0	15,693	48.9	7,713	24.0	-	-
1935	46,060	10,554	22.9	28,527	61.9	6,760	14.7	219	0.5
1941	80,489	12,346	15.3	62,766	78.0	4,834	6.0	543	0.7
1942	90,058	3,081	3.4	82,296	91.4	4,681	5.2	-	-
1945	107,612	3,231	3.0	98,177	91.2	6,204	5.8	-	-
1950	153,068	3,569	2.3	141,662	92.5	7,635	5.0	202	0.1
1955	240,813	1,158	0.5	232,923	96.7	6,478	2.7	254	0.1
1960	386,032	315	0.1	379,060	98.2	6,420	1.7	237	0.1
1962	360,628	266	0.1	353,445	98.0	6,775	1.9	142	0.0

Source: Based on data from *Anuários Estatísticos da Colónia de Moçambique* (yearbooks), 1930–1962

Indeed, enrolment rates in rudimentary primary education for the black population grew significantly, from approximately 3% for all providers in 1930 to 24% in 1960 for Catholic mission schools, which by then represented 98% of total enrolment.[63] This of course says nothing of the quality of education, and enrolment numbers for Mozambique in 1960 were not high even when compared with other African colonies in 1950 (see Figure I in Frankema, 2012). Nevertheless, the growth in enrolment rates was significant, and it represents the construction of a system and network of schools primarily by the Catholic missions.

The proximate explanation for the changes in the relative importance of providers is easy to find. As Cross points out, the *Acordo Missionario* annexed to the 1940 *Concordata* and the 1941 *Estatuto Missionário* "guaranteed a hegemonic and almost monopolistic position to the Catholic missionaries in matters concerning African education", leading to the decline of state involvement in rudimentary schooling and the increase in the importance of mission schools (Cross, p. 560). In fact, article 66 of *Estatuto Missionário* expressly stated that schooling targeted at the *indígena* population would be entirely provided by the Catholic missions, and that the state would remain in charge of this type of schooling only in areas where missions were not yet established or were not in a position to carry out this function, and only until the moment when missions could take over. This same article determined that colonial governors would agree with ecclesiastical authorities the transfer of schools from the state to the missions.

Thus, in execution of article 66 of *Estatuto Missionário,* schools previously run by the state were transferred to the different Catholic dioceses in Mozambique. The first

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[63] Enrolment data comes from the *Anuários Estatísticos da Colónia de Moçambique* (yearbooks). The 1930 census for the black population determined a population of 3.960.261 people. To calculate enrolment rates for 1930, I estimate the school age population as 25% of the total population, following Frankema (2012) and Benavot & Riddle (1988) (this represents an estimate of the 5-14 age bracket, commonly used in the literature for primary education). For 1960, I collect population data for the 5-14 age group directly from the different volumes of the 1960 colonial census (*III Recenseamento Geral da População na Província de Moçambique*). In 1960, the same calculation but using the age bracket of 7-12, indicated in the legislation regulating *ensino rudimentar* (see section three of this chapter), yields an enrolment rate of 40%. Incidentally, the 1960 census counted 6.455.614 people classified as black under the *indigenato*. This huge growth in population between 1930 and 1960 is indicative of the unreliability of earlier censuses, and it means that my calculations probably underestimate the increase in enrolment numbers during the period.

transfer of schools took place as a result of legislation passed in 1941, *Portaria* nº 4,469 of 13th August, and it brought about the turning point in enrolment observed in Table 3.2 for state rudimentary schools. The said *portaria* transferred all state-run rudimentary schools in *Provincia do Sul do Save,* which included the *distritos* of Lourenço Marques and Inhambane (see Figure 3.1 for the administrative division of the colony).[64] It also transferred some of the schools in the *distritos* of Quelimane, Tete, and Moçambique. The *distrito* of Cabo Delgado was not part of this first transfer. This is reflected in Figures 3.2 and 3.3, which zoom into the period between 1935 and 1942. We can observe the drop to zero enrolment in state-run rudimentary schools between 1941 and 1942 in Lourenço Marques and Inhambane, and the corresponding increases in enrolment in schools run by the Catholic missions in those *distritos*. The changes observed for Quelimane, Tete, and Moçambique in the same period are consistent with the partial transfer authorised in *Portaria nº* 4,469, while the trends for Cabo Delgado are consistent with the lack of transfer of schools between 1941 and 1942. Similar transfers would continue to take place through equivalent pieces of legislation in the next decades.

The proximate mechanism being clear, the question therefore becomes:

> Research Question: Why did the Portuguese colonial government rely on missions for the provision of schooling for African children at a time when the rest of European powers were moving towards greater state intervention in African education?

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[64]Although the borders of administrative divisions and their nomenclature changed frequently through the years, especially at the lowest levels, categories were fairly constant from the 1930s onwards. Below the colony of Mozambique itself, the largest division was *provincias.* During the 1940s and 1950s, there were four *provincias*: Sul do Save, Manica e Sofala, Zambézia, and Niassa. At a lower level, each *provincia* was divided into *distritos,* and each *distrito* was divided into *concelhos* and *circunscrições.* Under the *Reforma Administrativa Ultramarina* of 1933, articles 7 and 8 determined that areas with large populations of *civilizados* (see section 3)*,* intense commercial or industrial activity and numerous buildings in good conditions were classified as *concelhos*, whereas *circunscrições* covered the areas inhabited by populations not completely adapted to Portuguese civilisation or culture. In essence, *circunscrições* were primarily rural areas, whereas *concelhos* governed the urban areas (Havik, 2018, p. 216). Figure 3.1 shows the administrative division of the colony in 1947, at the level of *distritos* as well as *concelhos* and *circunscrições*.

A cursory look at the tightening relationship between the *Estado Novo* and the Catholic Church in the years leading up to the shift may suggest a superficial answer to the question. We may think that the colonial state must have transferred schools to the Catholic missions simply because the metropole was a pro-Catholic dictatorship. However, a closer examination belies this conclusion.

Firstly, it is important to note that the alliance between the *Estado Novo* and the Catholic Church did not imply a complete subordination of the missions to the colonial government and its objectives. Cross (1987, p. 550) contended that "Catholic missionaries in Mozambique were almost totally 'domesticated' and controlled by the colonial state." However, more recent scholarship has argued that we should not see Catholic missions in Portuguese Africa solely as agents of the state, or take for granted their subservience. Dores (2019) points out that, even if we take the Portuguese Catholic Church as static and under the control of the *Estado Novo*, the Church was not solely composed of Portuguese nationals and did not only respond to Portuguese ecclesiastical authorities. Collaboration did not mean there were no critical positions taken towards missionary strategies, and the different elements that conform the Catholic Church, from the Holy See, to national churches, religious congregations, and *ad gentes* missions, all had their own interests and their own projects regarding missionary activity, which were not always in coordination.[65] Similarly, Morier-Genoud (2019, Chapter 1, endnote 18) contends that neither party became subservient to the other, but rather that it was a reciprocal alliance.

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[65] Regarding this last point, Dores (2019) points out that at several moments in time, Catholic missionaries were closer to the projects designed by their respective metropolitan government than to the ideas spoused by the Holy See. Indeed, he describes how the 1940 *Concordata* and, specifically, the autonomous *Acordo Missionário*, were the culmination of an evolving struggle for control over missionary action in Africa between successive Portuguese governments and Rome. In a similar vein, Dores (2019) argues that, though relatively small and easily silenced, the 1950s and 1960s saw growing criticism within Portuguese Catholicism of missionary activities because of their seemingly greater focus on consolidating state power than on spreading the Christian message.

Figure 3.1: Administrative division of the colony of Mozambique, 1947
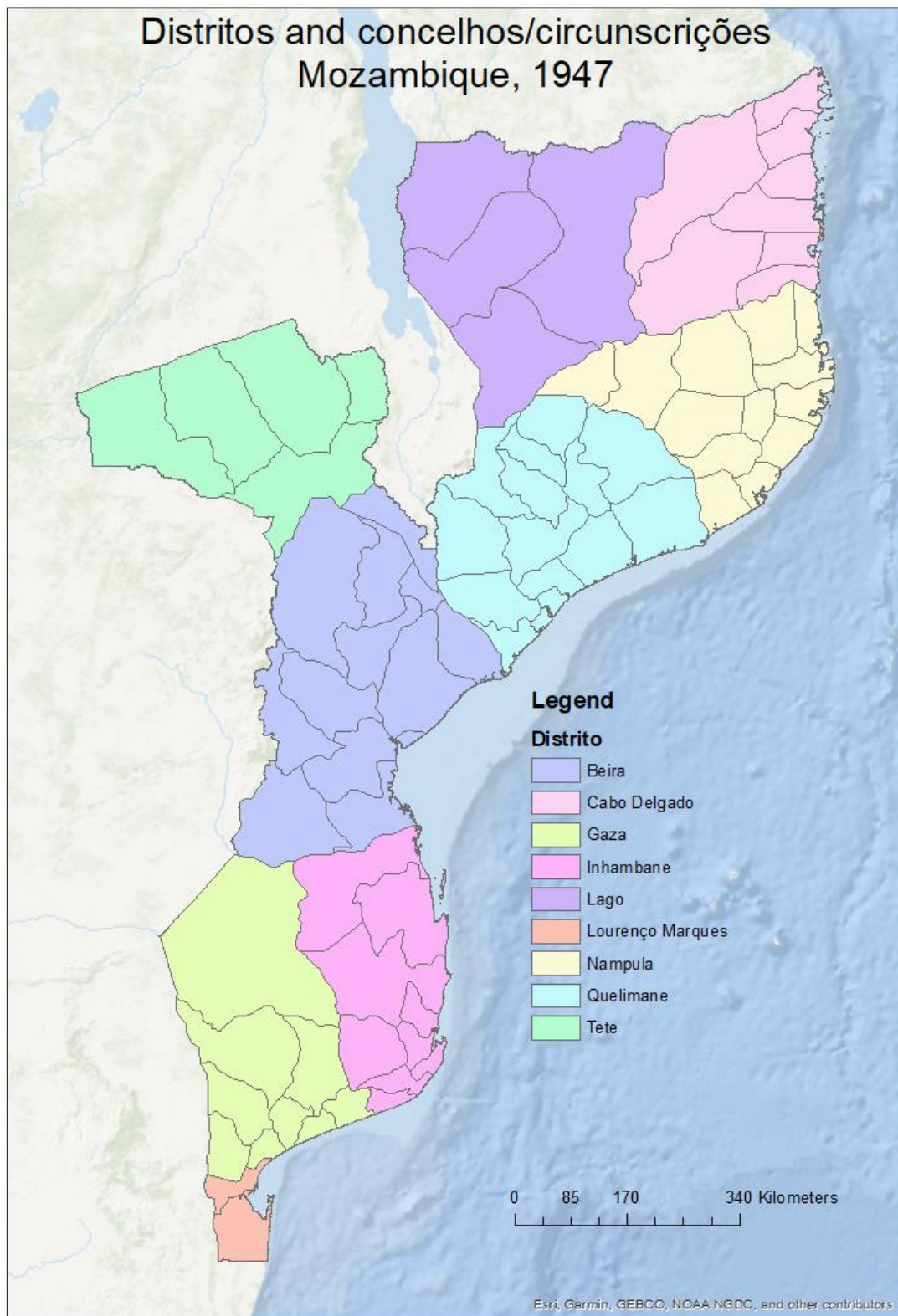
Source: Based on a 1945 map elaborated by *Repartição Técnica de Agrimensura* and the analysis of legislation changes.

Note: Division lines mark the limits of *concelhos* and *circunscrições*. Colour-coding is used to identify *distritos*.

Figure 3.2: Enrolment (all population groups) and total state expenditure on state-run rudimentary schools, 1935–1942
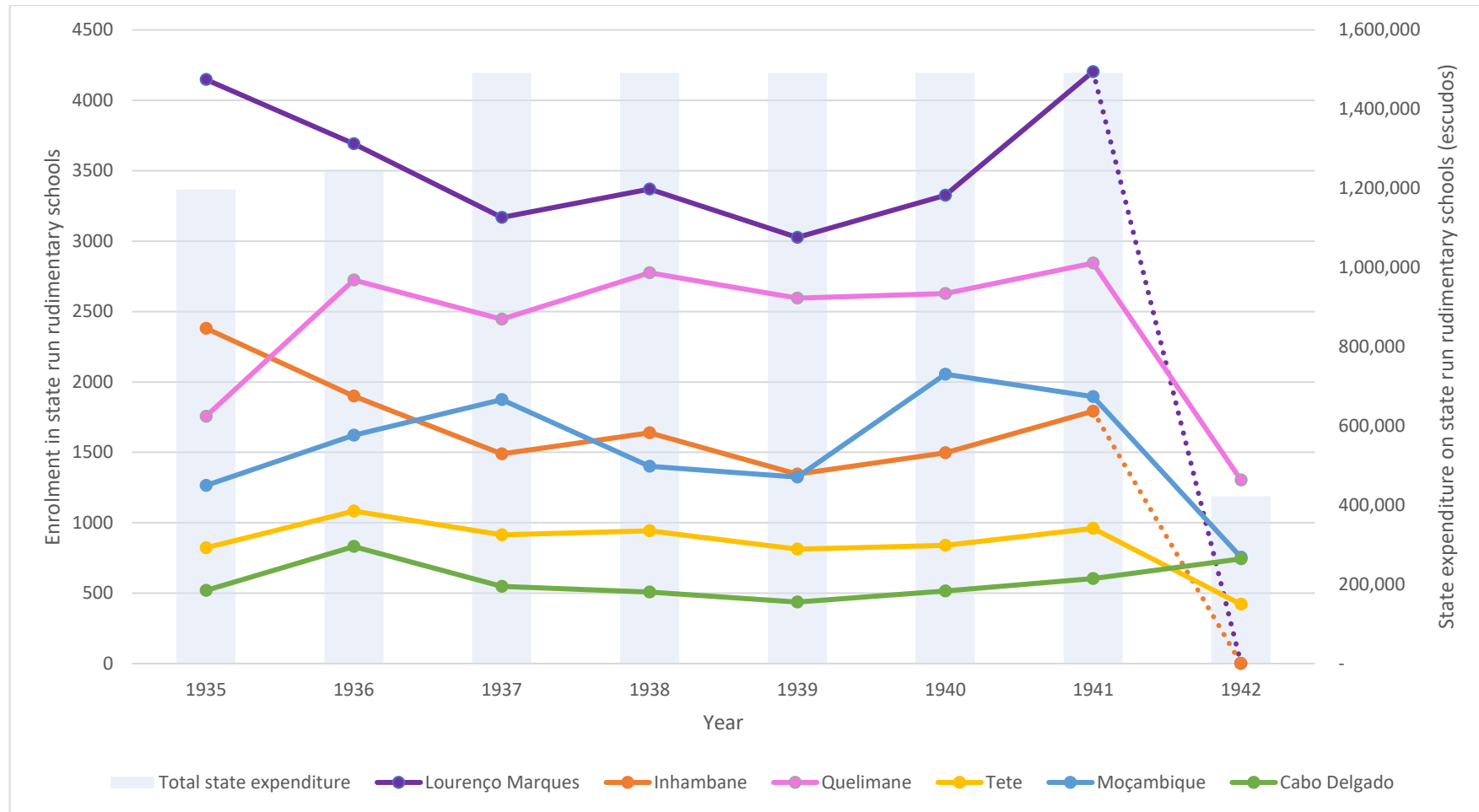
Source: Calculated using data from *Orçamentos Gerais* (general budgets) for Mozambique and *Anuários Estatísticos da Colónia de Moçambique* (yearbooks)

Figure 3.3: Enrolment (all population groups) in rudimentary schools run by the Catholic missions, and total state expenditure on Catholic missions, 1935–1942
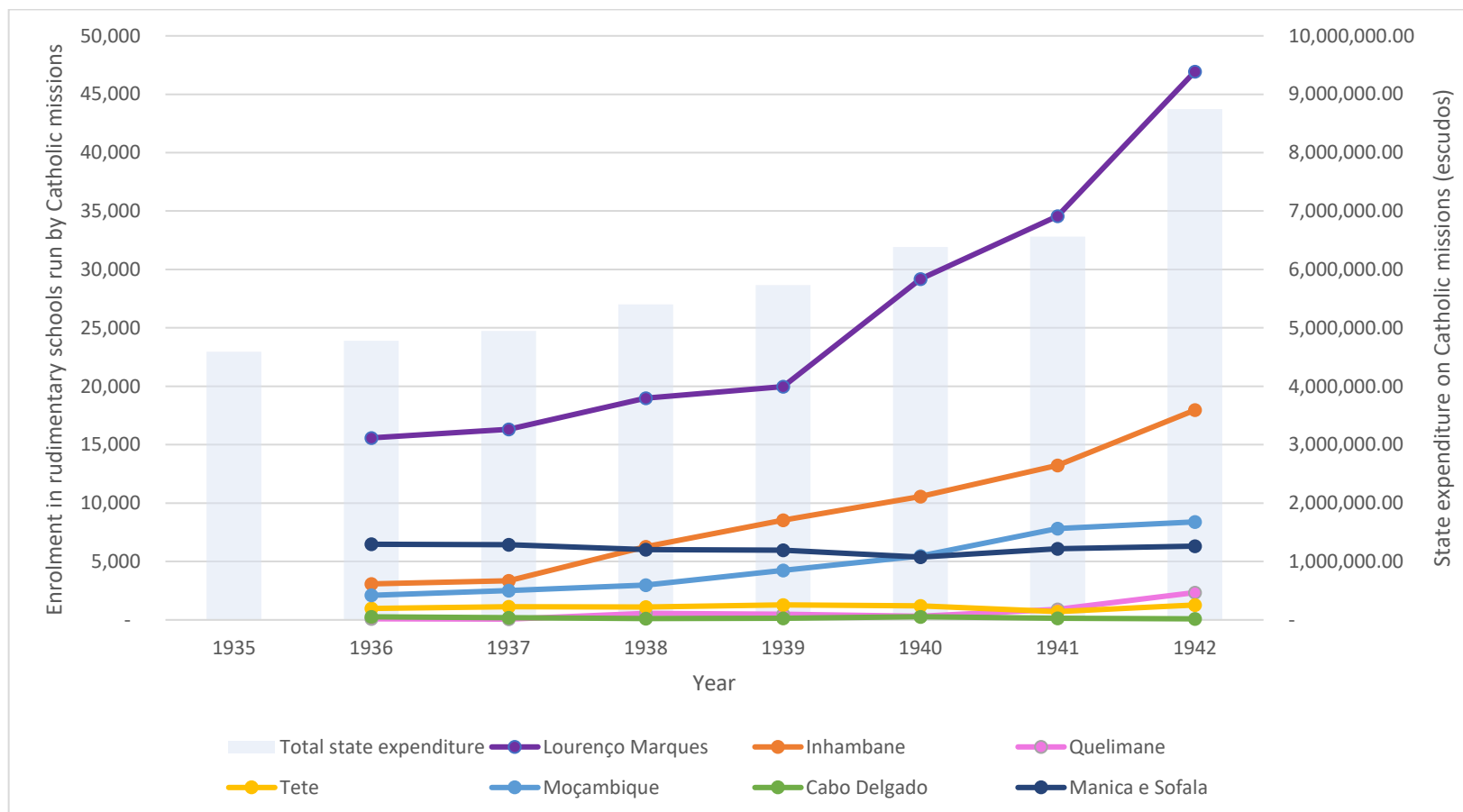
Source: Calculated using data from *Contas de gerência e de exercício* (accounts) for Mozambique and *Anuários Estatísticos da Colónia de Moçambique* (yearbooks)

Two additional points suggest the need to look for a more complex explanation. Primary education in the Portuguese mainland expanded under the *Estado Novo* (Palma & Reis 2021), but schooling there was not transferred to the Catholic Church. Similarly, Table 3.1 shows that in Mozambique the colonial state remained the main provider of primary schooling for the white population throughout the decades in which the *indigenato* was in place.[66] Conversely, the relative importance of the Catholic missions in this type of education declined from 16.4% of white children enrolled in 1930 to 7.4% in 1962.[67] Additionally, it is hard to imagine that the reliance on missions for the schooling of the African population was driven exclusively by the religious identity of the regime in Portugal or its non-democratic nature, given that the British and Belgian relied on missions to provide education in Africa for decades.[68]

Therefore, it is not obvious that the Portuguese colonial state, for the mere fact of the metropole being a pro-Catholic dictatorship, would use missions to provide rudimentary education to the African population. My goal is thus to understand the deeper causes leading the colonial state to withdraw from direct running of rudimentary education for the African population and to transfer its schools to the Catholic missions. This legislation was signed between representatives of the Portuguese *Estado Novo* and the Catholic Church, and it applied generally to all Portuguese colonies. I use the case of Mozambique, the most important Portuguese colony at the time together with Angola, to test two potential explanations for the reasons behind this shift. The first hypothesis focuses on financial efficiency reasons. The second one suggests that missionary education was seen as a tool to "nationalise" the African population and limit Protestant influence, and part therefore of the role of Catholic missions in the so-called Portuguese *civilising* task.

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[66] Indeed, we would expect Mozambique to mirror Portugal in this aspect, given that elementary education in the colonies was, purportedly, an extension of metropolitan education.

[67] Conversely, Catholic missions were charged with providing *ensino elementar* to the limited number of African children that surpassed the obstacles described in section three of this chapter, and moved upwards from rudimentary education.

[68] Even if they allowed for greater competition between Protestant and Catholic missions than the Portuguese.

3.3. Education under the *indigenato*

The analysis of these two hypotheses focuses on rudimentary education (*ensino rudimentar*), a type of very low-quality schooling which was the only educational experience for the vast majority of African children under Portuguese rule in Mozambique. This section gives an overview of the characteristics of said type of schooling, and how it was used to support colonial rule, through its deep embeddedness in the system of racial discrimination known as the *indigenato*.

Although it was adopted formally in 1928, the code of the *indigenato* systematised legislation passed as early as the 1899 Labour Law, and formal abolishment took place only in the early 1960s, when much of the legislation that provided the basis for it was modified or revoked (O'Laughlin, 2000). This system distinguished between *civilizados* or *não-indígenas* (the so-called civilised), who had the same rights as citizens of Portugal, and *indígenas* (natives), who did not (Jerónimo 2018; O'Laughlin, 2000). Different laws were applicable to each of these groups, as the *indigenato* permeated all aspects of life in colonial Mozambique, from administrative hierarchy and culture to the access of each group to services, and remained ingrained in colonial culture even after it was formally abolished (Havik, 2018, pp. 216, 218). The *indígenas* had to carry with them at all times a *caderneta indígena*, an identity card, and were subject to forced labour (known as *chibalo*) and movement control (Cross, 1987). These were part of a wider set of colonial laws which systematically subordinated *indígenas* by different means, from expropriating their land and levying hut taxes, to barring them from hiring labour, accessing credit, and setting up shops, or the low prices paid for their cash crops (Marshall, 1985). Similarly to other African colonies, the combination of these policies would have had the objective of creating a pool of cheap African labour for colonial capital. This objective was stated, for example, by the governor of Lourenço Marques in the early twentieth century, who argued that wage labour scarcity could be improved through the imposition of monetary taxes (Aguiar n.d., p. 75-76, cited in Alexopoulou, 2020).

An intermediate class, known as *assimilado*, was theoretically available to *indígenas* if they passed certain requirements, including literacy and paid employment. In theory, *assimilados* had all the rights and privileges of Portuguese citizens, and were granted benefits such as the right to purchase land and other property (Cross, 1987). However, very few Africans could fulfil the established requirements and, at the time when the *indigenato* was abolished, only 1 percent of the African population had been granted this condition (Marshall, 1985).[69] The Portuguese colonial policy of miscegenation was similarly ineffective.[70] People of 'mixed race', known as *mulatos* (or *mistos*), were supposed to play an important role in colonial life, and had access to better living conditions and education than *assimilados* (even if this did not entail racial equality *vis a vis* the white population), but they only represented 0.5% of the total population in 1960 (Cross, 1987).[71] The failure of these policies of assimilation and miscegenation is further reflected in the structure of the colonial economy: some of the *mulatos* and *assimilados*, as well as mission-educated Africans, held low-level skilled jobs, ranging from teachers to interpreters and overseers, but the great majority of skilled and semiskilled positions were held by Europeans (Cross, 1987).

Thus, discrimination against the African population permeated all aspects of public life in Mozambique. Educational policies were not an exception. During the 19th Century, the liberal government in Portugal (1834-1910) established a system of public schooling for both Europeans and Africans alike, but by 1868 settler protests forced a return to a system in which Africans were schooled in a small number of mission schools: in 1910 there were only 54 such primary schools, in which 1,195 African and *mulato* children were enrolled (Marshall, 1985, p. 158). In later years, within the *indigenato* a dual educational system was developed by the colonial state,

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[69] Marcum (2017, p. 111) recounts the experience of Joao Jamisse Nhambiu, a Methodist catechist with the condition of *assimilado*, who was taken from the audience of a municipal orchestral performance to jail because he could not produce his *caderneta indígena.* Being an *assimilado*, having a *caderneta* was in theory not required of him. The event is illustrative of how the *indigenato* pervaded all aspects of life, and of how uncommon it was for Africans to attain the condition of *assimilado.*

[70] This policy had its roots in the ideology of Lusotropicalism*.* Developed by Brazilian sociologist Gilberto Freyre, Lusotropicalism suggested "that the Portuguese had a singular understanding of, and capacity for, tropical life, people, and societies" (Morier-Genoud, 2019, p. 30).

[71] Cross (1987) uses the term *mulato*, but the primary sources I have used in this dissertation mostly use the term *misto*. Thus, I use the term *misto* when referring to colonial statistics.

"one part of which was to reproduce the rulers and the other to reproduce the ruled" (Marshall, 1985, p. 158).

The duality of the system manifested itself in every aspect of schooling, from the type and quality of education received, to the agent running the schools, and the level of investment. In Mozambique, expenditure on health and education represented 10% of the colonial budget in 1920, and fell to only 5% in 1960 (Alexopoulou, 2020). Even then, expenditure on education was much smaller than on health: in 1920, education represented 1.3% of total government expenditure in Mozambique, against 8.9% for health, 1.1% against 6% in 1930, and 2.5% against 6.5% in 1940 (Alexopoulou, 2018, Table 4.4). The share of expenditure on education was also consistently smaller than the average for British Africa, which was 2% around 1920, 5.1% around 1930, and 5.5% around 1940 (Alexopoulou, 2018, Table 4.4).[72] Within these low levels, expenditure priorities were skewed greatly across population groups. In 1930 the so-called *indígenas*, who represented more than 99% of the total population of Mozambique at the time, received only 48% of the total expenditure on education, while the rest of the population received 52%.[73] This disparity continued throughout the colonial period. In 1957, the Archbishop of Mozambique discussed the discrepancies in the distribution of education expenditure, destined for the building of schools, between white children and African children: the second six-year development plan (*Plano de Fomento*) for 1959-1964 destined 90,000 contos for the building of state-run schools, providing education to 8,683 students, whereas only 9,000 contos were destined to the building of rudimentary schools for 212,000 African students.[74] In February 1961, Eduardo Mondlane visited Mozambique and had discussions with educational authorities and students, and concluded that the Mozambican rate of illiteracy, close

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[72] In British Africa, Alexopoulou (2018) includes the Gold Coast, Sierra Leone, Nigeria, Gambia, Nyasaland, Uganda, and Kenya, using data from Frankema (2011).

[73] Figures used for expenditure and their distribution between the two population groups are from the *Anuario do Ensino* for 1930. Population figures are from the 1928 census for *civilizados* and the 1930 census for *indígenas*, and do not take into account the severe undercounting of the African population which was prevalent in colonial Africa, especially in early censuses. Both population figures are reported in the 1930 statistical yearbook for the colony.

[74] *Arcebispado de Lourenço Marques. Relatório do ano de 1957. Arquivo Histórico Ultramarino*, 1442 1B MU, p. 4. The Archbishop used student figures from the 1955 *Anuário do Ensino*.

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to 100%, was not surprising given that the per capita expenditure per African child of school age was less than \$3.00 per year (Marcum, 2017, pp. 11-12).

These differences in investment were accompanied by disparities in the quality of education received by each population group. In Mozambique, African children and white children followed very different schooling itineraries. The type of primary schooling that *civilizados* received*,* known as 'elementary' education (*ensino primario elementar e complementar*), was subject to the same legislation as education provided in the metropolis, and purportedly had the same goals and programs as those in force in Lisbon. Upon completion, *civilizados* could access high school education and, eventually, attend university. On the other hand, the objective of schooling targeted at the so-called *indígenas* was one of "nationalisation" and "civilisation".[75] In 1930, the *Diploma Legislativo nº 238*, of 17th May, established the guidelines for this type of schooling. The purported goal of native education was described in Article 1:

> "The objective of native education is to guide the native gradually from savage life to civilised life, build in him a conscience as a Portuguese citizen and prepare him for the fight of life, making him more useful to society and to himself."[76]

> *Diploma Legislativo nº 238*, of 17th May 1930. Article 1 (my translation).

The third characteristic of the dual system of education was the nature of the provider: education was provided by different actors, which varied in their relative importance depending on the type of schooling and the target population group. Providers included the colonial state, Catholic missions (mainly Portuguese), Protestant missions (mainly foreign), and a host of other institutions which included

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[75] Similar dual systems were established in other Portuguese colonies. See, for example, the work by Noré & Adão (2003) on the system in Angola.
[76] "*O ensino indígena tem por fim conduzir gradualmente o indígena da vida selvagem para a vida civilizada, formar-lhe a consciência de cidadão português e prepará-lo para a luta da vida, tornando-o mais útil à sociedade e a si próprio.*" The focus of the curriculum for African children on nationalisation was in accordance with historical principles of the Portuguese so-called "missao civilizadora", that went back to the 19th Century (Dores, 2019). Section five deals with this subject in more detail.

Islamic schools.[77] As described in section two, while education of white children was mainly run directly by the colonial state, the Catholic Church was responsible for most of the schooling provided to African children.[78] The network of rudimentary schools for the African population started expanding in the 1930s. The state was responsible for the direct running of a significant proportion of these schools at the beginning of the decade, but Catholic mission schools progressively increased in importance until 1941, when they were granted a monopoly over the education of the African population.[79] From then onwards, rudimentary schooling became a primarily Portuguese Catholic endeavour throughout the formal end of the *indigenato* in the early 1960s, when children enrolled in Catholic mission schools represented 98% of the total children enrolled in rudimentary education (Table 3.2).

The expansion of the school network, however, did not result in great increases in literacy. As was often the case in Portuguese colonies in Africa, policy prescriptions and declarations did not go hand in hand with the reality on the ground. Although rudimentary schooling was supposed to be free, students were often required to work on mission farms (Munslow, 1985, p. x., cited in Newitt, 1995), growing crops that would then be sold to bring in revenue for the missions, especially rice and cotton, and sometimes parents would even be required to supply the hoes to be used by their children, as well as sacks of maize or beans in payment for their education (Hedges, 1982, p. 10, cited in Marshall, 1985).[80] Isaacman (1992) describes how both Catholic and Protestant missionaries forced African students, as well as teachers, to work on cotton fields owned by the missions.[81]

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[77] Rudimentary education was also provided by the state to its recruited military units.

[78] The state, however, kept authorisation and supervision prerogatives over Catholic mission schooling (Marshall, 1985).

[79] As indicated above, this was established through article 66 of *Estatuto Missionário,* of April 5th 1941.

[80] Marshall (1985) contends that "Although the missions were authorized to offer schooling, the actual funds for the physical plant – for church buildings, staff housing, classrooms, workshops, and transport – were not provided by the state. Instead, the state sanctioned close collaboration between the missions and local officials, who made land and labor available in abundance." However, and even though the nature of the funding changed throughout the years, the colonial state did fund Catholic missions, as described in section four.

[81] The 1939-1940 agricultural census (*Recenseamento Agrícola* 1939-1940, p. 139) especifically mentioned 47,971 kg of cotton produced in the missions and schools of the *distrito* of Moçambique.

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The use of students as free labour was fully in line with the goals set by the colonial state for the education of *indígenas*. Native education was essentially practical and geared towards two goals: preparing Africans for agricultural work, and indoctrinating them in Portuguese nationalist ideals (Dores, 2019). As Cross (1987) points out, the Mozambican economy depended on African unskilled labour, with few Africans occupying semiskilled positions, mostly in urban areas, and the colonial state used education as a mechanism of social control, so it had "no need to produce "doctors" but only (…) promote certain attitudes, habits, and basic skills that would make people loyal to Portuguese authority and more productive." To further the nationalisation function of education, missionaries and auxiliaries were explicitly required to use Portuguese both when teaching and after lessons, although they were allowed to use the vernacular for the teaching of religion.[82] The quality of education also suffered indirectly from this requirement to teach in Portuguese, a language not spoken by the majority of the children, as well as from the inadequate training of the teachers, who often neglected the syllabus and instead focused on rote learning of the Catechism (Marshall, 1985). As a result, educational outcomes were poor: "the quality of 'rudimentary' education barely allowed even for the acquisition of literacy" (Newitt, 1995, p. 480), and illiteracy rates were estimated at 98% in 1958 (Ferreira, 1974, p. 71, cited in Marshall, 1985).

In theory, it was possible for Africans to advance beyond rudimentary schooling and enrol in elementary schooling. However, a series of bureaucratic obstacles and age restrictions made this an almost impossible task (Cross, 1987; Marcum, 2017; Marshall, 1985). The state of the legislation in the 1930s can help exemplify how the system was designed to thwart the advancement of Africans. The 1935 *regulamento* for rudimentary education set the school age at 7 to 12 years old (article 20), although this was extended to 15 for boys in some cases. This type of education was divided into three ascending grades of one-year duration each (article 5), and passing the final exam at the end of the third grade gave children their *diploma* and the right to enrol in the third grade of elementary education at any school in the colony (article 33). The *Portaria 2316*, of September 1st 1934, regulating elementary

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[82] Article 69 of *Decreto 31,207, Estatuto Missionário*.

education, mirrored these requirements: native children were allowed to enrol in the third grade if they had their rudimentary schooling *diploma* and were of school age, that is, 7 to 13 years old (article 1), with children aged 14 being unable to continue to enrol (article 2). This type of education, in turn, was divided into four ascending grades of one-year duration each (article 5), and passing all grades gave access to secondary schooling.[83] This structure and the corresponding age restrictions meant that an African child had to complete his rudimentary schooling before the age limit of 12 if he was to have any chance of enrolling in and completing elementary schooling, ultimately arriving at secondary schooling. However, the majority of children enrolled in rudimentary education each year did not pass to the next class, and the low quality of the education received, in turn, would have made it difficult for graduates to succeed in elementary schooling.[84]

As a result of these obstacles, very few Africans in Mozambique were able to advance beyond rudimentary education. By 1950 only one black African in Mozambique had completed secondary school (Marshall, 1985). In 1955, out of a Mozambican population numbering roughly six million, only ten Africans attended academic high schools, and the number enrolled in technical schools and seminaries was just above 200 (Marcum, 2017, p. 4). Years later, in 1961, Eduardo Mondlane would talk with students in Beira and hear from them that in the official high school there were only five Africans out of an approximate total of 500 students (Marcum, 2017, pp. 11-12).

According to Marshall (1985), this lack of African advancement does not mean that the system was a failure. Instead, it was "highly successful in terms of its 'hidden agenda' of forming a 'nation', destroying a class, and creating the notion of individual

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[83] Article 18 of *Portaria* 1147, of September 9th 1931, passing the *Regulamento de Instrução Secundária* established that enrolment in secondary education required either passing a specific exam or having passed elementary schooling.

[84] In 1935, schools run directly by the state had 9080 children (the majority of which were *indígenas*) enrolled in the first grade of rudimentary education. Out of these children, only 1061 advanced to the second grade. Similarly, 613 out of 1178 passed from second to third grade, and 231 out of 634 children enrolled in the third grade passed their exam and received their diploma (though this number could represent only those taking the exam, not passing it). In 1960, the situation was very similar. Out of a total 387,657 children enrolled in all rudimentary schools in the colony, only 21,469 passed from first grade to second, 10,174 passed from second grade to third, and 12,283 passed their third-grade exam. Data for both years comes from the respective editions of *Anuários Estatísticos de Moçambique.*

failure". The goal of social control was furthered through this system, by establishing education as the channel for social advancement, as "the way to resolve the 'problem' of being 'indigenous'", while simultaneously making it impossible for Africans to succeed in school (Marshall, 1985). In this way, "(c)olonial rule was rooted in and assured by a system of educational deprivation" (Marcum, 2017, p. 4). A further reason for the lack of spending on education for the African population was that assimilation was not a real objective: settlers arriving in increasing numbers were recruited for colonial administration positions over assimilated elites, thus reducing the incentives to invest in the education of Africans (Alexopoulou, 2020).

Towards the end of the *indigenato*, a slow process of change seemed to be underway. Under the second six-year plan, a "*first real attempt*" was made in the 1950s to expand the network of schools and cover the whole colony, seeking to provide workers for an industrialising economy while continuing the indoctrination of its inhabitants (Newitt, 1995, pp. 480-481). This second plan invested $125 million in Mozambique, and focused on health, education, and agriculture (Alexopoulou, 2020). This was accompanied by a cosmetic change to the nomenclature employed. In the *Decreto 39,666,* of May 20th 1954, passing the *Estatuto dos Indígenas*, the term *ensino primario rudimentar* was no longer present, replaced by the more palatable term *ensino primario de adaptaçao*, or adaptation schooling. This trend continued into the turn of the decade, when the colonial state adopted a more flexible policy that included the abolition of forced labour and increased social, economic, and educational opportunities for the native population (Cross, 1987).[85] These changes have been seen as a response to local and international pressures, an attempt to buy time within the context of emerging anti-colonial, revolutionary movements globally and in Africa, as well as the proclamation of armed struggle by FRELIMO in Mozambique in 1964 (Alexopoulou, 2020; Cross, 1987; Marshall, 1985; Newitt, 1995).[86] The educational system was one of the specific targets of this political

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[85] In addition to expanding primary education and social services, the metropole sought to maintain colonial rule by doubling the size of its military and engaging in other projects such as the regrouping of rural populations in planned villages known as *aldeamentos* (Marcum, 2017).

[86] Earlier, wars between nationalist movements and the Portuguese colonial administration had started in Angola in 1961 and Guinea-Bissau in 1963.

opposition's criticism. For example, in the late 1950s the newspaper *Notícias,* from Lourenço Marques, the colonial capital, criticised the focus of education for the African population on work, questioning the role of Catholic missionaries since the beginning of their monopoly, and accusing them of merely preparing Africans for agricultural work, instead of promoting their intellectual development (Dores, 2019). Voices like this one joined earlier critiques from Protestant missionaries (Silva, 2001, pp. 65-99, cited in Dores, 2019).

For a small minority within the Portuguese leadership, the idea behind these changes was to create an African middle class that would avoid revolutionary change and protect Portuguese colonial interests (Cross, 1987). Thus, the 1960s saw a moderate increase of spending on education, with the *Estado Novo* thinking "investments in public goods could place the metropole in a better position to negotiate its future relations with the colonies" (Alexopoulou, 2020). However, this expansion was a "belated and ultimately futile effort to make a reality of assimilation" (Marcum, 2017). Education was still not a top priority, and there were contrasts between noticeable investments in areas such as infrastructure, communications, industry and agriculture, and the marginal investments made in health and education, which led even Mozambican colonial authorities to highlight the lack of investment in these public goods (Jerónimo, 2018, p. 18). In addition to this, investments in social services targeted urban areas, particularly the capital, Lourenço Marques, and port cities such as Beira, thus serving the interests of settlers but not those of the majority of Africans living in rural areas (Alexopoulou, 2020). The second development plan, for example, included education as one of its targets, but it "aimed at increasing white settler migration from Portugal and serving the interests of the existing settler communities in trade, agriculture and irrigation" (Alexopoulou, 2020, p. 254).

The *indigenato* was formally abolished in 1961, when the Decreto 43,893 of 1961 revoked the last iteration of the legal documents upholding it, the *Estatuto dos Indígenas Portugueses das Províncias da Guiné, Angola e Moçambique* of 1954, and all population born in Angola, Guinea Bissau and Mozambique received Portuguese citizenship (O'Laughlin, 2000). With it, the dual system of education was ostensibly

finished. The *Decreto 45908*, of September 10th 1964, which passed the reform of *ensino primário elementar* for the colonies (at the time renamed as ultramarine provinces), no longer distinguished between native children and whites or *assimilados*. This meant, in theory, the end of differentiated native education, and the Church lost its monopoly on the education of the African population, with many missions schools converted into private schools under the control of the state, and following the same curricula as public education (Dores, 2019). It also allowed students of Catholic mission schools (thus, primarily African children) which surpassed the maximum age of enrolment a three-year transitional period to finish *ensino primário elementar*, up to a maximum age of 18.

However, according to Cross (1987), "the removal of 'civilized' and 'uncivilized' status was accompanied not by a democratization of education but by a more restrictive and difficult qualifying examination system", and the lack of adequate schools and transportation meant that distant rural areas, where the majority of African children lived, were excluded from the implementation of free and compulsory education. Similarly, Joao Jamisse Nhambiu would write in a 1963 UNEMO manifesto that reform had not been implemented in practice, and that African children still had to attend rudimentary schools run by Catholic missions, while white children and *assimilados* attended official elementary schools (Marcum, 2017, pp. 114-115). The contradiction between the formal abolishment of the *indigenato* and its de facto continuation was also manifested in obstacles to the political participation of Africans, as well as their social and economic position. In the 1964 elections to the Mozambique Legislative Council, only 93,079 people qualified as voters out of a population numbering around 7 million, a percentage of 1.3% that roughly coincided with the number of non-African citizens (Marcum, 2017). In the 1970s, a report by Wayne Fredericks, from the USA's State Department, highlighted how constitutional reforms granting more power to the white-dominated government in Lourenço Marques, which had even greater incentives than the metropole to repress the African majority, threatened to reduce African political participation even more (Marcum, 2017, p. 158). The same memo described that only a few Africans held administrative and political posts in Portuguese Africa, an inequality of opportunity that was fuelled by the "absence of

compensatory educational programs- at the technical and secondary levels designed to promote a significant African participation within the territories' economic and social development".

The end of colonialism would come before any significant change had taken place in the social and economic position of Africans. In 1974, the Carnation Revolution in Portugal brought about the end of *Estado Novo,* and the new government rapidly granted the African colonies their independence, first to present-day Guinea-Bissau in 1974 and then to the rest in 1975 (Mozambique, Angola and the insular colonies of Cabo Verde and São Tomé e Príncipe). As Cross (1987) points out:

> "In summary, the reformist strategy adopted by Portugal in the 1960s had failed. It was "too little too late" to produce significant and effective social change required for the neocolonial interests of Portugal*."

3.4. Saving on the provision of public goods

In Mozambique, the expansion of rudimentary education for the African population served multiple state interests. As described in the previous section, it contributed to mould African children into a cheap labour force for the colonial market, and also served the legitimacy imperative by indoctrinating these same children in the basic tenets of imperial ideology.[87] However, the provision of public goods, even if they were of very low quality, had to be balanced against the revenue imperative. This restriction was particularly relevant for the colonial state in Portuguese Africa. During the Great Depression of the 1930s, the *Estado Novo* led by Salazar implemented austerity measures and a strict policy of budget balance in the colonies, severely constraining the capacity of the colonial state to invest in welfare services (Alexopoulou, 2020, pp. 249-250). Education was never an expenditure priority for the colonial government in Mozambique: as indicated above, it represented 1.3% of total government expenditure in 1920, 1.1% in 1930, and 2.5% in 1940 (Alexopoulou, 2018, Table 4.4). Even with the prosperity of WWII, and the

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[87] Article 68 of the *Estatuto Missionário*, stating the goals for education of the African population, is a clear example of this.

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purported impulse given to education by the development plans of the 1950s, the share of expenditure destined to social services, including education, dropped in the post-war years and then remained stable (Alexopoulou, 2020, pp. 252-253, and Figure 8.7).[88] In 1960, the share of the budget destined to education and health was only five per cent (Alexopoulou, 2018, p. 62).

In the Portuguese mainland, the *Estado Novo* sought to reduce illiteracy by expanding the number of schools while keeping costs to a minimum, "even if parsimony meant having to lower standards" (Palma & Reis, 2021, p. 416). In the colonies, transferring all responsibility for the education of the African population to the Catholic missions may have been a way of resolving the problem of expanding educational provision while keeping expenditure low. As seen in the previous section, the British relied on missionary education as a way to reduce its costs. Thus, this is the first hypothesis I test:

> *Hypothesis 1*: In Portuguese Africa, primary schooling of the African population was made a monopoly of the Catholic missions in order to expand the network of schools while keeping colonial expenditure low.

In the years leading up to the Catholic monopoly over African education, the 1926 *Estatuto orgânico das missões católicas portuguesas de África e Timor*, known as *Estatuto João Belo* after its promoter, and the 1930 *Acto Colonial* channelled funds to the Catholic missions for education purposes (Newitt, 1995, pp. 478-479). Thus, given that the Catholic missions were subject to the control of and funded by the colonial government, the shift to provision by the missions cannot be understood as a straightforward outsourcing of costs. If Hypothesis 1 is true, the Catholic missions must have been a cheaper way of providing rudimentary education to the African population than state-run schools.

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[88] Newitt (1995, p. 464) describes the war as "a period of great opportunity and even prosperity" for Portuguese Africa: the metropole's policy of neutrality meant that the conflict did not affect the colonies, while world prices for their products soared. After the lean years of the 1930s, in the aftermath of the Great Depression, budgeted revenue in Mozambique almost tripled over ten years, from 581,839 *contos* in 1938 to 1,336,057 in 1948 (Newitt, 1995, p. 465). Part of this increase may be attributable to inflation: Newitt (1995) does not seem to deflate these figures, and the wholesale price index provided in the Palgrave Macmillan (2013) International Historical Stastics for Portugal increases from 99 to 238 between 1938 and 1948.

3.4.1. An efficiency rhetoric

Qualitative evidence shows that financial issues were considered by officials in charge of education in Mozambique in the period prior to the shift. The 1930 Mozambique edition of the *Anuário do Ensino*, a yearbook focusing specifically on educational issues, included a report by the *Inspector da Instrução Pública* (the highest colonial official for educational matters) at the time, Mario Teixeira Malheiros. The report described the different types of education provided in the colony. To justify the provision of a different, rudimentary education for the African population, the *inspector* cited the usual racist reasons, but also referenced economic considerations and the need to spread education quickly:

> "But natives are still in a savage or semi-savage state, from which they will rise not in a jump, the laws of human evolution being opposed to this, but through progressive graduation. The first schooling to provide to them must therefore be very rudimentary, of initiation, and thus different from that provided to civilized children. This is, moreover, what economic reasons and the need for a quick and immediate propagation of schooling advise."
>
> *Anuário do Ensino 1930. Colónia de Moçambique. Instrução Pública,* p. 208 (my translation).[89]

This is suggestive of how financial considerations were in the mind of colonial officials when designing the system of education for the African population. Such considerations also appeared when discussing the provision of education by the Catholic missions specifically. The report in the 1930 *Anuário do Ensino* provides seemingly contradictory visions in this regard. The *inspector* cited the school inspector for the first *circulo* (one of the levels of division of the colony for schooling

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[89] "*Mas os indígenas encontram-se ainda num estado selvagem ou semi-selvagem, do qual se elevarão, não de um salto, que a isso se opõem as leis da evolução humana, mas por uma progressiva gradação. A primeira instrução a ministrar-lhes tem de ser muito rudimentar, de iniciação, e por isso diferente da das crianças civilizadas. É de resto o que aconselham também a razão económica e a necessidade de uma divulgação do ensino rápida e imediata.*"

purposes), who claimed that "the nationalising and civilising action which the natives of the Colony receive from the Catholic missions do not correspond with the sacrifice done for it by the Colony's Public Treasury", advocating for a true separation of State and Church and the suspension of the payment of salaries and subsidies by the colonial government to the missionaries and their corporations, so as to improve their effort and proselytising results.[90] This school inspector calculated the larger amount of schools that the state could build and run with the funds destined for the Catholic missions. He also calculated the yearly cost of each student of annual average frequency in state-run schools at 86 escudos per year, and advocated for the missions to receive 100 escudos per student, linking subsidies given to the Catholic missions to results produced. The funds provided to the Catholic missions that the school inspector took as a starting point were not specific to education and, as discussed in the next section on quantitative evidence, this biased any comparison against the Catholic missions. However, the excerpt is still suggestive of how the efficiency of the Catholic missions in the provision of schooling may have been in doubt at the start of the period of study.

On the other hand, the same report made an explicit reference to the savings that would accrue to the state from the Catholic missions focusing on *ensino rudimentar* and the state-run schools focusing on *ensino elementar*:

> "In some places, like Inhambane, Quelimane and Magude, official schools and Catholic mission schools operate, both of them funded by public coffers. Given the goal of missions and the fact that they do not have teachers trained in normal schools, missions should take charge of rudimentary schooling and official schools of elementary schooling. This division of labour would benefit students and generate savings for the State."
>
> *Anuário do Ensino 1930. Colónia de Moçambique. Instrução Pública*, p. 223 (my translation).[91]

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[90] *Anuário do Ensino 1930. Colónia de Moçambique. Instrução Pública*, p. 241 (my translation).

[91] "*Em alguns lugares, como Inhambane, Quelimane e Magude, funcionam escolas oficiais e escolas das missões católicas, umas e outras sustentadas pelos cofres públicos. Atendendo à finalidade das missões e ao facto de não terem professores diplomados pelas escolas normais, deviam estas encarregar-se do*

The 1938 annual report written by the *Prelado de Moçambique,* the highest Catholic ecclesiastical authority in Mozambique at the time, provides us with additional insights. As would be expected, the *Prelado* argued that the funds earmarked for the Catholic missions in the colony's budget, though important, were very far from what they should be, given the services that the Portuguese missions provided to Portugal. Even though he did not give a specific quantity for rudimentary schooling, the *Prelado* calculated total savings accrued to the colonial government from the use of missions as compared to state-run schools to be 3,759,000 *escudos*.[92] The *Prelado* calculated the costs, per teacher and school, incurred by the state on the schools it ran directly, and then extrapolated these unitary costs to the schooling services provided by the Catholic missions. What these calculations imply is that the state saved expenditure because the Catholic missions provided services that were not paid for by the state. A note in document number 2, attached to the 1938 annual report, seems to confirm this:

> "Of these [the 269 teachers working in mission-run schools in 1937] only 169 are paid from the general quantity in the Budget, the rest are paid from the minute allocation of each Mission, from the small profits of some missions and even from the salaries of some missionaries." [93]

> *Relatório do Prelado de Moçambique* (1938). *Arquivo Històrico Ultramarino*, 2344 1B MU. Document number 2 (my translation).

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ensino rudimentar e as escolas oficiais do elementar. Haveria nesta divisão de trabalho melhor aproveitamento para os alunos e economia para o Estado."

[92] *Relatório do Prelado de Moçambique* (1938). *Arquivo Històrico Ultramarino*, 2344 1B MU, p. 16 and onwards. These savings, if accurate, would have represented a very large percentage of both budgeted state expenditure on missions in 1938, which was 5,991,554 *escudos*, and state expenditure on state-run schools (for all types of education and population groups, not only *rudimentar*) in 1938, which was 10,779,994 *escudos* (*Orçamento Geral para o ano económico de 1938, Colónia de Moçambique, Imprensa Nacional*).

[93] "*Dêstes só 169 é que recebem pela verba global do Orçamento, os restantes pesam sôbre a diminuta dotação ordinária de cada Missão, sobre os fracos rendimentos dalgumas missões e até sôbre os vencimentos dalguns missionários.*" The structure of state expenditure on Catholic missions recorded in budgets changed over time (for example, article 23 of *Estatuto Missionário* passed by *Decreto Lei nº 31,207* of 1941 established that missionaries would no longer be paid individually by the state, their payment coming from global subsidies paid to missions instead). The quote alludes to general quantities earmarked for all missionary activity, allocations earmarked for individual missions, and salaries paid individually to missionaries. The reference to profits made by missions probably alludes to commercial activities by missions.

This quote suggests that the Catholic missions provided schooling without the state covering, at least with dedicated funds, the cost of many of their teachers, thus generating savings for the colonial state. Ultimately, however, evidence for the efficiency of the Catholic missions would be a moot point if colonial state officials did not perceive the outsourcing of rudimentary education as beneficial to the state. The 1938 annual report from the *Prelazia* once again provides us with qualitative evidence in this regard. In one of the administrative documents attached to the report, an unidentified official of the *Direcção Geral de Administração Política e Civil, Repartição de Justiça, Instrução e Missoes,* the section of the colonial administration dealing, among other, with the Catholic missions, summarised the report written by the *Prelado de Moçambique* and gave his opinion on it. Most importantly for my purposes, he described the missionaries as the best option for the provision of healthcare and education, arguing that no one could provide said services better or cheaper:

> "In these assistance services, such as those of primary and professional schooling, no one is better or even equal to the missionaries. Nobody provides better or cheaper services and it is not their fault if the State does not take advantage of them, as they gladly accept such tasks, because they are Christian charities and excellent instruments of evangelical propaganda."
>
> *Informação Nº 109*, administrative document attached to *Relatório do Prelado de Moçambique* (1938). *Arquivo Històrico Ultramarino*, 2344 1B MU (my translation).[94]

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[94] "*É que nestes serviços de assistencia, como nos de instrução primaria e profissional, ninguém excede nem sequer iguala os missionarios. Ninguém faz melhor nem mais economicamente e se o Estado os não aproveita não é por culpa dêles, que de bom grado aceitam tais encargos, por serem obras de caridade cristã e excelentes meios de propaganda evangelica.*"

3.4.2. The decoupling of expenditure from educational outcomes

I now examine quantitative evidence for Hypothesis 1, testing whether financing the Catholic missions was a cheaper way for the state to expand rudimentary education for the African population than directly running the schools itself. To test this hypothesis, I calculate colonial state expenditure per child enrolled, comparing figures for schools directly run by the colonial government against figures for the Catholic mission schools. If the shift was a cost-saving strategy, we would expect government expenditure per child on state-provided education to be higher than that in mission-run schools.

I check whether any hypothetical savings from the shift were apparent in the years leading up to its implementation. The *Estatuto Missionário*, the piece of legislation responsible for the shift, was signed in April 1941. This marks the upper end of my period of analysis, while data availability in primary sources marks the lower end, leading me to focus on the period 1936–1941.[95] I collect data on expenditure from colonial budgets and accounts of income and expenditure, and enrolment data from general statistical yearbooks for the colony.[96] Unfortunately, budgets and accounts reported data at different levels for state-run and missionary education. Consequently, I can only compare colonial state expenditure on state-run schools (per child enrolled in such schools) against total colonial state expenditure on the Catholic missions (per child enrolled in primary rudimentary schools run by the missions). This biases the comparison against the Catholic missions, because they provided a number of services to the colonial state beyond rudimentary schooling, from healthcare to religious conversion and other types of schooling.[97] As an

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[95] Prior to 1936 enrolment data for mission schools is less reliable, and it is difficult to disaggregate expenditure for state-run schools in early budgets.

[96] See section A of the Appendix for more details.

[97] Article 21 of the 1926 *Estatuto orgânico das missões católicas portuguesas de África e Timor,* for example, gives a list of functions to be performed by missions, not including conversion to Catholicism. The functions listed are: a) African education, b) general education, c) agricultural education, d) education regarding livestock, e) vocational education, f) female education, g) healthcare for Africans, h) scientific research, and i) collaboration in the elaboration of geographic, historical, or economic publications. These items are my summary and translation following the order in the original list. It is worth noting that items *c* to *f* also mention the education of Africans, despite it having its own item *a*.

An additional issue that biases the unitary measures further against Catholic missions is that I am not able to capture the cost of building state-run schools, whereas the cost for the state of the

example of these additional services, Table 3.1 shows that, throughout the period between 1930 and 1962, the Catholic missions were responsible for a non-negligible percentage of the elementary schooling provided to white children.

When analysing the costs of providing education, we must calculate measures at a regional level, to take into account variations in the physical and economic geography of the colony. There are multiple reasons for this. Firstly, providing services in some areas of the colony was costlier than in others, due to geography and existing infrastructure. Chapter 2 describes the differences in state capacity across the colony. Installing administration services in Niassa, for example, was more expensive than in other districts due to its lack of access to the sea and the absence of a railway.[98] Secondly, local factors influencing the demand for schooling may have also affected measures of expenditure per student, favouring providers present in those areas where a given level of expenditure and supply of schooling met a higher local demand and, therefore, a higher number of actual students. Studies of education in African colonial settings tend to over-emphasise the role of supply factors, frequently linked to metropolitan identity, but local demand from the African population played a great role in educational development (Frankema, 2012). Therefore, I calculate colonial state expenditure per child enrolled, for both schools run by the state and by the Catholic missions, at the regional level of the *distrito*.

In the years before the shift, the state-run schools and the Catholic mission schools had a different relative presence across the territories of Mozambique (see Figures 3.4 and 3.5). Given the importance of the physical and economic geography of the colony, I focus my comparison on *distritos* in which both the state and Catholic missions had a significative presence: Lourenço Marques, Inhambane, and

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construction of Catholic missions would be included in the total subsidies granted to them, which are the basis for the calculation of unitary costs for Catholic mission schools.

[98] Mention in page 163 of *Orçamento Geral da Receita e Tabelas da Despesa Ordinária e Extraordinária da Colónia de Moçambique para o ano económico de 1930-1931.* A similar remark was made by the *Director Geral do Ensino*, a high colonial official for education in 1922, referring to the importance of the early mission of S. José de Boroma, given the difficulties to build even a single house in the interior of the colony (*Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922. Arquivo Histórico Ultramarino.* 2344 1B MU).

Moçambique.[99] Table 3.3 shows the amount of expenditure per child enrolled, measured at the *distrito* level, for state-run schools and schools run by the Catholic missions, for these three *distritos* between 1936-1941.

In 1936, unitary costs in all three regions were higher for the Catholic mission schools than for the state-run schools. By 1939, however, despite the imbalance in the construction of our measures, unitary costs in the *distritos* of Lourenço Marques and Inhambane were lower for the schools run by Catholic missions than for state-run rudimentary schools. In the *distrito* of Moçambique, state-run schools still showed lower unitary costs in 1941 than missionary schools, but the original gap had almost been closed. The picture is the same if we look at expenditure per child attending school regularly, instead of expenditure per child enrolled. Thus, in Lourenço Marques and Inhambane, the centre of Catholic mission activity during the period of study, provision of primary schooling for the African population through the funding of the Catholic missions would have become, by the late 1930s, a clearly cheaper option for the colonial state than directly running the schools itself. This difference in unitary costs would favour the Catholic missions even more if the implicit cost of the other services provided by these missions, as well as the costs of construction of buildings (not included in the expenditure in state-run schools) could be discounted.

The negotiations that eventually led to the signing of the *Estatuto Missionário* opened in the mid-1920s, with preliminary accords signed in 1928 and 1929, and then began in earnest in 1929 (Morier-Genoud, 2019, p. 20). Thus, any financial reasons for the *Estado Novo* to grant a monopoly on African education to Catholic missions would have been based on observed trajectories and extrapolations, and not on a single point in time, just before the signing. Importantly, Table 3.3 shows that unitary costs for state-run schools were relatively homogeneous across *distritos* and stable in the years leading up to the shift, even if absolute enrolment in said schools increased by roughly 20% between 1936 and 1941. On the other hand,

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[99] These three *distritos* represented approximately 60% of enrolment in state-run rudimentary schools in the period between 1936–1941. For Catholic rudimentary schools they represented 73% in 1936, and grew in importance up to 88% in 1941.

unitary costs for Catholic mission schools followed a downward trajectory in all three of our *distritos* of focus.[100]

The pattern that emerges indicates that transferring rudimentary schooling responsibilities to the Catholic missions generated savings for the state because school network development by the missions was decoupled from state expenditure on missions, as the qualitative evidence suggests. Between 1936 and 1941, expenditure on the Catholic missions in Lourenço Marques and Inhambane increased by 13%, while expenditure on those in Moçambique increased by 72% (Table 3.3). On the other hand, enrolment in the rudimentary schools run by the Catholic missions, during the same period, increased by 122% in Lourenço Marques, 329% in Inhambane, and 272% in Moçambique (Table 3.3).

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[100] Unitary costs for the Catholic missions were much more variable across *distritos*, with very high figures in some cases. This can be explained by the data limitations described above: I can only observe funding received by ecclesiastical authorities for their general sustenance and for all services provided, but not the smaller variable costs tied to schooling. This means that in places where the network of Catholic schools had not yet been developed, such as Tete, Quelimane or Cabo Delgado, unitary costs, as I am able to construct them, were very high. However, the patterns described in this section are the same if I include all *distritos* in the calculation of unitary costs: state-run schools display constant unitary costs, while unitary costs for Catholic mission schools decreased over the 1935-1941 period. By 1941 unitary costs for state-run schools in the whole of the colony were 99 *escudos* per child enrolled, and 103 *escudos* per child enrolled in Catholic mission schools.

Figure 3.4: Distribution of enrolment in state-run rudimentary schools across *distritos* (all population groups), 1935–1942
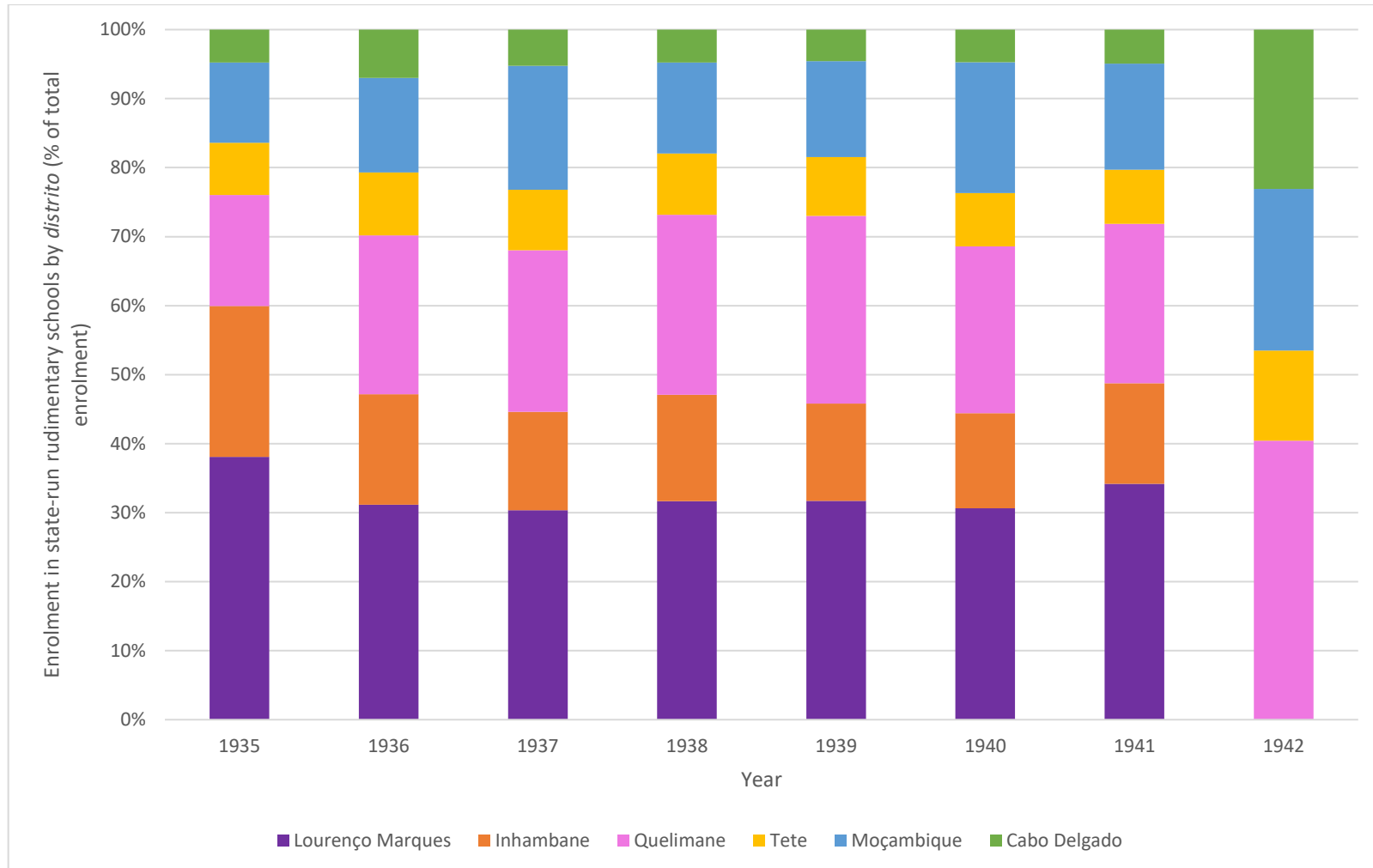
Source: Calculated using data from *Anuários Estatísticos da Colónia de Moçambique* (yearbooks)

Figure 3.5: Distribution of enrolment in Catholic mission rudimentary schools across *distritos* (all population groups), 1936–1942
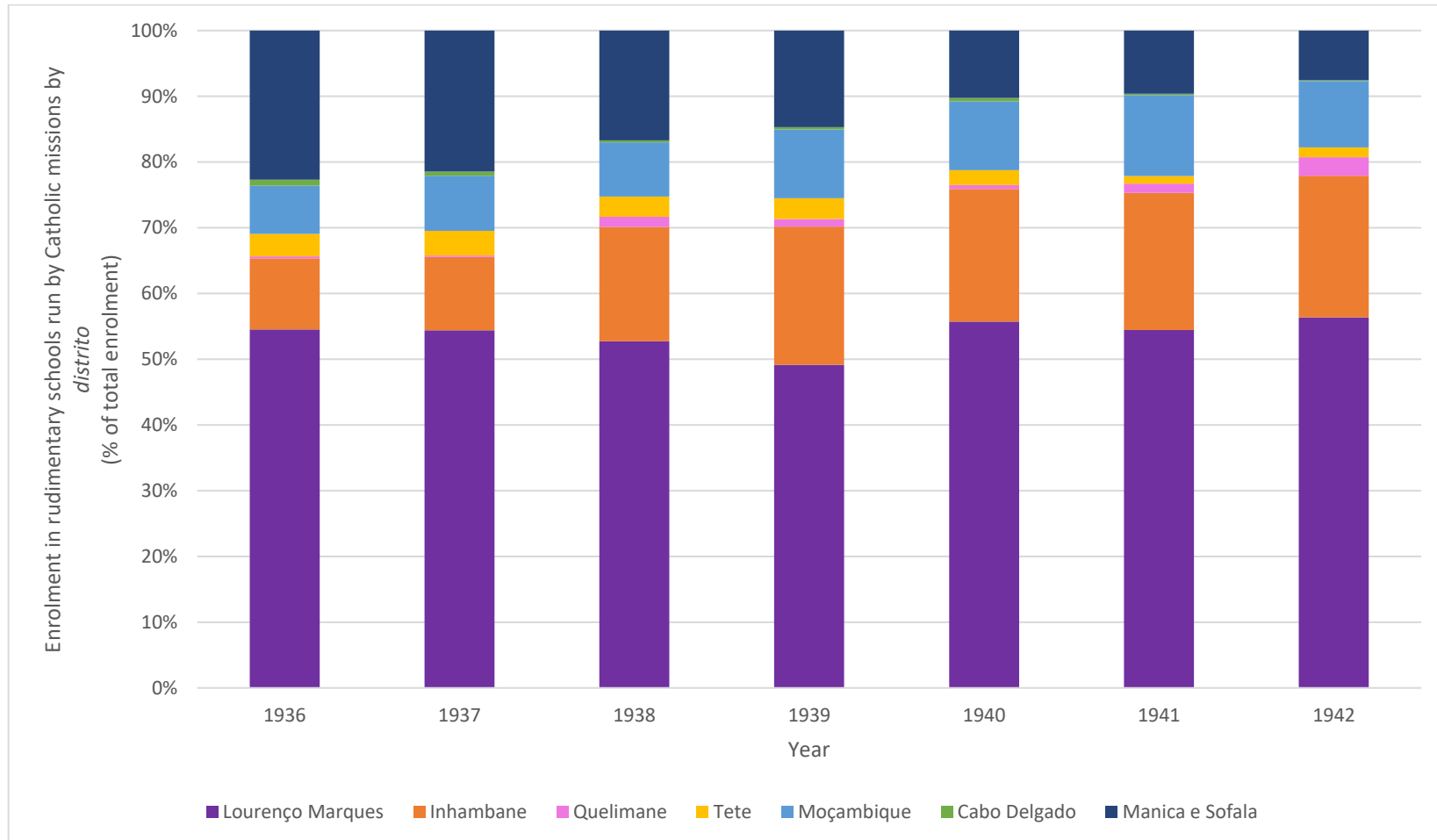
Source: Calculated using data from *Anuários Estatísticos da Colónia de Moçambique* (yearbooks)

Table 3.3: Unitary measures of state expenditure on state-run rudimentary schools and Catholic mission rudimentary schools, at the *distrito* level, 1936-1941

| Distrito | Year | Provider of rudimentary education | | | | | |
| | | State | | | Catholic missions | | |
		Total cost (escudos)	Enrolment	Cost per enrolled	Total cost (escudos)	Enrolment	Cost per enrolled
Lourenço Marques	1936	366,600	3,692	99	1,836,667	15,581	118
	1937	348,480	3,169	110	2,004,658	16,311	123
	1938	364,320	3,369	108	2,197,238	18,989	116
	1939	324,720	3,026	107	1,860,192	19,977	93
	1940	340,560	3,325	102	2,060,518	29,187	71
	1941	364,320	4,204	87	2,070,161	34,565	60
Inhambane	1936	223,300	1,900	118	983,169	3,084	319
	1937	212,400	1,489	143	892,954	3,351	266
	1938	220,267	1,639	134	907,944	6,261	145
	1939	173,067	1,345	129	971,317	8,540	114
	1940	188,800	1,496	126	1,078,980	10,567	102
	1941	204,533	1,792	114	1,110,771	13,234	84
Moçambique	1936	187,371	1,622	116	521,695	2,104	248
	1937	213,686	1,874	114	591,883	2,511	236
	1938	174,114	1,401	124	708,657	2,980	238
	1939	189,943	1,325	143	781,971	4,251	184
	1940	197,857	2,055	96	883,905	5,482	161
	1941	189,943	1,895	100	899,010	7,833	115

Source: Calculated using data from *Orçamentos Gerais* (general budgets) for Mozambique, *Contas de gerência e de exercício* (accounts) for Mozambique, and *Anuários Estatísticos da Colónia de Moçambique* (yearbooks)

This pattern continued in the decades that followed and until the end of *indigenato*. Morier-Genoud (2019, Table 1.1.) provides figures on total state subsidies to the church in Mozambique during this period, measured in constant US dollars. Subsidies grew by a factor of 1.7 between 1940-1942 and 1949-1951, from 878,848 US$ to 1,519,234 US$, and grew again by a factor of 1.4 until the period 1958-1960, when subsidies were 2,263,516 US$. Meanwhile, Table 3.2 shows that enrolment in Catholic rudimentary schools grew by a factor of 1.7 between 1942 and 1950, from 90,058 students to 153,068 students, and subsequently exploded by a factor of 2.6 between 1950 and 1960, from 153,068 students to 386,032 students. Once again, as in the calculations for the period between 1936 and 1941, the figures for state subsidies used in this comparison were meant to cover not only the costs incurred by missions in providing education, but the capital necessary for the establishment of new missions, the construction of new buildings, and the provision of other services like elementary education and healthcare. Thus, the decoupling of growth in educational outcomes from the growth in expenditure, especially in the 1950s, allowed the state to promote the expansion of the school network while keeping costs under control. In line with Hypothesis 1, these gains in efficiency may have been one of the reasons behind the monopoly granted to Catholic missions.

The question remains, why did granting a monopoly to the Catholic missions allow for this decoupling? The first place to look is the "Africanisation of the mission".[101] As Meier zu Selhausen (2019, p. 44) describes, "the principal agents of Christian and educational expansion were African missionaries and teachers", and Frankema (2012, p. 343) argues that in British colonies "(t)he expansion of missionary education between 1900 and 1940 would have been financially impossible without the contribution of African teachers", which were paid orders of magnitude less than a European teacher.[102] In Mozambique, the process of "Africanisation" was mixed. Missionaries, who were "the official face of the church", conducting major ceremonies and baptisms, were mostly European until the end of our period of study, with the first ordinations of African priests only taking place late in the 1950s

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[101] See Meier zu Selhausen (2019, section 5) for an overview of the literature on the topic.
[102] See Frankema (2012, p. 343) for an interesting financial argument for why it was cheaper for Catholic missionary societies to send more European teachers than Protestant societies.

(Morier-Genoud, 2019, pp. 70, 81, 86).[103] However, it was African evangelists and teachers who "performed the actual dissemination of the Catholic faith to convince people to convert", something that happened in particular at the schools (Morier-Genoud, 2019, p. 70). Indeed, it was African teachers, often catechists at the same time, who were in charge of the rudimentary schools located in villages around the principal Catholic mission station (Padre Vicente, personal communication, May 6, 2022). In 1942, out of 904 *assalariados* (wage workers) of all Catholic missions in Mozambique, 833 were black Africans, and a further 22 were classified as *mistos*.[104] In turn, the majority of *assalariados* in each mission were African teachers. There were 365 *assalariados* working for the Archdiocese of Lourenço Marques in 1942: 12 of them were European teachers, most likely in urban missionary schools providing elementary education, while 303 were African teachers.[105]

Like in other African colonies, recruiting African teachers was cheaper than hiring Europeans. Already in 1907, General Governor Freire de Andrade found that it was black teachers who allowed for the most effective and cheap development of literacy among African children, and opened a free course of Portuguese language for black teachers.[106] Years later, in 1941, article 70 of *Estatuto Missionário* explicitly referred to the training of African teachers in specific schools. Annual reports by the bishops of the different dioceses in Mozambique frequently mentioned the issues caused by low pay to these teachers, who would leave for other jobs, including working for the colonial state. Bishops mentioned the application of wage raises in several instances, but overall this speaks to the savings accrued by employing African instead of European teachers.[107] Thus, we can see that in Mozambique, like in other colonies,

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[103] There was an early exception, Alexandre F. Lopes, who was ordained already in 1953 (Morier-Genoud, 2019, endnote 37 to Chapter 3). The training of African sisters also started relatively late in Mozambique (Morier-Genoud, 2019, p. 89).

[104] There were only 10 black African female *assalariadas*, and 7 *mistas*. (*Anuário Estatístico 1942, Colónia de Moçambique, Imprensa Nacional de Moçambique*, pp. 178-179).

[105] *Relatório do Prelado referente ao ano de 1942, Arcebispado de Lourenço Marques. Arquivo Històrico Ultramarino*, 2344 1B MU. The table does not distinguish between Africans classified as black and Africans classified as *mistos*.

[106] This is described in pages 6 and 9 of the 1930 *Anuário do Ensino*, within the monograph destined for the Paris International Colonial Expo of 1931. The *Anuário* was signed by the *Inspector da Instrução Pública*, Mário Teixeira Malheiros.

[107] *Relatório do Prelado referente ao ano de 1947, Arcebispado de Lourenço Marques*; *Relatório do Prelado referente ao ano de 1957, Arcebispado de Lourenço Marques*; *Relatório do Prelado referente ao ano de 1951, Diocese de Beira*; *Relatório do Prelado referente ao ano de 1960, Diocese de Beira*. For all: *Arquivo Històrico Ultramarino*, 1442 1B MU.

from a financial perspective it was the role played by Africans that allowed Catholic missions to expand their network of schools.

However, this still does not explain why outsourcing education to Catholic missions was a financially efficient way for the colonial government to expand the network of schools. After all, the state could have hired these same Africans for the same low pay. Indeed, the state already employed African teachers in the years when it ran rudimentary schools itself.[108] Ultimately, the decoupling of state expenditure from mission education expansion was possible because, as hinted in the previous sub-section, and as described by Cogneau & Moradi (2014, p. 702), colonial state subsidies did not cover the full costs of operation of the mission schools.

To understand how this was the case for Mozambique, we must look at the structure of missionary subsidies set up by the *Estatuto Missionário* of 1941. Article 47 established that total subsidies for Catholic missions at the colony level, marked in each colonial budget, would be distributed by the colonial government among the dioceses in accordance with the number of missionaries working in them and the operations being run, such as seminaries. Each *Prelado* (bishop) was then to distribute these quantities following his own criteria.[109] No reference was made, however, to how the figure for total subsidies at the colony level would be determined: educational outcomes were not linked to global subsidies. In addition to this, article 23 put an end to the direct payment of salaries by the government to missionaries and their religious auxiliaries. Instead, they were to be paid by the *Prelados* of each diocese, or the *Superiores* heading each religious congregation operating in the colony, from the subsidies they were to receive on the basis of article 47. In this same vein, article 74 made *Prelados* responsible for the hiring of

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[108] The 1930 statistical yearbook for the colony gives the number of teachers in rudimentary schools, classified by population group: state-run schools had 1 European teacher and 64 African teachers; Catholic mission schools had 10 European teachers, 5 teachers classified as *indianos*, and 124 African teachers. Protestant mission schools had 28 European teachers and 159 African teachers. Interestingly, all African teachers were classified as auxiliary, unlike most Europeans and *Indianos*. *Anuário Estatístico da Colónia de Moçambique, Ano de 1930*, p. 258.

[109] On top of these quantities, extraordinary subsidies could be given by the state for specific ends like the construction of certain buildings (article 49), and the colonial government would grant Catholic missions the land necessary for their operation (article 52), up to 2,000 hectares in Mozambique and Angola.

African teachers, subject to approval by the colonial government, but did not mention specific funding by the colonial government.[110] Thus, state subsidies to Catholic missions were not linked to the variable costs of expanding education.

The distinctive feature of Catholic missions, that allowed for this decoupling, was that they had a much greater financial autonomy than any educational institution the colonial state could set up. Catholic missions had a range of alternative financing options, beyond the subsidies received from the state. On a macro scale, Catholic congregations were financed by the Vatican. At the local level, individual missions had agricultural operations that brought in revenue, often using child labour from students (see section three). Finally, thanks to the authorisation established by article 48 of *Estatuto Missionário*, they could make collections from their parishioners. These alternative financing options allowed for missions to expand their activities, including educational ones, beyond the scope of what was possible with the subsidies granted by the state. At the same time, Catholic missions had incentives to expand rudimentary education: converting Africans was the primary objective of all Christian missionaries, and one of their key strategies was education, both in Africa as a whole (Meier zu Selhausen, 2019, pp. 26, 30), and in Mozambique in particular (Morier-Genoud, 2019, p. 70). The Archbishop of Mozambique made this connection clear in his *Relatório* for 1956, describing the opportunity granted by rudimentary education for the conversion of African children, even if it was poorly funded and its educational outcomes were low.[111] It was this combination of incentives and financial autonomy that led to the decoupling described above, and made subsidising Catholic missions, and granting them a monopoly, an efficient option for the Portuguese colonial state to develop education for the African population.

In contrast to the shift that I am examining, the state remained the main provider of primary schooling for the white population. The higher quality of education received by white children and other demographics considered as *civilizados* meant that

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[110] Moreover, article 47 did not link the distribution of global subsidies by the colonial government across dioceses to educational outcomes.

[111] *Relatório do Prelado referente ao ano de 1956, Arcebispado de Lourenço Marques. Arquivo Histórico Ultramarino*, 1442 1B MU.

running these schools would have been costlier than running rudimentary schools. Of course, the white population in Mozambique was small and mostly limited to urban settings, and enrolment rates of 58% in *ensino primario elementar* were achieved by 1960 with only 9,339 white children enrolled in the whole colony (Table 3.1). The African population in Mozambique, on the other hand, was much larger. By 1960, achieving enrolment rates of 24% for the whole of the colony meant providing schooling to 386,032 black children (Table 3.2).[112] Therefore, in spite of the differences in the quality of education provided, significantly expanding schooling for the African population would have been a costlier endeavour, in absolute terms, than providing schooling for the white population. Nevertheless, this discrepancy still highlights the fact that financial considerations were likely not the only reason for granting a monopoly over African education to Catholic missions. In the next section, I analyse the hypothesis that this was also related to the concept in Portuguese imperial thought of the "civilising mission", and the perceived threats to state security and hegemony in the Portuguese colonies.

3.5. A "civilising mission"

The relationship between state power in Portugal and the Catholic Church changed throughout the years. The coup d'état of 28th May 1926 in Portugal marked the transition from the Republic (1910–1926), a limited parliamentary democracy which was anti-clerical, to a Military Dictatorship (1926–1933) first and then the corporatist dictatorship of the *Estado Novo* (1933–1974), both of which were pro-Catholic.

However, Dores (2019) describes how continuity rather than rupture was the norm in metropolitan policy regarding missions throughout the 19th and 20th centuries.

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[112] I calculate enrolment rates for the 5-14 age group, following the age bracket commonly used in the literature for primary education (see for example, Frankema, 2012, and Benavot & Riddle, 1988). I collect population data for the 5-14 age group from the different volumes of the 1960 colonial census (*III Recenseamento Geral da População na Província de Moçambique*). As described in section two of this chapter, for rudimentary education of the black children the same calculation but using the age bracket of 7-12, indicated in the legislation regulating *ensino rudimentar* (see section three), yields an enrolment rate of 40%.

The project of a so-called "civilising mission" began during the monarchic period, and would last through the Republic and into the *Estado Novo.* Even the Republic, in spite of its markedly anti-clerical rhetoric, continued to rely on Catholic missions as an instrument of imperial policy, and never implemented legislation ending their existence. This "civilising" project of the Catholic mission was based on the Portuguese language and Catholicism, and its objective was to "nationalise" the local population, as a way of consolidating Portuguese territorial dominion. The objective of nationalisation would remain the guiding principle of Portuguese missions even after the beginning of armed conflicts in the colonies.

In 1926, the preamble to *Estatuto João Belo* described the nationalisation and civilisation of "native" populations as one the main responsibilities of colonial powers, and religious missions as one of the main tools (Dores, 2019, p. 286). Article 21 of the *Estatuto* described the goal of the general program of Portuguese missions as defending the interests of the Portuguese colonial empire and developing its moral, intellectual, and material progress. The program detailed in the article included "native" education, geared among other things towards the supression of indigenous customs and the learning of the Portuguese language.

Later on, the goals that African education had to follow under the monopoly of Catholic missions were clearly stated in Article 68 of the *Estatuto Missionário*, and were fully in line with this "civilising" project:

> "[...] Those plans and programs (referring to plans regulating African education, approved by colonial governments) will aim at the perfect nationalisation and moralisation of the natives and their acquisition of work habits and skills, in harmony with the sexes, conditions and conveniences of the regional economies, including in moralisation the abandonment of idleness and the preparation of future rural workers and artisans who produce enough for their needs and social burdens.
>
> Indigenous education will thus be essentially nationalistic, practical and conducive to the native being able to earn the means to support himself and

his family, and will take into account the social state and psychology of the populations for which it is intended [...]"

Estatuto Missionário, of 1941, article 68 (my translation).[113]

Thus, the monopoly over African education granted by the *Estatuto Missionário* to Catholic missions can be understood as a continuation of their role within the Portuguese "civilising mission". As Dores (2019) describes, the 1941 *Estatuto Missionário* established the role of the Catholic Church within the imperial structure as the foremost tool for the nationalisation of the "natives", especially through missions and their educational activities. Through their monopoly over African education, missions in Mozambique "became a branch of the government with an important role in propaganda and social control" (Newitt, 1995, p. 479).

In this section, following the classification of colonial state imperatives by Young (1994), I analyse the degree to which this role of Catholic mission education in the Portuguese "civilising" project was designed as a defense against purported threats to Portuguese colonial hegemony and security,:

> *Hypothesis 2*: In Portuguese Africa, the colonial state granted Catholic missions a monopoly over education of the African population as a defense against perceived threats to state hegemony and security.

For Hypothesis 2 to be true, Catholic missions and mission schools must have been considered more effective than state-run schools in counteracting existing threats to hegemony and security. Let us examine, then, three of the major perceived threats to Portuguese state hegemony and security in Africa: Protestant missions, Islam, and foreign powers.

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[113] "*[...] Aqueles planos e programas terão em vista a perfeita nacionalização e moralização dos indígenas e a aquisição de hábitos e aptidões de trabalho, de harmonia com os sexos, condições e conveniências das economias regionias, compreendendo na moralização o abandono da ociosidade e a preparação de futuros trabalhadores rurais e artífices que produzam o suficiente para as suas necessidades e encargos sociais. O ensino indígena será, assim, essencialmente nacionalista, prático e conducente a o indígena poder auferir meios para seu sustento e de sua família e terá iem conta o estado social e a psicologia das populações a que se destina [...]*".

3.5.1. Threats to hegemony and security

The security imperative refers here to the objective of the colonial state of safeguarding its sovereignty and territorial integrity from external threats, and keeping public safety within its borders (Young, 1994, p. 37).[114] As described in Chapter 2, the autonomy of the Mozambican colonial state was subject to British dominance in southern Africa. At a broader level, insecurity was a running theme for Portuguese Africa since the period of the Scramble for Africa, and was fuelled in the 1930s by British and French appeasement strategies, which considered the possibility of offering the Belgian Congo, or the Portuguese colony of Angola to Nazi Germany (Young, 1994, p. 158).

On the other hand, the hegemony imperative required that no segment of society made a direct affront to the colonial state's right to rule (Young, 1994, pp. 35-36). Under the racism prevalent among colonial circles, the black population was considered malleable and potentially vulnerable to external influence.[115] In his 1938 report to the *Ministro das Colonias*, the *Prelado* of Mozambique, Teodosio Clemente de Gouveia, referred to black Africans as *res nullius*, a legal term for things that are property of no one and can thus be appropriated by whomever takes possession first. This perspective was the basis for warnings about the "denationalising" effects of exposure of Africans to Protestant missions, and Islam, which could threaten Portuguese sovereignty.[116]

The clash between European colonial domination, Christian missionaries and Islam was a generalised issue in colonial Africa. The Muslim religion "represented the most comprehensive ideological challenge to hegemony available to Africa at the moment of subjugation", a "mortal danger if not managed with care", while Christian

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[114] Young (1994) is not very clear on his definition of this particular imperative. This is my working interpretation for the purposes of the chapter.

[115] Importantly for my analysis, given that the Catholic missions were transferred the monopoly over schooling for the African population, but not for the white population, I find that in the primary sources I analyse this rhetoric mainly referred to the African population.

[116] *Relatório do Prelado de Moçambique* (1938). *Arquivo Histórico Ultramarino*, 2344 1B MU, p. 4.

missionaries "had a visceral animosity towards Islam, and they regarded combating its spread as a sacred vocation" (Young, 1994, p. 110). In Mozambique, an early mention to the threat of Islam was made by the predecessor to Teodosio Clemente, the *Prelado* Joaquim Rafael Maria d'Assunçâo Pitinho, who wrote in his 1922 annual report about how the influence of Islam, pervasive along the coast of the northern *distrito* of Moçambique, weakened Portuguese sovereignty, and how an organised network of Catholic missions were necessary to counteract it.[117] It is interesting to see if missions in Mozambique were preferentially targeting areas with a high prevalence of Islam: in certain colonies, the instability caused by resistance to Christian missionary influence among Muslim locals led administrators to limit the operations of Christian missions and even bar them from operating in Muslim regions (Frankema, 2012; Young, 1994).

The threat of Protestant missions to Portuguese sovereignty was constantly highlighted by Catholic authorities in their reports to colonial officials, presenting Catholic missions as the solution to such a threat. For example, in his 1922 annual report, the *Prelado* at the time, Joaquim Rafael Maria d'Assunçâo Pitinho, talked about foreign "propaganda" against the Portuguese colonial administration and against the "civilising action" of the Portuguese missions, the role of Protestant missionaries in this supposed campaign and the use of Catholic missions to neutralise it.[118] This threat was even enshrined in colonial legislation: the preamble to *Decreto* 12,485, passing the 1926 *Estatuto João Belo,* is a very clear example of the deleterious influence attributed to foreign missions and the purported need to counteract it through the action of Catholic missions. According to Dores (2019, p. 286-287), said preamble built on a tradition of Portuguese imperial thought which saw foreign missionaries, normally Protestant but also foreign Catholic, as a danger to Portuguese colonial sovereignty. This fear went back as early as 1867, when Protestant and foreign Catholic missionaries were seen as potential agents of other powers, and suspected of "denationalising the natives" (Mondlane, 1983, p. 71, cited in Cross, 1987, p. 556). It is interesting to note here both the longevity of the

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[117] Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922 (Doc 30), 2344 1B MU. p. 46.

[118] *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922* (Doc 30)*. Arquivo Histórico Ultramarino.* 2344 1B MU, pp. 17-18.

"denationalising" rhetoric, which appears consistently in primary ecclesiastical sources at least into the early 1960s, and the connection between the Protestant threat to hegemony and the threat from foreign powers.

As a result of this perceived threat, Protestant missions faced a wide array of obstacles in colonies held by historically Catholic colonisers, which ranged from direct blocking to regulations which made it harder for them to operate (Woodberry, 2004, Chapter 2). In Angola and Mozambique, Protestant missions were not barred from entry, but they were banned from working near Catholic missions, or in the territories of concessionary companies (Moreira 1935; 1936: 43-50, cited in Woodberry, 2004, pp. 32-33). Academic and language requirements in Portuguese (as well as French and Italian) colonies would have had the effect of diverting Protestant missionaries to other African territories (Woodberry, 2004, p. 34). In Mozambique, the *Diploma Legislativo nº 167* of 1929, passing the *Regulamento do exercício das missões religiosas de diversas confissões e nacionalidades,* established in article 2 that all religious missions had to use Portuguese in catechism and in the rest of their relations with natives. Similarly, the *Diploma Legislativo nº 168* of 1929, which regulated primary schools categorised as *particular* (essentially schools run by missions), established in article 6.6. that missions providing *ensino elementar* had to do so in Portuguese.[119]

Table 3.2 shows the decline in importance of foreign missions in Mozambique in the provision of rudimentary schooling for the black population, one of the proxies for missionary activity. Absolute enrolment numbers remained relatively stable, but their relative importance declined from 24% in 1930 to only 1.9% in 1962. Newitt (1995, pp. 479-480) sees this decline in their educational role as the result of a deliberate policy by the colonial state:

> "The relative decline of foreign missions was of course part of government
> policy, and obstacles were increasingly placed in the way of their operation.

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[119] *Diploma Legislativo nº 168* refers to education provided to Africans. *Ensino rudimentar* as a category would not exist until its regulation in *Portaria 1114,* of 17th May 1930, hence the reference to *ensino elementar* in spite of the regulation being addressed to the schooling of the African population.

African teachers could only gain admission to training institutions if they were Catholic, and access to further education in general likewise depended on subscription to the established state religion."

Marcum (2017) reccounts several instances of state disruption of Protestant missionary activities in Mozambique, late into the colonial period. One episode refers to the experience of Joao Jamisse Nhambiu working as a Methodist catechist in the 1950s, and his confrontation with a Portuguese Catholic priest who had him arrested for being, in the words of the priest, a "hindrance to positive Catholic action" and an obstacle to "effective colonization of the people in that community" (Marcum, 2017, p. 110). In another, he describes how a Methodist mission in Inhambane faced discrimination and suppression of its activities throughout the years, including an official decision to close its mission schools in 1962, in spite of having received the right to establish schools since 1883 (Marcum, 2017, p. 8).[120]

Writing in the same 1938 report referenced above, the *Prelado* provides us with a short summary of these perceived threats. He went on to warn of three threats to Portuguese national sovereignty in Mozambique: bolshevism, Islam, and Protestantism, suggesting the insufficiency of Catholic missionary activity as one of the causes, and their strengthening and expansion as the solution.[121] The *Prelado* identified the extension of Islam from the coast of the northern region of Niassa, to the margins of Lake Nyassa in the interior, and "invading" the whole of the *distrito* of Porto Amélia. Protestantism, on the other hand, was prevalent across the whole of the *Provincia* of Sul do Save, but also in the margins of Lake Nyassa in the north, the region of Angónia in north-eastern Tete, and central regions like that of Barue or territories under control of the *Companhia de Moçambique*. Finally, in an interesting link between the three threats considered here, the *Prelado* warned of bolshevism being most prevalent among Protestants and Muslims, and its spread

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[120] In what we may call somewhat of a self-fulfilling prophecy, the fact that in Portuguese Africa Protestant missions had less to lose than their Catholic counterparts, and were not influenced by the relationship between Catholicism and nationalism, led Protestant missions to challenge the colonial state earlier than Catholic missions (Dores, 2019, p. 281). Also, some of the most prominent leaders of Mozambican nationalist movements, like Eduardo Mondlane, studied in Protestant missionary schools.

[121] *Relatório do Prelado de Moçambique* (1938). *Arquivo Històrico Ultramarino*, 2344 1B MU. Especially *Capitulo IV* and *V* of the *Relatório.*

potentially giving a pretext to neighbouring powers for their intervention in Mozambique.

3.5.2. Catholic mission schools as defensive tools

The previous section describes how Protestant missions, Islam, and foreign powers were considered threats to Portuguese colonial security and hegemony. I now show that Catholic missions and mission schools, in particular, were seen as a tool that could be used against these perceived threats.

Obviously, Catholic authorities had every reason to present the Catholic missions as the solution to purported threats: this argumentation was often accompanied in ecclesiastical reports by calls for greater state funding of the Catholic missions. It is thus important to check the opinion on the matter within colonial circles. Importantly, Catholic mission schools were considered a better tool than state-run schools for the goal of "civilising" the African population by prominent colonial officials. Years before the signing of *Estatuto Missionário,* the preamble to the 1926 *Estatuto João Belo* considered lay schools to be insufficient for the purported goal of assimilating local populations, but it highlighted the effectiveness of religious action for such purposes:

> "The consensus among states is that it would not be practical to multiply merely lay primary and professional schools among the numerous native populations of the colonies, to absorb them into the metropolitan civilisation, nor could the intended complex effects on the simple and virgin spirit of these peoples, so predisposed to being influenced by religious action, be accomplished solely through these processes, even if it were possible to utilise them with such amplitude."

Preamble to *Decreto* 12,485 from 1926, passing the *Estatuto orgânico das missões católicas portuguesas de África e Timor* (my translation).[122]

The opposition faced by the secular missions established under the Portuguese First Republic also reflects the role assigned to the Catholic missions in the "civilising project", and in particular in limiting the influence of Protestantism. These secular missions, composed of lay individuals and refraining from any religious action, were introduced by Law 223, of November 22nd 1913, in response to the lack of Catholic missionaries for the Portuguese "civilising project".[123] Dores (2019, p. 285) describes how, in a context in which the religious element was considered essential to the process of "civilising" local populations, certain colonial elements opposed these secular missions, arguing that their secular nature made them incapable of fulfilling one of their main goals, which was competing against Protestant missions. Among those who opposed them was João Belo, *Ministro das Colónias*.[124] Predictably, ecclesiastical authorities also doubted the ability of the secular missions to counteract Protestant influence, calling instead for religious missions.[125]

In Mozambique, the highest-ranking colonial official around the time of the signing of *Estatuto Missionário*, the *Governador Geral* General José Tristão de Bettencourt, expressly advocated for the use of Catholic missions as a way of indirectly limiting the influence of Protestantism:

"(Referring to the foreign missions) They exist in large numbers and exert an influence that I have tried to mitigate, where it is harmful.

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[122] "*O mesmo consenso dos estados reconhecen que nem seria prático multiplicar escolas meramente civis de instruçao primária e profissional no meio das numerosas populações indígenas das colónias, para as absorver pela civilização das metrópoles, nem se conseguiriam únicamente por êsses processos, quando fôsse possível empregá-los com tal amplitude, os efeitos complexos que se pretende atingir no espiríto simples e virgem essas raças, tam especialmente dispostas a deixar-se influenciar pela acção religiosa.*"

[123] *Anuário do Ensino*, 1930, p. 9.

[124] João Belo was behind the inquiry which eventually shut down the *Instituto das Missões Laicas*, where secular missionaries were trained (Dores, 2019, p. 285). Secular missionaries must not be confused with missionaries from the secular clergy, which were priests and not lay people.

[125] *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922*. *Arquivo Histórico Ultramarino*, 2344 1B MU, p. 45.

I am, however, of those who think that this must be achieved by somewhat indirect means, with a foremost role for the Catholic missions which, for this, require the assignment of the essential resources."

Relatório do Governador Geral de Moçambique. Respeitante ao periodo de 20 de Março de 1940 a 31 de Dezembro de 1942. Volume I, pp. 115-116 (my translation).[126]

The impossibility of an outright ban on Protestant missions or their provision of schooling would have further incentivised using Catholic missions as a tool to counteract their influence. In his 1940–1942 report, the *Governador Geral* discusses article 66 of *Estatuto Missionário*.[127] According to the *Governador*, a literal reading of the article, where it says schooling for the native population should be trusted "entirely" to the Catholic missions, would imply the closing of all schools for the *não-civilizados* run by the foreign missions. However, he continues, such a move could have international repercussions. Here, he is most likely referring to the international treaties guaranteeing the freedom of establishment of missions, seen at the time in Portuguese colonial thought as a gateway to undue Protestant influence.[128] The *Governador* finishes by mentioning having consulted the legislator behind *Estatuto Missionário*, who answers that forbidding the provision of this type of schooling by foreign missions was not the intention of article 66.

I now analyse qualitative evidence from ecclesiastical reports to colonial officials. The above caveat applies: Catholic authorities would have been interested in presenting Catholic missions as the solution to purported threats. However, the fact that these reports were addressed to high colonial authorities and the same rhetoric

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[126] *"São em grande número e exercem uma influência que tenho procurado atenuar, onde ela se mostra nociva. Sou, porém, dos que pensam, que tal deve conseguir-se por meios de certa forma indirectos, cabendo, nessa acção, o primeiro papel às missões católicas que, para tanto, precisam de ser dotadas com os recursos indispensáveis."*

[127] *Relatório do Governador Geral de Moçambique. Respeitante ao periodo de 20 de Março de 1940 a 31 de Dezembro de 1942. Volume I,* pp. 111-112.

[128] This idea is present in the preamble to the 1926 *Estatuto orgânico das missões católicas portuguesas de África e Timor*. It is also mentioned by the *Prelado* in his 1922 report: *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922*. Arquivo Histórico Ultramarino, 2344 1B MU, p. 22.

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was used consistently over the years, by multiple *Prelados* in different ecclesiastical regions of Mozambique, shows that there was a shared language and set of ideas between ecclesiastical and colonial officials on the role of Catholic missions and schools against perceived threats. Importantly for the purposes of this chapter, in their "civilising" rhetoric Catholic authorities alluded specifically to the use of schools as a way for Catholic missions to exert their "nationalising" and "civilising" influence against the perceived threats. In the same 1938 report referenced above, the *Prelado* proposed strategies to counteract the threats to Portuguese sovereignty, and referenced schooling as the main activity through which the "nationalising" action of Portuguese missionaries took place: multiplying schools meant multiplying the points of nationalisation.[129]

Judging by the frequency of references in their reports to colonial officials, the Protestant "threat" held a prominent position in the spectrum of perceived threats. These references often alluded to the role of Catholic mission schools. In 1922, when talking about the mission of *San Benedito dos Muchopes,* the *Prelado* Joaquim Rafael Maria d'Assunção Pitinho, referred specifically to the role of the Catholic mission schools in limiting the influence of the Protestant missions.[130] His successor, Teodosio Clemente de Gouveia, wrote in 1942 as the Archbishop of Lourenço Marques and authority for the newly created diocese of Beira, and described the confidence deposited by the *Superior* of the *Missão do Santo Condestavel do Alto Molocue* on mission schools to "fight" the Protestant missions.[131] In 1957, the Archbishop described the obstacle of "Protestant sects" to missionary activities, and argued that the health of the Catholic Church and the Portuguese state in Mozambique required a vast network of rudimentary schools (by then re-named as adaptation schools), establishing one in each African village before they are reached

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[129] *Relatório do Prelado de Moçambique* (1938). *Arquivo Històrico Ultramarino*, 2344 1B MU, pp. 15 and onwards.

[130] *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922*. *Arquivo Històrico Ultramarino*, 2344 1B MU, pp. 31-32.

[131] *Relatório do Prelado referente ao ano de 1942*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 2344 1B MU, p. 18. The agreements between *Estado Novo* and the Catholic Church led to the ecclesiastical reorganisation of the colony. The colony was divided into multiple dioceses, and Teodosio Clemente de Gouveia became Archbishop. Though his see was in Lourenço Marques, for a brief interval he was also the authority for the newly created diocese of Beira.

by the "Protestant sects".[132] In 1960, he would refer specifically to the "denationalising" effect of Protestant mission schools, which highlights further the importance of education in the Catholic-Protestant clash.[133]

Although there were some missions in central and northern regions, Protestant missionary activity in Mozambique was concentrated in the south of the colony. The historical influence of Islam, on the other hand, was larger in the central and northern regions: this is reflected in the ecclesiastical reports. In 1952, the *Prelado* for the diocese of Beira warned about the divisory line between Zambezia and Niassa being broken by the "minions of Mohammed", and argued it was imperative to close this imaginary border with three additional missions to prevent the spread of Muslim influence. The specific relevance of education for this purported threat was highlighted in the 1922 report by the *Prelado*, in which he quoted a missionary of *Missão de S. Luiz Gonzaga de Malatane-Angoche* who said that, once the necessary teaching personnel was ready, schools would be set up in the hinterland to counteract the effect of the ubiquitous Muslim schools and the "denationalising" effects of Islam.[134]

Finally, imperial competition and the ambitions of other powers limited and threatened the Portuguese empire in Africa, and this influenced missionary policy in the continent, leading to the use of missions as instruments for the assertion of territorial claims and sovereign legitimacy (Dores, 2019, pp. 227-278).[135] This is borne out in ecclesiastical reports, where warnings about the importance of covering territory with Catholic missions often referred to border areas. Bishop Sebastião Soares de Resende, of the central diocese of Beira, wrote in 1952 about the absence of missions in the bordering regions of Marávia, Zumbo and part of the *concelho* of Tete, and argued that Catholic missions were the best "defense castles

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[132] *Relatório do Prelado referente ao ano de 1957, Arcebispado de Lourenço Marques. Arquivo Histórico Ultramarino*, 1442 1B MU, pp. 1-3.

[133] *Relatório do Prelado referente ao ano de 1960, Arcebispado de Lourenço Marques. Arquivo Histórico Ultramarino*, 1442 1B MU, p. 3.

[134] *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922. Arquivo Histórico Ultramarino*, 2344 1B MU, p. 48.

[135] Dores notes that this was not a Portuguese innovation, as missionaries in the Belgian Congo and French colonies in Africa were also given "imperial utility", that is, used for the consolidation of dominion and imperial presence (Dores, 2019, pp. 278-279).

against possible, probable, and even real communist invasions".[136] In 1954, he would write again about the same area in the *distrito* of Tete, stating the political importance of occupying the region because of the large dimensions of the borders and the circumstances in neighbouring colonies.[137] Similarly, when writing in 1962 about the mission in Rotanda, in the *posto* of Manica, he suggested that its isolation and location in a border area made it "susceptible to all kinds of influences and exchanges".[138] Given the role of rudimentary schools in the "civilising" function of Catholic missions, it is likely that these references to the need for Catholic missions in border areas, to counteract "denationalising" influences coming from abroad, included the need for educational expansion.

The discussion above shows that arguments by ecclesiastical authorities for the expansion of Catholic missions were not abstract calls for increased missionary activity, but had particular goals in mind and targeted specific regions. For example, in 1942 Archbishop Teodosio Clemente described the presence of foreign missions as one of two characteristics of a territory, the other one being population density, that merited augmenting the presence of Catholic missions.[139] We can observe the spatial component of mission location policy (or rhetoric at least), as well as the combination of two of the perceived threats, Protestantism and foreign powers, in the fact that colonial and ecclesiastical authorities were not only preoccupied with the Protestant missions in Mozambique: Protestant missions in neighbouring colonies were also seen as a threat and a negative influence over African populations in Mozambique. Border areas close to these missions were thus seen as requiring Catholic missionary presence. In his 1922 report, the *Prelado* Joaquim Rafael Maria d'Assunçâo Pitinho mentions the influence of the missions in foreign colonies multiple times.[140] In several instances, he mentions the need to expand Catholic

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[136] *Relatório do Prelado referente ao ano de 1952*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 1442 1B MU.

[137] *Relatório do Prelado referente ao ano de 1954*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 1442 1B MU.

[138] *Relatório do Prelado referente ao ano de 1962*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 1442 1B MU.

[139] *Missões. Arquidiocese de Lourenço Marques. Relatório do Prelado referente ao ano de 1942. Arquivo Històrico Ultramarino*. 2344 1B MU, p. 42.

[140] Indeed, a cursory look at the 1925 World Missionary Atlas, edited by Beach & Fahs (1925), shows that many foreign missions set up near the borders of Mozambique in neighbouring colonies (the Atlas gives the location for missionary stations in 1923).

missionary presence in the northern territory of Niassa, where the Protestant missions set up in the small island of Likoma, part of British Nyasaland (current-day Malawi) and right off the Mozambican coast of Lake Niassa, exerted their influence through 70 schools:

> "There are absolute needs for Portuguese missions in this vast region, which borders others with an abundance of missions, in contrast with what happens inside our borders. The Protestant missions of Lago are a danger that must be diminished or neutralised by Portuguese religious action."
>
> *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922. Arquivo Històrico Ultramarino*, 2344 1B MU, pp. 54-55 (my translation).[141]

The *Prelado* once again references the negative influence of the foreign missions across colonial borders when talking about the region of Angónia, located in the north-eastern limit of Tete and bordering Nyasaland, where the Catholic mission of *San Francisco Xavier da Angónia* was already established in 1922, in Lifidzi.

> "There are many religious missions in the English border, resulting in a serious damage to our political influence, disputed by foreign missionary action."
>
> *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922. Arquivo Històrico Ultramarino*, 2344 1B MU, p. 44.[142]

Overall, then, the picture that emerges from an analysis of primary sources is that, among Portuguese colonial and ecclesiastical circles, Catholic missions and mission

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[141] "*Há necessidades absolutas de missões portugezas nesta tão vasta região, limitrofe doutras onde abundam missões em desfavoravel confronto com o que se passa adentro das nossas fronteiras. As missões protestantes do Lago são um perigo que deve ser atenuado ou neutralisado pela acção religiosa portugueza*."

[142] "*Abundam as missões religiosas na fronteira ingleza com grave prejuizo da nossa influencia politica disputada pela acçao missionária estrangeira*."

schools were considered a tool to counter the influence of Protestant missions, Islam, and foreign powers, and that this may have guided mission location policy.

3.5.3. The location of missionary activity

I now turn to a quantitative analysis of Hypothesis 2, by studying the factors that drove the spread of Catholic missions in Mozambique during the colonial period. If Catholic missions and their schools were used as a tool against the perceived threats of Protestant missionaries, Islam, and foreign powers, we should find Catholic missions prioritising areas close to Protestant missions, areas with a high percentage of Muslim population, and areas close to international borders.

Locating Catholic missions close to Protestant missions may have limited their influence through two mechanisms. The first one is competition. The sources quoted above show that the discourse about competing against the Protestant missions for students and converts was not a call for an abstract expansion of the Catholic missions. Rather, expansion of the Catholic missions was to be focused in areas where Protestant missions were present. The second way in which proximity of Catholic missions could limit Protestant influence is through the indirect legal obstacles referenced above: Protestant missions could not work near Catholic missions. Missions were likely to set up missionary stations and schools close to pre-existing missions, from which they could draw support. We can see this in Figures 3.6 and 3.7: schools run by Catholic and Protestant missions were usually set up close to the main mission upon which they depended. This is in line with evidence of how the Catholic missions ran *escolas filiais*, or branch schools linked to the missions, whereby the missionaries regularly visited branch schools run by African teachers.[143] Such regular visits would have required proximity of the schools to the missions. Thus, given that Protestant missions were barred from working close to Catholic missions, establishing Catholic missions near Protestant missions would have cast a radius limiting their expansion.

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[143] Mentioned by the *Prelado* Joaquim Rafael Maria d'Assunçâo Pitinho in *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1927* (Doc 33). Arquivo Històrico Ultramarino. 2344 1B MU, p. 1.

The rationale of locating Catholic missions in Muslim areas would have been one of religious competition for converts. Mission rudimentary schools would have been a key piece, given their role in the conversion of children. In the case of the threat to security posed by foreign powers, the sources described above show that locating Catholic missions in border areas was seen as a way to expand Portuguese political influence in these strategic regions. Given the "nationalising" goals of rudimentary education in Mozambique, mission schools would have been a key aspect of this dynamic.

3.5.3.a. Georeferenced dataset

To analyse the drivers of mission location, I build a new geo-referenced dataset of Catholic mission primary stations in Mozambique between 1922 and 1971.[144] I divide the colony into a grid of 50 x 50 km cells, yielding 360 cells: the main variable of interest is whether a cell contained a Catholic mission in a particular year or not, as well as the number of Catholic missions located within each cell.[145] Using missionary atlases to georeference the location of missions leads to multiple issues that can bias the analysis (see Jedwab et al., 2022). I avoid these pitfalls by using unpublished annual reports by the Catholic ecclesiastical authorities instead. In 1922, at a time when the entire territory was yet to be under the control of the colonial state, there were only 27 open primary stations in the whole colony. By 1971, at the eve of independence, there were 250 primary stations operating in Mozambique.

The dataset also includes information on the three factors of interest. I proxy for the prevalence of Islam among the population by calculating the percentage of Muslim people at the level of *concelhos* and *circunscrições,* over the total black population, from the 1950 colonial census (Figure 3.8). Each cell is attributed the value of the *concelho* or *circunscrição* it overlapped the most with. I georeference the location of

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[144] See section B of the Appendix for more details. I am able to locate primary stations, not each individual outstation or village school.

[145] The irregular outline of any territory means that cells around the borders and coastline can be very small: I drop any cell that is less than 1% of the area of a regular 50 x 50 km cell. This yields the dataset of 360 cell observations.

Protestant missions in 1936 from Moreira (1936) and calculate the distance of each cell centroid to the closest Protestant mission (Figures 3.9-3.14). The data for 1936 can be taken as representative of the location of Protestant missionary activity until at least 1962, for two reasons. First, enrolment numbers for black children in rudimentary education, one of the main activities of missions in Mozambique, remained fairly stable until 1962 (Table 3.2). Second, the location of Protestant missions in the 1930s, mostly concentrated in the south of the colony, mirrors the image presented in the *Atlas Missionário Portugués* of 1962 with only small differences (see Figure A.3.1 in the Appendix, for a visual comparison). Finally, I calculate the distance of each cell centroid to the closest international border.

To understand the importance of our three factors of interest, I control for other variables that have been found to influence the expansion of missions in colonial Africa. I take as a reference the factors identified for Ghana, and Africa in general, in the important work by Jedwab et al. (2022), which is the most thorough examination so far of the determinants of Christian missionary expansion in colonial contexts.[146] Based on their conceptual framework, I think of missionary orders as not-for-profit organizations that obtain utility from the conversion of locals and the schooling of students.[147] The appeal of a certain location is a trade-off between the utility that it may report to each mission, and the costs of setting up and carrying out activities in that location. Certain factors may influence both sides of the equation. For example, one issue that works against Hypothesis 2 is that greater prevalence of Islam among the local population may have incentivised Christian missions to seek conversions, but may have also increased resistance and thus the costs of running the mission. I follow an arbitrary classification of factors into broad categories: disease environment, political economy, population density, agriculture, accessibility, and geography.[148] The rationale for including each variable within those groups, and the sources used, are described in section B of the Appendix.

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[146] Of course, some factors that are exclusively relevant to the Ghanaian context or otherwise not relevant for Mozambique are not included here, and others are added that may have been important in Mozambique.

[147] The framework that I draw from is briefly exposed in an earlier, working paper version (Jedwab et al., 2019), but not in the final, published version.

[148] This classification is similar to that followed by Jedwab et al.'s (2019) working paper.

Figure 3.6: Protestant missions and rudimentary schools in Mozambique, 1931
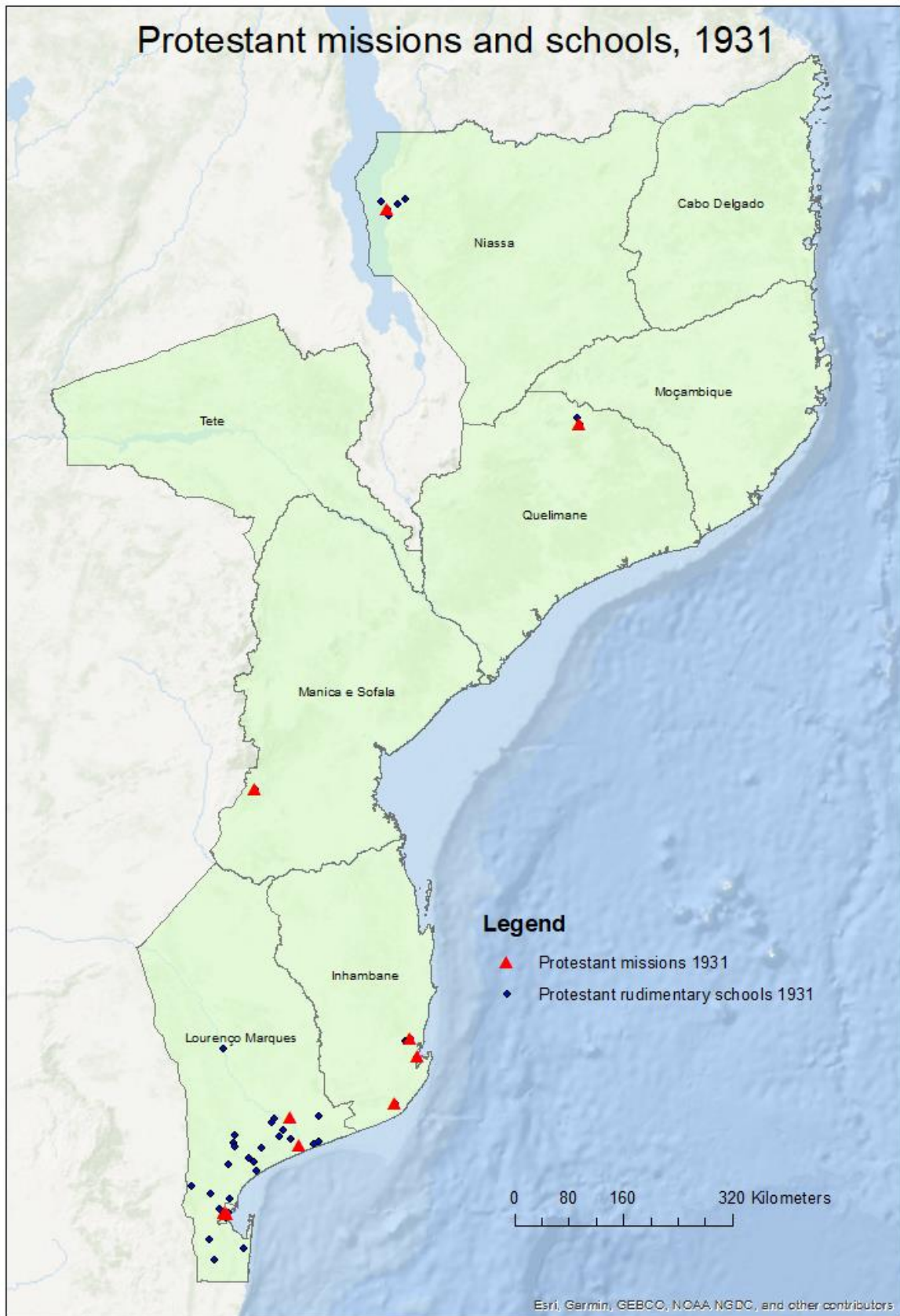
Protestant missions and schools, 1931

Source: Georeferenced using data from *Anuários Estatísticos da Colónia de Moçambique* (statistical yearbooks) and *Anuários do Ensino* (education yearbooks)

Figure 3.7: Catholic missions and rudimentary schools in Mozambique, 1931
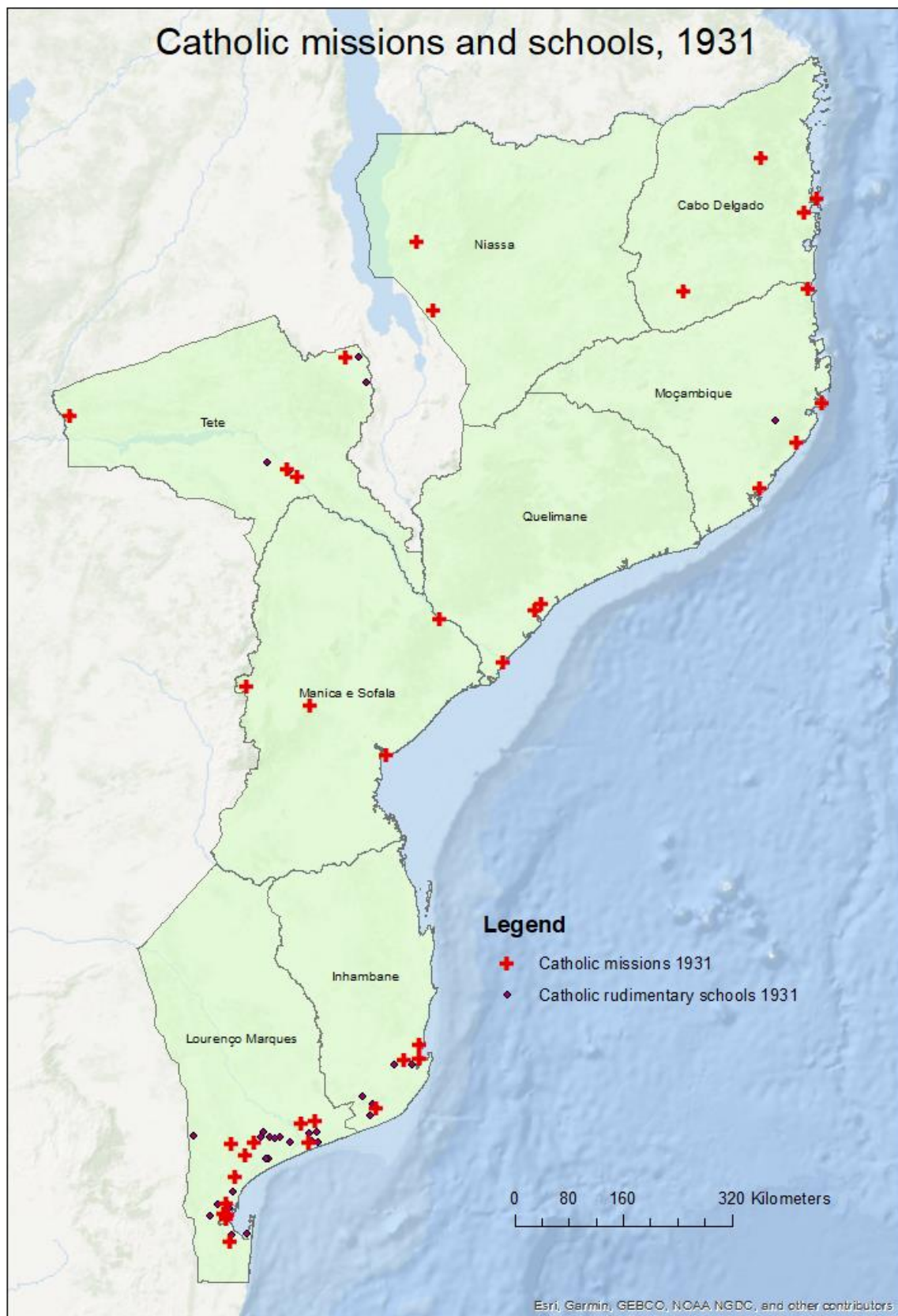
Source: Georeferenced using data from *Anuários Estatísticos da Colónia de Moçambique* (statistical yearbooks) and *Anuários do Ensino* (education yearbooks)

Figure 3.8: Percentage of Muslim population in Mozambique, 1950
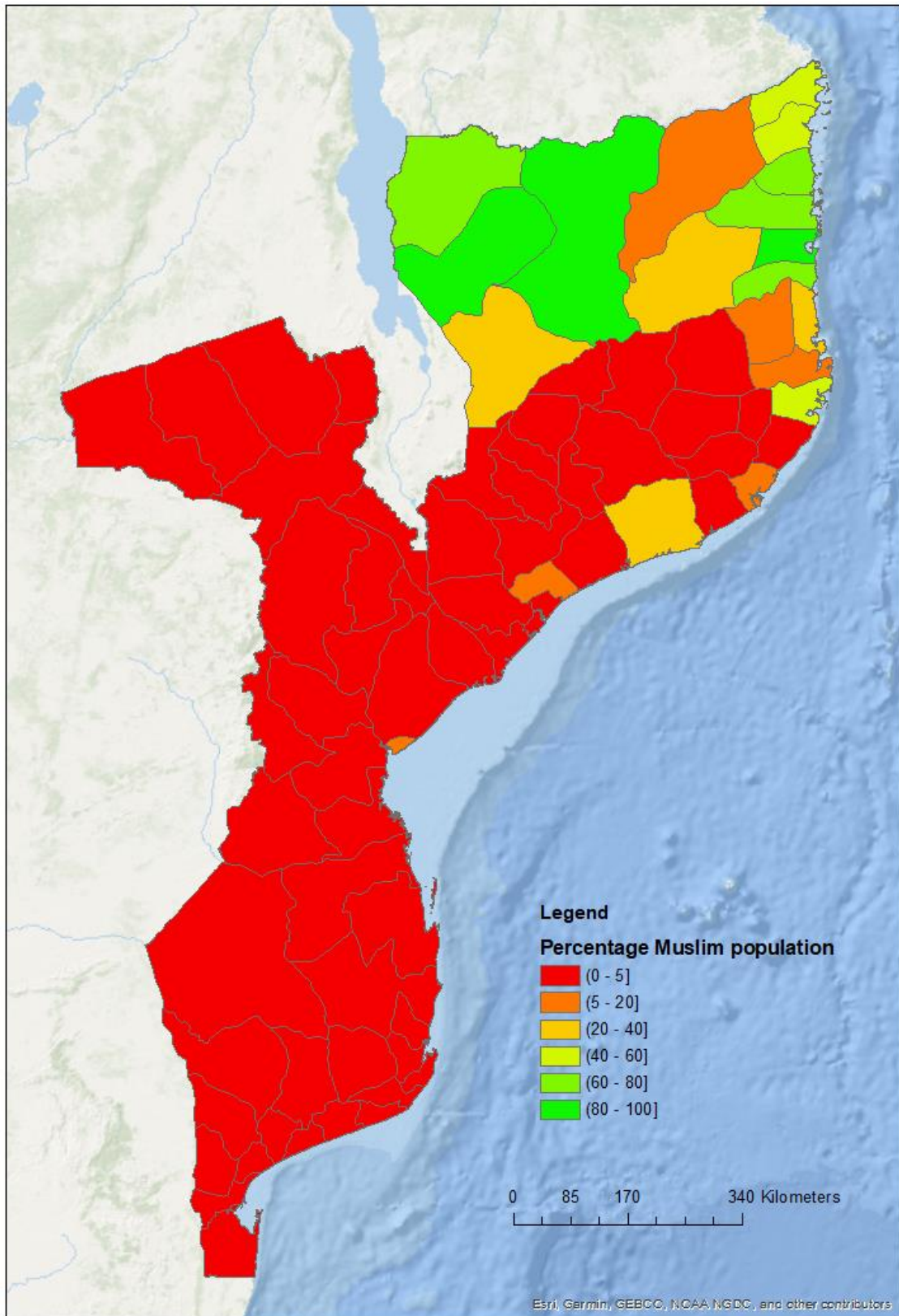
Source: Georeferenced using data from *Província de Moçambique. Instituto Nacional de Estatística, Delegação de Moçambique* (1960) *III Recenseamento Geral da População na Província de Moçambique*

Figure 3.9: Catholic missions in Mozambique, 1922
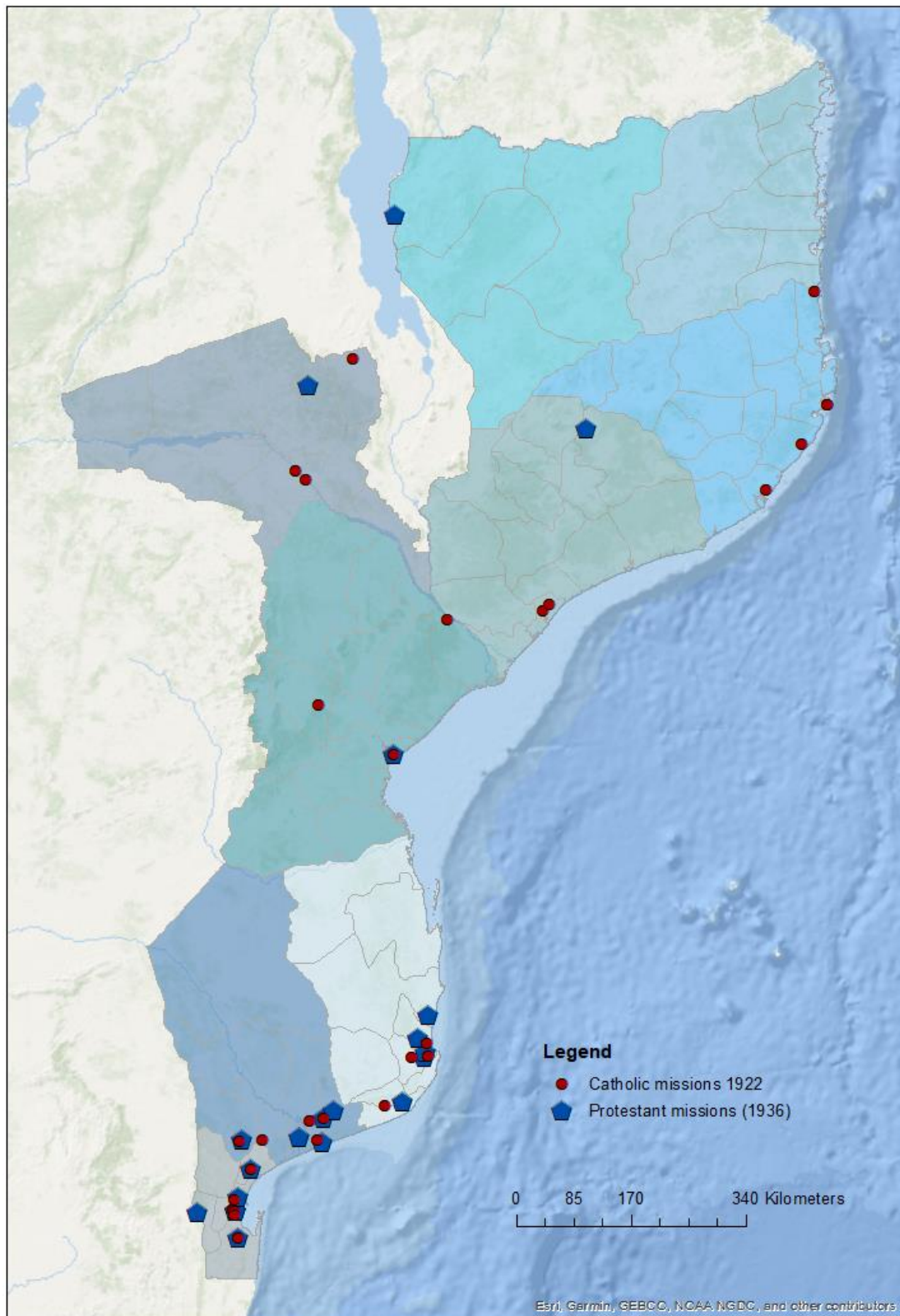
Source: Georeferenced using data from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 2344 1B MU

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936), are also shown for context

Figure 3.10: Catholic missions in Mozambique, 1928
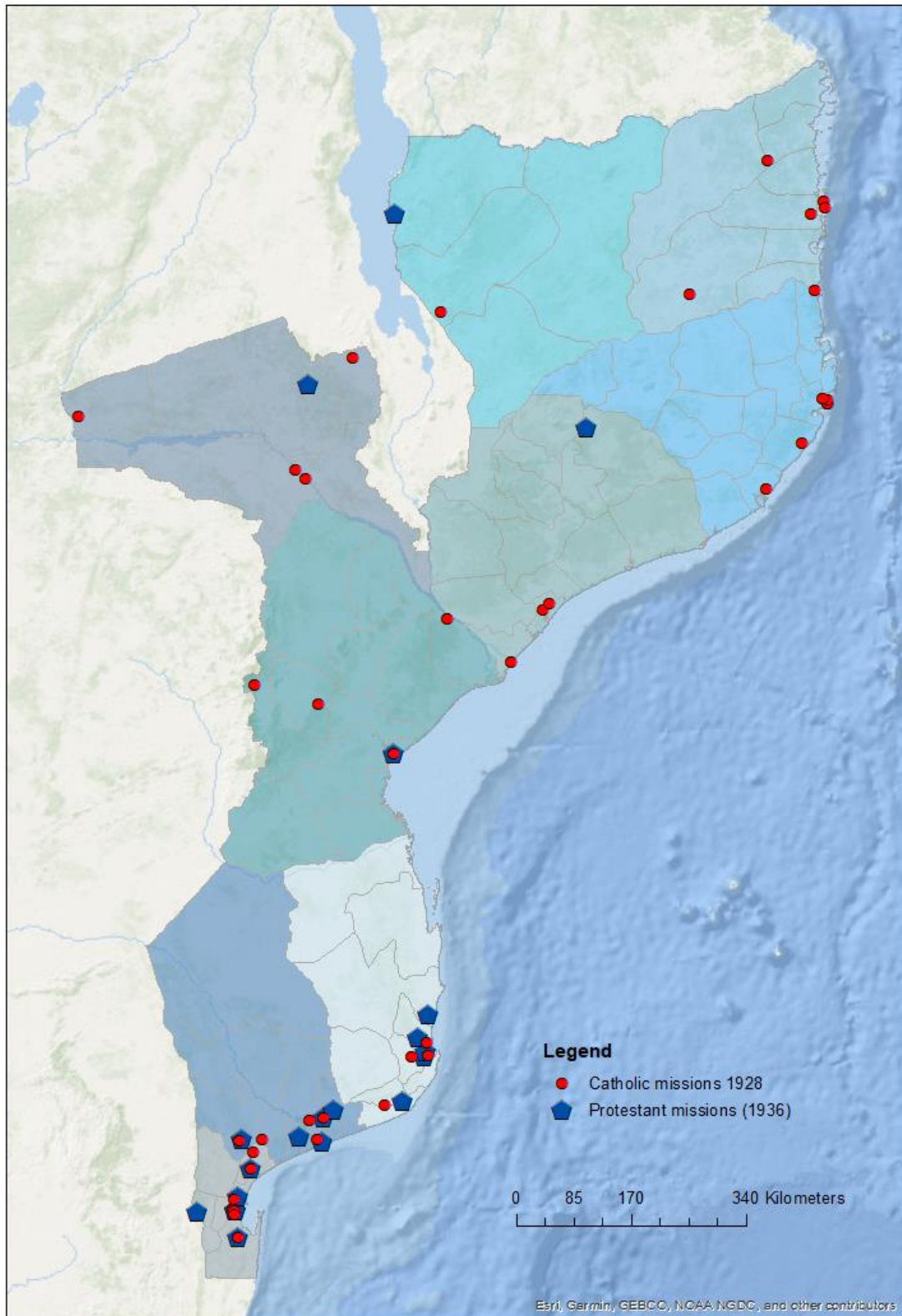
Source: Georeferenced using data from unpublished ecclesiastical reports archived

in *Arquivo Històrico Ultramarino*, 2344 1B MU.

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936),

are also shown for context.

Figure 3.11: Catholic missions in Mozambique, 1942
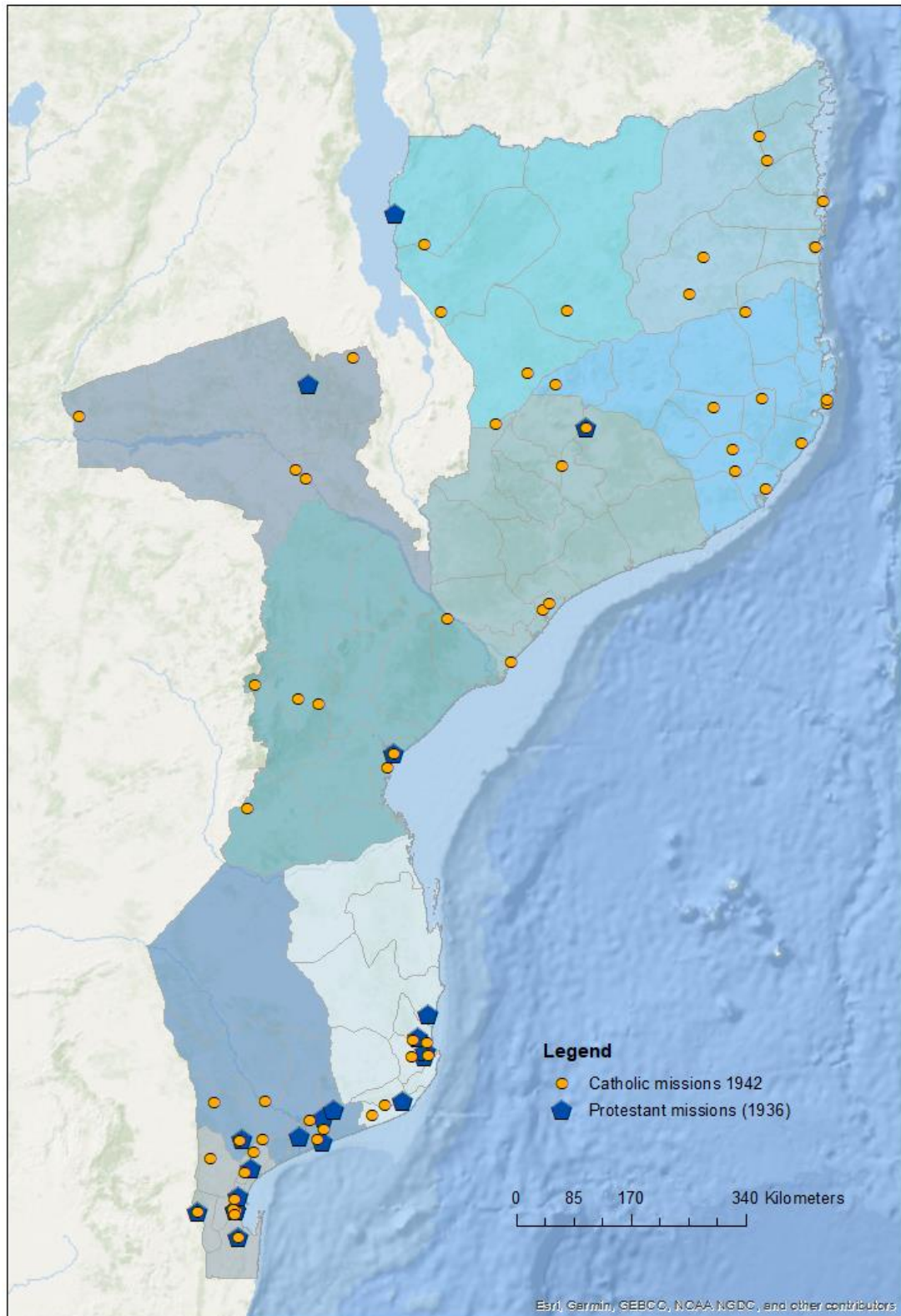
Source: Georeferenced using data from unpublished ecclesiastical reports archived
in *Arquivo Històrico Ultramarino*, 2344 1B MU

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936),
are also shown for context.

Figure 3.12: Catholic missions in 1952
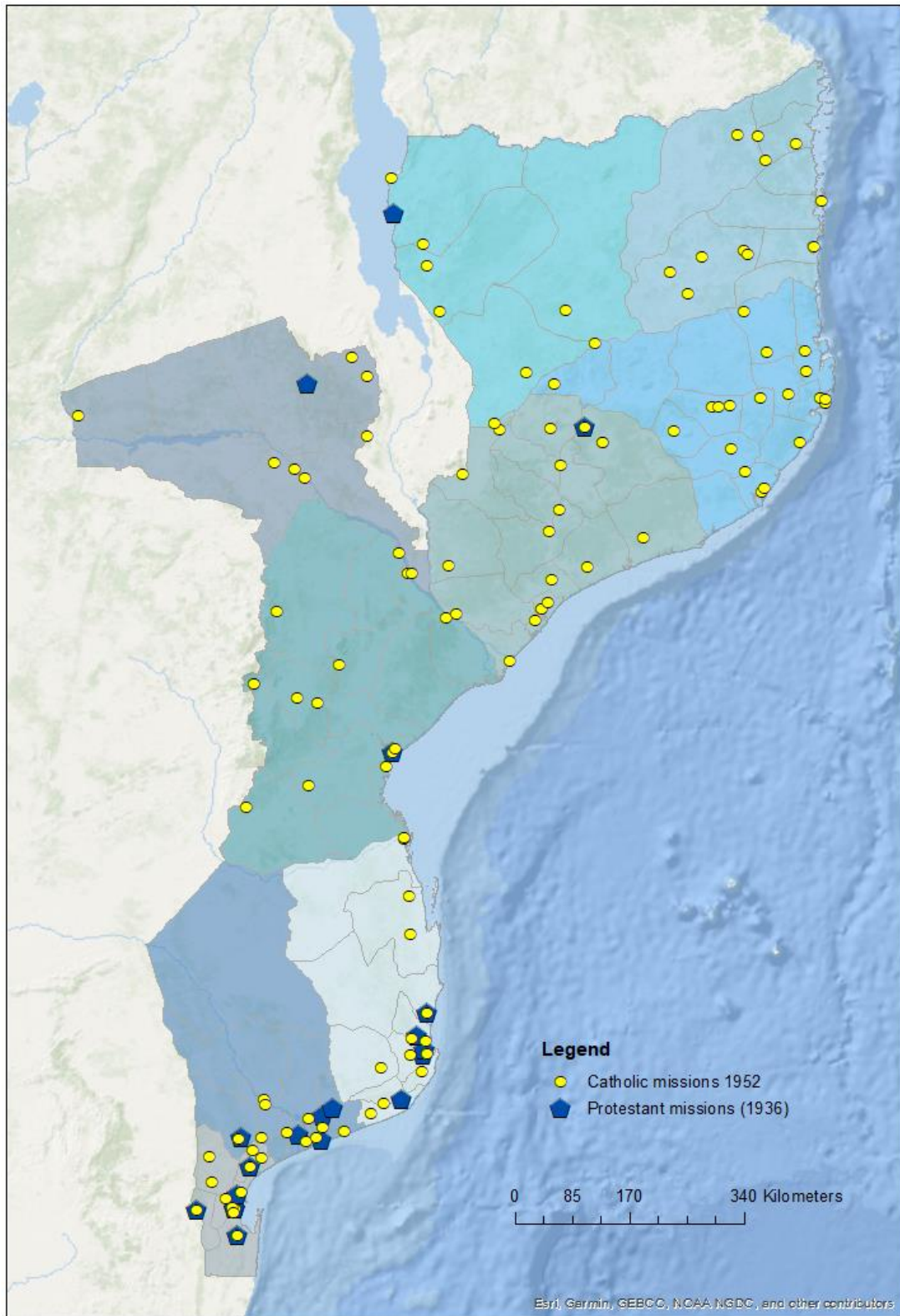
Source: Georeferenced using data from unpublished ecclesiastical reports archived

in *Arquivo Històrico Ultramarino*, 1442 1B MU

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936),

are also shown for context.

Figure 3.13: Catholic missions in Mozambique, 1962
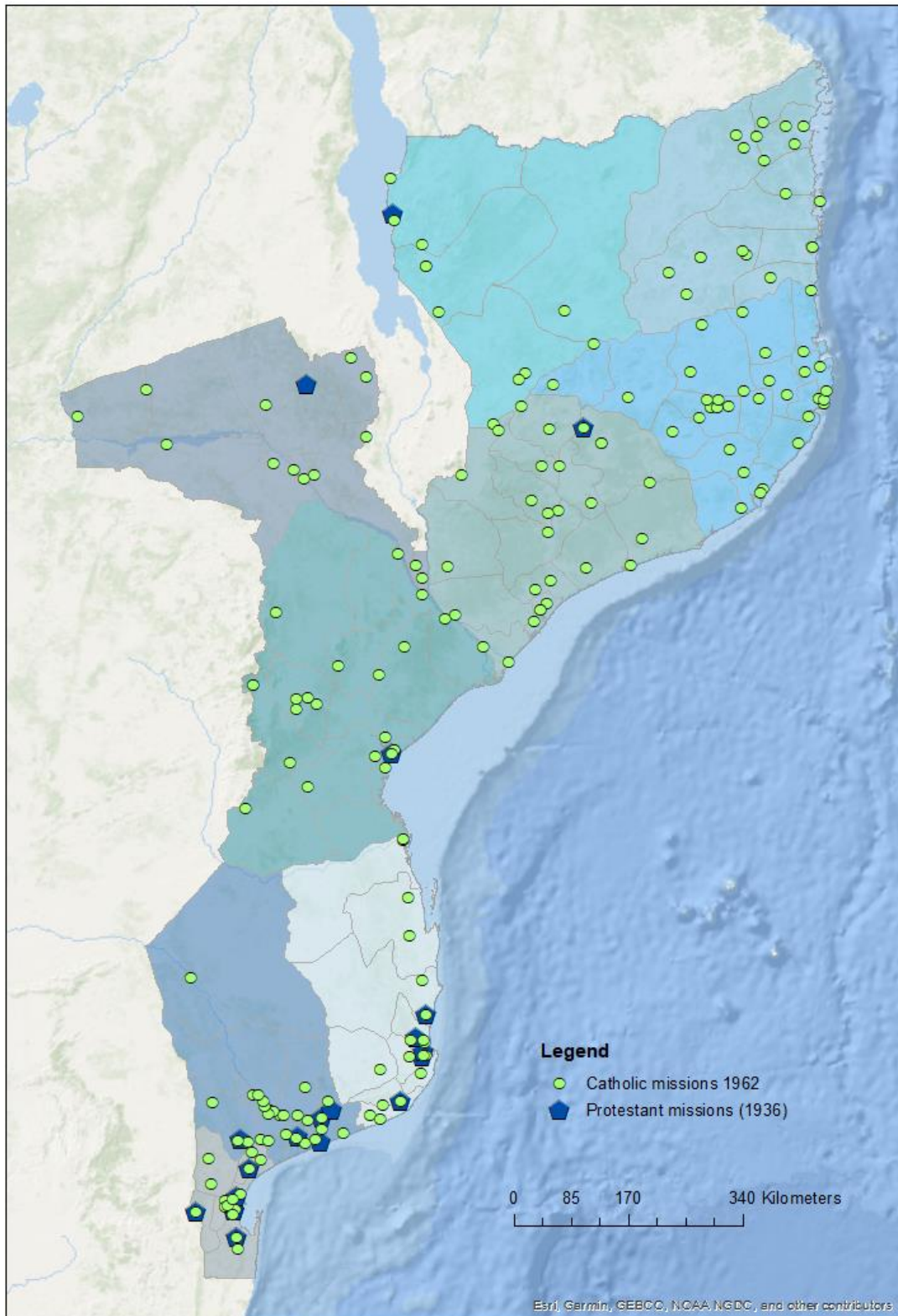
Source: Georeferenced using data from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936), are also shown for context.

Figure 3.14: Catholic missios in Mozambique, 1971
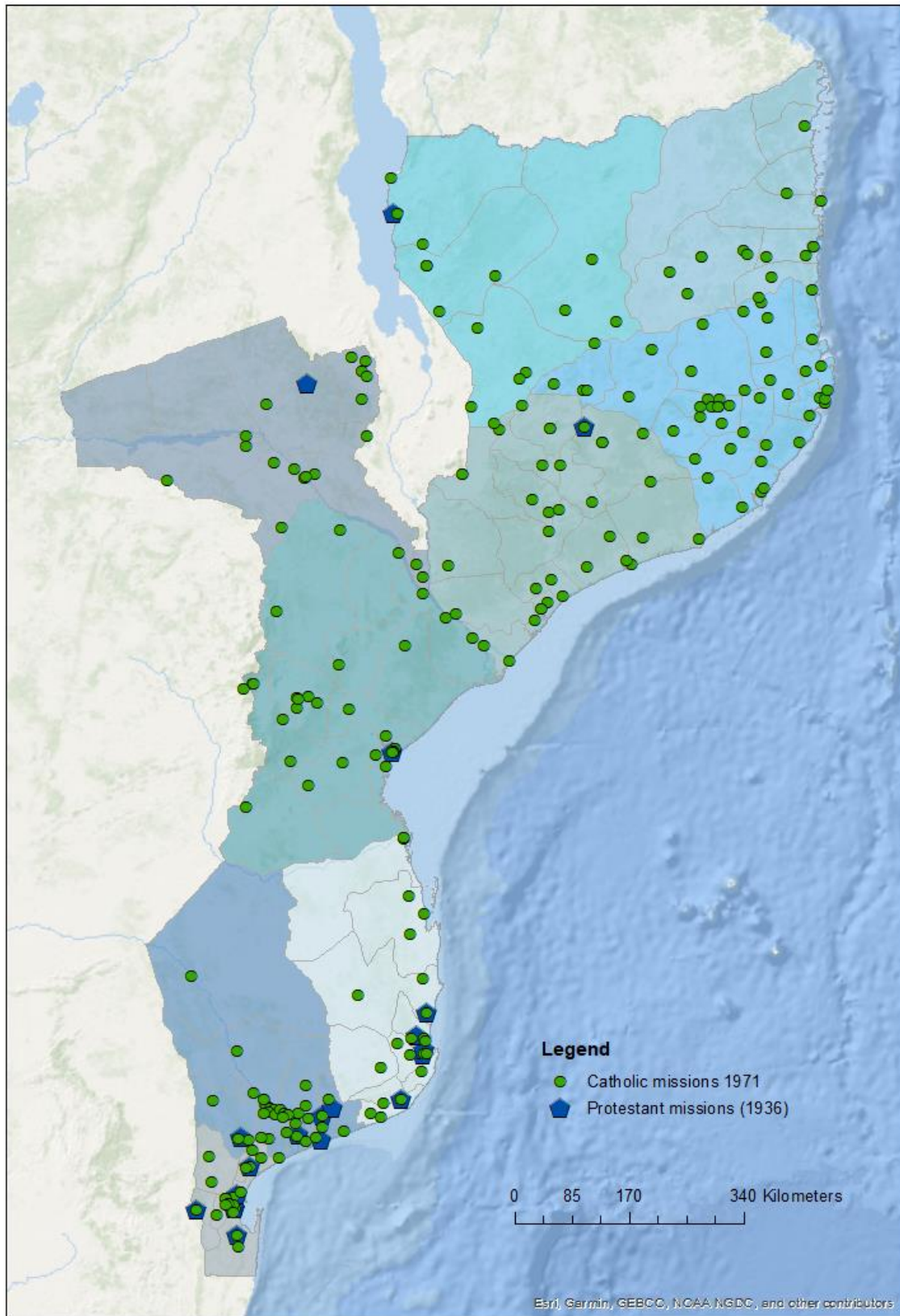
Source: Georeferenced using data from *Anuário Católico* 1971

Note: Protestant missions in 1936, georeferenced using data from Moreira (1936), are also shown for context.

To test Hypothesis 2 quantitatively, I analyse whether Catholic missions prioritised areas close to Protestant missions, areas with a high percentage of Muslim population, and areas close to international borders. To do so, I run two sets of regressions on the georeferenced dataset, analysing the factors driving the extensive and intensive margins of Catholic missionary activity, respectively. The establishment of a new mission in a location with no prior missionary activity is referred to here as growth along the extensive margin. Conversely, the number of missions within a circumscribed area is referred to here as the intensive margin of missionary activity.

The dataset includes fourteen benchmarks for the location of Catholic missionary activity between 1922 and 1971. I analyse the changes in the extensive and intensive margins of missionary activity across five relatively homogeneous time periods (see Figures 3.9-3.14): between 1922 (28 georeferenced Catholic missions) and 1928 (41), 1928 and 1942 (61), 1942 and 1952 (117), 1952 and 1962 (192), and 1962 and 1971 (250). By using a longitudinal dataset I can analyse the changing importance of each factor.[149] An important caveat is that, although I control for a complete set of economic and logistic factors that influenced missionary expansion in colonial Africa (Jedwab et al., 2022), these results are not causal: they are merely intended to analyse potential correlations that may lend support to Hypothesis 2, in combination with the qualitative analysis above. All regressions include standard errors accounting for spatial correlation within 100km (Conley, 1999).[150]

Thus, in the first set of regressions, which are aimed at analysing the extensive margin of missionary activity, I estimate a general linear model with logit regressions:

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[149] The work by Jedwab et al. (2022) highlights the importance of taking into account this dynamic element when analysing Christian missionary activity and its location.

[150] To determine the threshold for the application of Conley standard errors, I plot spatial correlograms of the residuals for the regressions in Tables 3.4 to 3.7, showing Moran's I for distance bands of 52.5km. The correlograms are presented in section C of the Appendix, Figures A.3.2-A.3.5. For the majority of regressions, spatial correlation disappears before the 100km threshold: I pick this as the threshold following Jedwab et al. (2022), which should provide conservative estimates of standard errors.

$$logit(y_{c,t}) = \beta_0 + \beta_1 Threats_{c,t} + X_{c,t} + \Omega_{c,t-1} + \alpha_d + \varepsilon_{c,t}$$

where $y_{c,t}$ is a binary variable indicating whether a cell c contained at least one Catholic mission in year t or not; $\beta_1 Threats_{c,t}$ is a vector of our main variables of interest, proxying for the three perceived threats to Portuguese colonial security and hegemony; $X_{c,t}$ is a vector of control variables; $\Omega_{c,t-1}$ is a dummy indicating whether a cell c contained at least one Catholic mission in the previous benchmark year; α_d are *distrito*-level fixed effects, to capture any relevant characteristics of Mozambique's great regional heterogeneity not covered by the battery of controls; and ε_c is the unobserved error term.

Table 3.4 shows the estimation results for regressions in which proximity to Protestant missions and to international borders is measured through dummy variables indicating whether the centroid of a cell is within an arbitrary threshold of 50km. The prevalence of Islam is proxied through the percentage of Muslim population in the *circunscrição*. The first column shows results for a regression in which all periods are pooled together: the dependent dummy variable takes value 1 if a cell contained a Catholic mission in any of the benchmark years between 1922-1971. Over the full period, Catholic missions were more likely to be established in more densely populated areas, close to railways, interior water bodies, and the coast, as well as in areas with higher soil fertility. However, none of the proxies for our three threats are significant. I then examine if the importance of these factors changed over time. Between 1922 and 1928, the majority of new Catholic missions were not established close to Protestant missions (Figure 3.10), as shown in the negative coefficient of the third column. In the period between 1928 and 1942, however, many of the new Catholic missions were placed in close proximity to operating Protestant missions (Figure 3.11), as shown by the positive coefficient for the fourth column. For the rest of the periods, the effect of proximity to Protestant missions is positive, but is not estimated precisely. The effect of the prevalence of Islam is generally positive, but is only estimated precisely in the third column, for the period between 1922 and 1928. Finally, Table 3.4 shows that Catholic missions were not prioritising border areas, as the coefficient is negative for the majority of the periods, and significant in the third and sixth columns.

Table 3.5 shows the estimation results for the same regressions, but in this case proximity to Protestant missions and international borders is proxied by the natural logarithm of the distance of each cell centroid to the closest Protestant mission, and to the closest international border. The interpretation of the direction of coefficients for these two proxies is now inverted, but results are generally equivalent to those in Table 3.4. Catholic misisons were more likely to be established close to Protestant missions between 1928 and 1942, as well as between 1952 and 1971, as shown by negative coefficients of the distance variable. The variable for Muslim areas is not significant, and border areas were generally avoided, as the positive coefficients for distance to the border show.

I now run a second set of regressions, where I analyse the intensive margin of missionary activity by estimating the following linear regression model:

$$y_{c,t} = \beta_0 + \beta_1 Threats_{c,t} + X_{c,t} + \alpha_d + \varepsilon_{c,t}$$

where $y_{c,t}$ is a continuous variable indicating how many Catholic missions a cell c contained in year t; $\beta_1 Threats_{c,t}$ is a vector of our main variables of interest, proxying for the three perceived threats to Portuguese colonial security and hegemony; X_m is a vector of control variables; α_d are *distrito*-level fixed effects, to capture any relevant characteristics of Mozambique's great regional heterogeneity not covered by the battery of controls; and ε_c is the unobserved error term.

Again, Table 3.6 shows the estimation results for regressions in which proximity to Protestant missions and to international borders is measured through dummy variables. Similarly to the extensive margin, areas with greater population density, closer to railways, navigable rivers, the coastline, and *distrito sedes*, had greater missionary activity across the years. Importantly for Hypothesis 2, areas within 50km of Protestant missions were targeted by a greater number of Catholic missions. On the other hand, the prevalence of Islam, and proximity to international borders, did not seem to have a large effect on Catholic mission activity. Table 3.7 shows regressions with the alternative proxies for proximity to Protestant missions and international borders. Using a continuous variable is a harder test of any

potential effects of proximity to Protestant missions, given that these effects would have tapered off after a certain threshold. Still, the coefficients are generally negative, indicating that areas close to Protestant missions had larger Catholic activity, and they are significant for the years of 1922 and 1942. Proxies for the other two threats do not show significant effects.

These results show that the expansion of Catholic missions was a dynamic process, with factors becoming relevant during different time frames. Overall, I find partial support for Hypothesis 2, with one of the three threats described showing consistent results. Once we account for economic and logistic factors relevant to the location decisions of missions in colonial Africa, distance to Protestant missions within Mozambique remains a significant explanatory factor driving the extensive margin of Catholic missionary activity in the years leading up to the shift in the early 1940s, and the intensive margin for much of the colonial period. Thus, the monopoly on African education granted to the Catholic missions in 1941, and the correlative transferring of government run schools to the Catholic missions, may have represented a further step in an ongoing process of using Catholic missions to counteract perceived threats to Portuguese colonial security and hegemony.

Table 3.4: Spread of Catholic missions in Mozambique, 1922-1971. Logit regressions. Proximity to Protestant missions and international borders measured as dummy variables

Predictors		Dependent variable: dummy if Catholic mission in the cell in year					
	Pooled	1922	1928	1942	1952	1962	1971
Dummy if Catholic mission 1922/1928/1942/1952/1962			75.615***	8.220***	7.129***	31.701***	5.158***
			(5.606)	(2.480)	(1.006)	(0.774)	(0.784)
Dummy if Prot. mission 50km (1936)	1.286	0.540	−17.905***	2.400**	0.171	0.233	1.608
	(0.991)	(1.632)	(4.044)	(0.796)	(1.039)	(1.034)	(1.422)
Percentage Muslim population	0.001	0.003	0.087·	−0.006	0.021	−0.008	0.006
	(0.008)	(0.080)	(0.050)	(0.013)	(0.022)	(0.011)	(0.009)
Dummy if border 50km	−0.586	−2.210	−3.559*	0.949	−0.213	−1.481·	0.181
	(0.492)	(1.407)	(1.516)	(0.618)	(0.747)	(0.779)	(0.622)
HYDE pop. density 1920/1930/1940/1950/1960	0.232*	0.175	0.404	0.410**	−0.020	0.222*	0.180*
	(0.112)	(0.156)	(0.425)	(0.156)	(0.109)	(0.098)	(0.089)
Ln dist. to railway 1922/1928/1942/1952/1962/1962	−0.477*	−1.460	−4.566**	−0.600**	−0.409	−0.457	−0.320
	(0.219)	(0.903)	(1.461)	(0.228)	(0.327)	(0.317)	(0.248)
Ln dist. to distrito sede (1962)	0.123	−0.944	4.759*	−0.974*	−0.402	0.792	−0.516
	(0.279)	(1.183)	(1.853)	(0.443)	(0.371)	(0.601)	(0.455)
Ln dist. to navigable rivers	0.016	−0.813*	−0.025	−0.241	−0.241	−0.221	0.448
	(0.214)	(0.341)	(1.085)	(0.437)	(0.311)	(0.317)	(0.398)
Ln dist. to interior water bodies	−0.434·	−0.056	−0.353	−0.178	−0.133	−0.230	−0.194
	(0.257)	(0.490)	(1.408)	(0.626)	(0.332)	(0.402)	(0.353)
Ln dist. to primary roads	−0.172	0.016	−0.470	−0.241	−0.412**	0.081	−0.139
	(0.129)	(0.220)	(0.435)	(0.229)	(0.139)	(0.203)	(0.167)
Ln dist. to coastline	−1.221***	−4.368*	−5.810***	−0.027	−1.001·	−1.229*	−0.728
	(0.307)	(1.746)	(1.692)	(0.681)	(0.584)	(0.620)	(0.452)
Ln dist. to explorer routes	0.000	−0.000	−0.000***	0.000	0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mean elevation	0.002*	0.008*	0.011·	0.005·	0.004***	0.001	0.001
	(0.001)	(0.004)	(0.006)	(0.003)	(0.001)	(0.002)	(0.002)
Ruggedness	0.009*	−0.002	0.030**	0.004	−0.001	0.007	0.003
	(0.004)	(0.014)	(0.010)	(0.006)	(0.004)	(0.005)	(0.006)
Soil fertility	0.174·	−0.430	1.255	0.236	0.066	−0.006	0.161
	(0.093)	(0.551)	(0.902)	(0.281)	(0.167)	(0.182)	(0.166)
Rain mean	−0.032*	−0.040	−0.228*	−0.042·	0.028	−0.003	−0.056**
	(0.015)	(0.068)	(0.102)	(0.023)	(0.027)	(0.027)	(0.021)
TseTse Suitability Index	3.375	−13.151	−63.861***	5.724·	0.991	1.824	1.407
	(2.506)	(14.858)	(12.471)	(2.984)	(4.007)	(2.795)	(3.108)
Malaria prevalence	−0.158	138.456·	431.701*	−31.338	−32.470	−35.509	−19.479
	(25.703)	(76.876)	(195.024)	(43.695)	(36.632)	(49.909)	(36.208)
Ln (trade of enslaved/ethnic group area)	−0.435	−2.793·	−2.507	−1.533·	0.350	0.456	−0.292
	(0.415)	(1.491)	(2.726)	(0.859)	(0.643)	(0.611)	(0.634)
Cell area	0.000**	0.000*	0.000·	0.000*	0.000	0.000·	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Num. obs.	360	270	360	360	360	360	360
Distrito FE. Num. groups	9	7	9	9	9	9	9
Deviance	344.636	56.929	30.921	105.032	171.030	143.537	182.930
Log Likelihood	−172.318	−28.465	−15.461	−52.516	−85.515	−71.768	−91.465
Pseudo R²	0.172	0.219	0.529	0.412	0.410	0.546	0.492

***p < 0.001; **p < 0.01; *p < 0.05; ᵈᵒᵗp < 0.1. I run Logit regressions in which the dependent variable is a binary variable indicating whether a cell contained a Catholic mission in a particular year or not. The regression shown in the first column analyses locational determinants for missions during the whole period of 1922-1971. The second column shown analyses locational determinants for missions in the first year of the dataset. Subsequent regressions analyse the locational determinants of the spread of Catholic missions in regular intervals, controlling for presence in the earlier benchmark. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level.

Table 3.5: Spread of Catholic missions in Mozambique, 1922-1971. Logit regressions. Proximity to Protestant missions and international borders measured as continuous variables

			Dependent variable: dummy if Catholic mission in the cell in year				
Predictors	Pooled	1922	1928	1942	1952	1962	1971
Dummy if Catholic mission 1922/1928/1942/1952/1962			79.583**	8.409**	7.189***	31.309***	5.141***
			(25.181)	(2.825)	(0.914)	(0.673)	(0.737)
Ln dist. Prot. mission (1936)	−0.372	−0.814	3.260	−1.327**	0.742	−0.992	−1.000˙
	(0.347)	(0.879)	(11.226)	(0.452)	(0.516)	(0.563)	(0.522)
Percentage Muslim population	0.000	0.020	0.198	−0.006	0.013	−0.004	0.007
	(0.008)	(0.085)	(0.247)	(0.016)	(0.022)	(0.013)	(0.010)
Ln dist. border	0.571˙	−1.555	6.735	−0.480	0.031	0.997*	0.183
	(0.311)	(1.163)	(6.223)	(0.516)	(0.533)	(0.464)	(0.462)
HYDE pop. density 1920/1930/1940/1950/1960	0.242*	0.086	−0.090	0.377*	−0.023	0.225*	0.185*
	(0.108)	(0.198)	(0.613)	(0.170)	(0.086)	(0.092)	(0.091)
Ln dist. to railway 1922/1928/1942/1952/1962/1962	−0.461*	−1.002˙	−8.820	−0.593**	−0.579˙	−0.293	−0.296
	(0.212)	(0.594)	(6.368)	(0.195)	(0.346)	(0.333)	(0.260)
Ln dist. to distrito sede (1962)	0.151	−0.989	10.515	−0.844˙	−0.619˙	1.288˙	−0.220
	(0.283)	(0.995)	(11.881)	(0.457)	(0.369)	(0.725)	(0.470)
Ln dist. to navigable rivers	−0.098	−0.956˙	−3.013	−0.281	−0.178	−0.445	0.292
	(0.207)	(0.488)	(3.261)	(0.313)	(0.329)	(0.275)	(0.379)
Ln dist. to interior water bodies	−0.538*	0.326	−2.826	−0.203	−0.132	−0.163	−0.286
	(0.260)	(0.653)	(3.301)	(0.594)	(0.273)	(0.363)	(0.393)
Ln dist. to primary roads	−0.160	−0.147	−0.027	−0.166	−0.444**	0.136	−0.058
	(0.126)	(0.145)	(0.386)	(0.252)	(0.137)	(0.222)	(0.166)
Ln dist. to coastline	−1.078***	−4.002**	−7.170	−0.066	−1.136*	−0.855	−0.758
	(0.322)	(1.253)	(6.104)	(0.721)	(0.557)	(0.625)	(0.464)
Ln dist. to explorer routes	0.000	−0.000	−0.000˙	0.000˙	0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mean elevation	0.003*	0.002	0.030	0.003	0.005**	0.000	0.001
	(0.001)	(0.003)	(0.040)	(0.003)	(0.002)	(0.003)	(0.002)
Ruggedness	0.010*	−0.003	0.033***	0.004	−0.000	0.008	0.004
	(0.004)	(0.015)	(0.009)	(0.007)	(0.004)	(0.006)	(0.006)
Soil fertility	0.179*	−0.695	1.295	0.239	−0.025	0.160	0.230
	(0.088)	(0.619)	(2.037)	(0.287)	(0.161)	(0.191)	(0.178)
Rain mean	−0.029˙	−0.011	−0.548	−0.046˙	0.028	−0.002	−0.062**
	(0.016)	(0.067)	(0.489)	(0.024)	(0.024)	(0.031)	(0.019)
TseTse Suitability Index	2.485	−14.240	−51.648***	3.337	3.977	−0.252	−0.589
	(2.678)	(13.191)	(7.926)	(2.584)	(4.692)	(2.847)	(3.623)
Malaria prevalence	−7.776	174.016**	565.395˙	−19.367	−20.206	−60.603	−24.189
	(27.052)	(55.231)	(289.133)	(41.977)	(39.620)	(51.785)	(40.400)
Ln (trade of enslaved/ethnic group area)	−0.383	−2.418*	−7.551	−1.220	0.266	0.596	−0.080
	(0.418)	(0.985)	(4.706)	(0.819)	(0.628)	(0.553)	(0.674)
Cell area	0.000˙	0.000*	−0.000˙	0.000*	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Num. obs.	360	270	360	360	360	360	360
Distrito FE. Num. groups	9	7	9	9	9	9	9
Deviance	343.846	57.022	25.592	107.491	168.705	138.783	180.677
Log Likelihood	−171.923	−28.511	−12.796	−53.745	−84.352	−69.392	−90.338
Pseudo R²	0.174	0.218	0.557	0.403	0.416	0.556	0.497

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; ˙$p < 0.1$. I run Logit regressions in which the dependent variable is a binary variable indicating whether a cell contained a Catholic mission in a particular year or not. The regression shown in the first column analyses locational determinants for missions during the whole period of 1922-1971. The second column shown analyses locational determinants for missions in the first year of the dataset. Subsequent regressions analyse the locational determinants of the spread of Catholic missions in regular intervals, controlling for presence in the earlier benchmark. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level.

Table 3.6: Number of Catholic missions per cell, 1922-1971. OLS regressions. Proximity to Protestant missions and international borders measured as dummy variables

	Dependent variable: number of Catholic missions in the cell in year					
Predictors	1922	1928	1942	1952	1962	1971
Dummy if Prot. mission 50km (1936)	0.142***	0.144**	0.312***	0.251*	0.366*	0.308
	(0.009)	(0.044)	(0.025)	(0.111)	(0.177)	(0.425)
Percentage Muslim population	−0.001	0.001	−0.001	0.001	−0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)
Dummy if border 50km	0.018	−0.008	0.053	0.112	0.062	0.074
	(0.055)	(0.071)	(0.095)	(0.108)	(0.179)	(0.231)
HYDE pop. density 1920/1930/1940/1950/1960	0.022	0.033˙	0.052**	0.029	0.066˙	0.086
	(0.015)	(0.017)	(0.020)	(0.026)	(0.037)	(0.054)
Ln dist. to railway 1922/1928/1942/1952/1962/1962	−0.116*	−0.204*	−0.102˙	−0.188*	−0.236*	−0.243*
	(0.051)	(0.090)	(0.055)	(0.080)	(0.107)	(0.107)
Ln dist. to distrito sede (1962)	−0.088	−0.035	−0.129	−0.180	−0.432*	−0.765**
	(0.064)	(0.084)	(0.093)	(0.130)	(0.219)	(0.279)
Ln dist. to navigable rivers	−0.018	−0.005	−0.025	−0.077	−0.165˙	−0.283
	(0.019)	(0.028)	(0.024)	(0.047)	(0.089)	(0.192)
Ln dist. to interior water bodies	0.008	−0.028	0.028	0.046	0.044	0.130
	(0.029)	(0.054)	(0.049)	(0.067)	(0.092)	(0.126)
Ln dist. to primary roads	0.003	0.011	0.004	−0.035	−0.009	−0.046
	(0.011)	(0.014)	(0.020)	(0.029)	(0.039)	(0.057)
Ln dist. to coastline	−0.058*	−0.091*	−0.099*	−0.199*	−0.268*	−0.280˙
	(0.026)	(0.039)	(0.045)	(0.082)	(0.123)	(0.160)
Ln dist. to explorer routes	0.000	0.000	0.000	0.000˙	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mean elevation	0.000	0.000	0.000*	0.001*	0.001˙	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Ruggedness	−0.000	−0.000	0.000	−0.000	−0.000	−0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Soil fertility	−0.018	−0.003	−0.008	0.007	0.012	0.014
	(0.019)	(0.024)	(0.013)	(0.025)	(0.038)	(0.053)
Rain mean	−0.002˙	−0.005*	−0.005˙	0.000	0.005	0.007
	(0.001)	(0.002)	(0.002)	(0.004)	(0.005)	(0.007)
TseTse Suitability Index	−0.192	−0.177	−0.125	−0.469	−0.108	0.146
	(0.137)	(0.176)	(0.254)	(0.437)	(0.798)	(1.085)
Malaria prevalence	4.280˙	8.476*	3.513	2.899	1.909	−6.995
	(2.375)	(3.847)	(3.154)	(5.468)	(7.883)	(10.942)
Ln (trade of enslaved/ethnic group area)	−0.018	−0.121	−0.075	−0.035	−0.019	−0.046
	(0.045)	(0.080)	(0.062)	(0.085)	(0.141)	(0.177)
Cell area	0.000	0.000	0.000	0.000	0.000˙	0.000˙
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Num. obs.	360	360	360	360	360	360
Num. groups: distrito_1959	9	9	9	9	9	9
R² (full model)	0.287	0.290	0.299	0.347	0.348	0.343
R² (proj model)	0.232	0.252	0.241	0.289	0.296	0.290
Adj. R² (full model)	0.229	0.233	0.242	0.294	0.295	0.289
Adj. R² (proj model)	0.189	0.209	0.198	0.249	0.256	0.249

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; $^{cdot}p < 0.1$. I run OLS regressions in which the dependent variable is a continuous variable indicating the number of Catholic missions contained in a cell in a particular year. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level.

Table 3.7: Number of Catholic missions per cell, 1922-1971. OLS regressions. Proximity to Protestant missions and international borders measured as continuous variables

	Dependent variable: number of Catholic missions in the cell in year					
Predictors	1922	1928	1942	1952	1962	1971
Ln dist. Prot. mission (1936)	−0.033˙	−0.028	−0.093*	0.066	−0.028	−0.065
	(0.020)	(0.035)	(0.039)	(0.066)	(0.096)	(0.123)
Percentage Muslim population	−0.001	0.001	−0.000	0.000	−0.002	0.000
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)
Ln dist. border	−0.043	−0.006	−0.040	−0.031	0.010	0.085
	(0.040)	(0.052)	(0.059)	(0.072)	(0.098)	(0.143)
HYDE pop. density 1920/1930/1940/1950/1960	0.019	0.032˙	0.048*	0.034	0.069	0.092
	(0.015)	(0.017)	(0.020)	(0.028)	(0.042)	(0.059)
Ln dist. to railway 1922/1928/1942/1952/1962/1962	−0.115*	−0.204*	−0.100˙	−0.199*	−0.237*	−0.239*
	(0.052)	(0.090)	(0.056)	(0.077)	(0.106)	(0.105)
Ln dist. to distrito sede (1962)	−0.097	−0.042	−0.128	−0.224˙	−0.452*	−0.746**
	(0.067)	(0.086)	(0.091)	(0.122)	(0.205)	(0.267)
Ln dist. to navigable rivers	−0.015	−0.007	−0.031	−0.079˙	−0.179*	−0.312˙
	(0.018)	(0.028)	(0.021)	(0.043)	(0.081)	(0.184)
Ln dist. to interior water bodies	0.015	−0.025	0.032	0.045	0.040	0.112
	(0.030)	(0.055)	(0.048)	(0.061)	(0.085)	(0.120)
Ln dist. to primary roads	0.002	0.010	0.005	−0.040	−0.010	−0.042
	(0.010)	(0.014)	(0.021)	(0.030)	(0.041)	(0.061)
Ln dist. to coastline	−0.085*	−0.102*	−0.128*	−0.215*	−0.273*	−0.241
	(0.035)	(0.050)	(0.057)	(0.087)	(0.131)	(0.167)
Ln dist. to explorer routes	0.000	0.000	0.000	0.000*	0.000**	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Mean elevation	0.000	0.000	0.000*	0.001**	0.001*	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Ruggedness	−0.000	−0.000	0.000	−0.000	0.000	−0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Soil fertility	−0.021	−0.007	−0.012	−0.010	0.002	0.014
	(0.018)	(0.022)	(0.012)	(0.023)	(0.034)	(0.051)
Rain mean	−0.003˙	−0.005*	−0.005˙	0.002	0.006	0.009
	(0.001)	(0.002)	(0.003)	(0.004)	(0.005)	(0.006)
TseTse Suitability Index	−0.204	−0.207	−0.247	−0.378	−0.153	−0.017
	(0.156)	(0.198)	(0.248)	(0.440)	(0.833)	(1.097)
Malaria prevalence	3.852	8.042*	2.498	2.594	0.836	−8.005
	(2.427)	(3.786)	(3.150)	(5.325)	(7.705)	(9.974)
Ln (trade of enslaved/ethnic group area)	0.007	−0.102	−0.031	0.002	0.022	−0.033
	(0.046)	(0.080)	(0.064)	(0.083)	(0.138)	(0.161)
Cell area	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Num. obs.	360	360	360	360	360	360
Num. groups: distrito_1959	9	9	9	9	9	9
R² (full model)	0.285	0.287	0.291	0.342	0.344	0.342
R² (proj model)	0.230	0.249	0.232	0.284	0.291	0.289
Adj. R² (full model)	0.227	0.229	0.233	0.289	0.291	0.289
Adj. R² (proj model)	0.186	0.206	0.188	0.244	0.251	0.249

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; $^{\cdot dot}p < 0.1$. I run OLS regressions in which the dependent variable is a continuous variable indicating the number of Catholic missions contained in a cell in a particular year. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level.

3.6. Conclusions

During the early years of the colonisation of Africa and into the interwar period, European powers used Christian missions to pursue the hegemony imperative within their colonial borders, with education being one of their roles (Young, 1994, p. 156). The Portuguese colonial state relied on Christian, Catholic missions for the provision of education for a longer period than the rest of European imperial powers. Indeed, in 1941 the *Estado Novo* would sign agreements with the Catholic Church granting Catholic missions in Portuguese African colonies a monopoly over the education of the African population, at a time when the majority of African colonies would start moving towards greater participation of the state in educational provision.

Article 66 of *Estatuto Missionário,* part of the agreements signed between the *Estado Novo* and the Catholic Church, effectively implemented this shift towards the monopoly of the Catholic missions on rudimentary education for the African population. By analysing the specific case of Mozambique, focusing on the provision of primary schooling for the majority of the population, the African children enrolled in rudimentary schooling under the *indigenato* system of racial discrimination, I shed light on the reasons for this particular characteristic of the Portuguese colonial model of education.

In the process of doing so, I contribute to a better understanding of the political economy of public goods provision in colonial Africa, where states faced a number of mutually countervailing imperatives (Young, 1994). In Mozambique, the provision of public goods served the legitimacy imperative by indoctrinating African children in the basic tenets of imperial ideology, but this had to be balanced against the revenue imperative, constrained as the Mozambican colonial state was by austerity measures under the *Estado Novo*. Transferring schooling responsibilities to cheaper mission schools was a solution to this dilemma, which also allowed the colonial state to pursue the security and hegemony imperatives: Catholic missions and schools were seen as a better tool than state-run schools to counteract the influence of Protestant missions over the African population, considered a threat to

Portuguese colonial rule in Mozambique. This perspective was based on traditional Portuguese imperial ideology, which saw Catholic missions as a key element in its "civilising project".

Ultimately, a combination of economic and geopolitical weakness highlighted the demands of the revenue and security-hegemony imperatives in Portuguese Africa. These, together with imperial ideology, determined the comparatively outsized importance of Catholic missions in the educational system of Portuguese Africa.

Appendix

A. Saving on the provision of public goods

This section describes the sources and process followed for the construction of measures of expenditure per child enrolled, measured at the *distrito* level, for state-run schools and schools run by the Catholic missions between 1936-1941.

I collect data on the expenditure earmarked for different items from colonial budgets, while accounts of income and expenditure provide data on quantities actually spent, which often did not coincide exactly with the budgeted amounts.[151] I collect enrolment data from general statistical yearbooks for the colony.[152] The data collected refers to both children classified as black and children classified as *mistos* under the *indigenato.* The large trends in enrolment presented in Table 3.2 include black children only: children classified as *mistos* were residual in number, and so they would not influence the evolution of these large trends. However, when calculating the financial resources spent per child enrolled, I include both demographics for increased precision.

Calculating colonial state expenditure per child enrolled in state-run rudimentary schools is relatively straightforward. For the period 1936–1941, the budgets for the colony give information at the *distrito* level on expenditure earmarked for *ensino primario rudimentar*. The budgets list the number of teachers for each *distrito*, each being paid the same salary, and the total cost of other items, such as teaching materials and furniture, is given as a lump sum for each *distrito*. However, budgeted expenses were often different from actual expenditure, primarily because the actual number of teachers was generally lower than the number budgeted for.[153] Therefore, I use the real number of teachers per *distrito*, provided by the statistical yearbooks, multiplied by the budgeted salary per teacher, to calculate real expenditure on

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[151] These documents received the name of *Orçamento Geral da Receita e Tabelas da Despesa Ordinária e Extraordinária da Colónia de Moçambique,* and *Contas de gerência e de exercício,* respectively.

[152] These documents received the name of *Anuário Estatístico da Colónia de Moçambique.*

[153] The same applies to the number of schools. The greatest discrepancies were in Moçambique, Porto Amelia and Tete.

teacher salaries per *distrito*.[154] To calculate real expenditure on other items such as teaching materials and furniture, I divide the budgeted cost of other items by the number of budgeted teachers, and multiply this ratio by the number of teachers listed in the yearbook.[155] I then divide total costs for each *distrito* by enrolment at the *distrito* level in state-run rudimentary schools, provided by statistical yearbooks.

Unfortunately, expenditure data for state-run rudimentary schools are more detailed than expenditure data for rudimentary schools run by the Catholic missions. Colonial budgets and accounts do not allow me to distinguish, within total state expenditure earmarked and subsequently spent on Catholic missions, quantities specifically destined for the provision of primary rudimentary schooling by the Catholic missions. I can only calculate total colonial state expenditure on the Catholic missions, per child enrolled in primary rudimentary schools run by these missions. To calculate this measure at the *distrito* level, I use real expenditure from colonial income and expenditure accounts. The largest expenditure items are salaries for missionaries and salaries for wage workers (*pessoal assalariado*). Income and expenditure accounts only list real expenditure on these items for the whole of the colony. Thus, to attribute these quantities for each *distrito,* I use the colonial budgets: budgets detail missionary salaries at the *distrito* level, so I take the percentage that each *distrito* represents over total budgeted missionary salaries, and attribute real expenditure on missionary salaries and wage workers to each *distrito* using these percentages.[156]

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[154] Ideally, I would use the *contas* providing actual expenditure, given that statistical yearbooks may not match exactly the number of teachers on the ground, and that some of these teachers may have been paid less than budgeted. However, information for salaries is not given at the *distrito* level in the *contas*. I also cannot use the attribution methodology I describe for the construction of unitary measures for Catholic mission schools, because from 1937 onwards the *contas* lump salaries for teachers of state-run rudimentary schools with the rest of salaries for state educational services.

[155] This way of assigning costs is realistic, given that schools were normally run by one teacher: in the data for state-run schools provided by *Anuário Estatístico de Moçambique* between 1934 and 1941, there is a one-to-one correspondence between teachers and schools for almost all *circunscrições* and *concelhos*.

[156] Earlier sources provide more detail. For 1936, I collect salaries at the *distrito* level for both missionaries and wage workers directly from *contas*, without having to use data from *orçamentos* to distribute *contas* data. For 1937 and 1938, orçamentos detail wage worker salaries at the *distrito* level, not only missionary salaries, so I can use that data to distribute data from *contas* for wage worker salaries, instead of using missionary salaries as a proxy.

Other expenditure items for Catholic missions included *dotações* or lump sump subsidies (individually for each mission: *Estatuto Missionário* would change this), *fundos de reserva* for the missions in each *distrito,* salaries and other minor expenditures for the *Direcção das Missões* (the general directorate for missions, and a global *dotação* for all missions in the territories administered by the state (at this point, all except Manica e Sofala). Individual *dotações* for each mission are provided by the *contas* for all years of focus, so I aggregate them at the level of *distrito*. The *fundos de reserva* are provided at the *distrito* level for all years also. Salaries for the *Direcção* are included in *contas* in the same items as salaries for missionaries working in the missions and their wage workers, and are therefore attributed by *distrito* in the same way as salaries for missionaries and wage workers, using data from *orçamentos.* Finally, I attribute the global *dotação* to each *distrito* by calculating the percentage of total individual *dotações* and *fundos de reserva* that each *distrito* receives over the total (excluding Manica e Sofala).[157]

As with state-run schools, I then divide the total cost for each *distrito* by enrolment at the *distrito* level in schools run by the Catholic missions, listed in statistical yearbooks.

To assuage any concerns about the effects of the methodology I use to attribute spending across *distritos* on the testing of Hypothesis 1, I calculate unitary measures at the level of the whole colony and the comparison between state and Catholic missions remains the same: there were relatively stable unitary costs for state-run schools, and decreasing unitary costs for mission-run schools.

An additional issue that biases the unitary measures further against Catholic missions is that I am not able to capture the cost of buliding state-run schools, whereas the cost for the state of the building of Catholic missions would be included

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[157] For 1936, the detail on data for missionary and wage worker salaries in the *contas* allows me to distribute the items for the *Direcção* and the global *dotação* more precisely. I calculate the percentage that expenditure on each *distrito* (missionary salaries, wage worker salaries, *dotações*, and *fundos de reserva*) represented over total expenditure on *distritos* (that is, all expenditure on missions excluding the items for *Direcção* and the global *dotação*). I then use those percentages to attribute the quantities for the *Direcção* and the global *dotação* to each *distrito*. The total expenditure used to calculate the percentage then used to attribute the global *dotação* excludes Manica e Sofala, because said *dotação* is only attributed to missions in territories managed by the state.

in the total subsidies granted to Catholic missions, which are the basis for the calculation of unitary costs for Catholic mission schools.

Finally, any analysis of expenditure in colonial Mozambique during these years must account for the fact that the 1935-1936 fiscal year was 18 months long. This was a transition year linked to the changes introduced by *Decreto 25,306*, after which fiscal years coincided with natural years, starting on January 1st 1937.

B. A "civilising mission"

This section describes the sources and process followed for the construction of the data necessary to test Hypothesis 2 quantitatively.

B.1. Christian missionary activity, 1922-1971
B.1.a. Catholic missions

I build a new georeferenced dataset of Catholic missions in Mozambique between 1922-1971. The literature on the long-term effects of historical missions has usually relied on the digitisation of maps included in missionary atlases from the early twentieth century. This leads to a number of reliability issues which Jedwab et al. (2022) point out, including undercounting and non-classical measurement error. I avoid such pitfalls by using unpublished annual reports sent by the Catholic ecclesiastical authorities to the colonial government, the *Relatórios dos Prelados* hosted in the *Arquivo Histórico Ultramarino* in Lisbon, to georeference the location of Catholic missions.

Until the benchmark for 1938, the reports I use were general reports on the whole of the colony, sent by the *Prelado* to the colonial authorities. Beginning with the reports for 1942, and after the agreements between *Estado Novo* and the Catholic Church, the colony was divided into multiple *prelazias* (dioceses). In 1942, there were three dioceses: Lourenço Marques, Beira, and Nampula. By 1962, two additional dioceses had been created: Quelimane and Porto Amelia. Article 77 of

Estatuto Missionário required each *prelado* (bishop) to send, within the first 90 days of each year, a *relatório* (report) of the missionary activities carried out in the territory under their jurisdiction. These *relátorios* included multiple lists of missionary activity, which I use to georeference the existing Catholic missions in each year. In spite of the guidelines set by Article 77, each *prelado* followed his own style when composing the *relátorio*, and so the collecting process requires some homogenisation, although data remains comparable.[158] The *prelados* collected these data from the *superiores* (leaders) of each congregation working in their *prelazia*, and presumably from the secular clergy directly, given that they were under the direct authority of their *prelado.*

Article 47 of *Estatuto Missionário* established that global subsidies in each colonial budget would be distributed by the colonial government among the dioceses in accordance with the number of missionaries working in them and the operations being run. Thus, *prelados* had strong incentives to report all missions operating in the region under their authority: this assures that *relátorios* include all Catholic missions.[159]

I georeference the location of missions in several steps. First, for each year, I collect the name of the location of each mission from the ecclesiastical reports.[160] Then, I cross-check the coordinates for each of these localities with multiple sources.[161] Finally, I check the coordinates against maps from the late colonial period.[162] The

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[158] In the archive I consulted, the *Arquivo Histórico Ultramarino*, reports for certain years are missing: I georeference the location of Catholic missions for all the reports I could find, yielding fourteen benchmarks.

[159] This is the same rationale for completeness as that cited in Jedwab et al. (2022): "Each mission society was required to submit annual reports on its activities to the colonial administration, thereby listing all of their stations. Churches received annual grants from the colonial government for their pastoral services, which provided a strong incentive to report."

[160] The location of Catholic missions in 1931 comes from the colonial statistical yearbook, and the location in 1971 comes from the *Anuário Católico de Moçambique* for 1971 (*Conferência Episcopal de Moçambique*, 1971).

[161] Most coordinates are cross-checked through a combination of the historical topographical dictionary produced by Dias Rafael (2001), the online directory found at Falling Rain (http://www.fallingrain.com/world/MZ/), a list of settlements produced by the International Organization for Migration (IOM) for the flood response of 2015 (shapefile availabe at https://data.humdata.org/dataset/mozambique-settlement-shapefiles), and Google Maps.

[162] These maps are georeferenced from the *Atlas Missionário Portugués* of 1962 (*Missão para o Estudo da Missionologia Africana*, 1962), and the *Anuário Católico de Moçambique* from 1971 (*Conferência Episcopal de Moçambique*, 1971). Their production at the tail end of the colonial period makes them

resulting dataset includes the location of Catholic missions for fourteen different years spanning the period.[163] As Cogneau and Moradi (2014, p. 705), attest, duplicate place names are a regular feature of Africa that can prevent the identification of locations and lead to attrition when constructing georeferenced datasets. I solve these and other challenges, such as changing names over time, certain localities being known by several names, or large inconsistencies in the spelling used for each locality in different primary sources, by manually cross-checking location names across multiple sources (see sources in footnote 6). I am able to locate all missions mentioned in the *relátorios* between 1922-1971 except the missions for Luasi in 1934 and 1938, Chache in 1947, Nicuia in 1950, Muetaze in 1950, and Macanga in 1957. This is not a major issue, given that they were only in operation for a small number of years.

An additional deficiency of using missionary atlas maps is the inaccuracies in the georeferencing of missions. Jedwab et al. (2019, p. 20, and Web Appendix Figure 6) find differences between the georeferenced location of 109 missions reported in both Cage and Rueda (2016), who digitise Beach (1903), and Nunn (2010), who digitises Roome (1924). Thus, using the method described above, based on placenames, has the further advantage of increased accuracy.

The *relátorios* allow me to locate primary stations only, but not smaller outstations. Meier zu Selhausen (2019, p. 51) warns:

> "What is clear is that paying attention to the dynamic determinants and African agency in the expansion of Christian missions (i.e. the inclusion of both main and out-stations) is critical. This will minimize the risk of grossly overestimating missions' long-term effects, which otherwise may lead to

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a good fit for this purpose for two reasons: improvements in state capacity through the decades of colonial rule make them arguably more reliable (though the *Anuário Católico de Moçambique* is only used as a second check, given the approximate nature of some of the maps), and with the exception of the few missions that were abandoned, they include the universe of missions until the end of the period of study.

[163] The years are 1922, 1928, 1931, 1934, 1938, 1942, 1947, 1950, 1952, 1955, 1957, 1960, 1962, and 1971.

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overly optimistic conclusions of the legacy of missions on current African education."

However, the analysis I carry out is not one on the long-term effects of Christian missions, where taking distance to primary stations as the main explanatory variable, instead of accounting for out-stations too, may lead to the issues described by Meier zu Selhausen. I am analysinig the factors driving the location of Catholic missions and their rudimentary schools: insofar as out-stations and mission schools located around the main station, once the location for this had been determined and the station established, analysing the factors for the location of primary stations is a good enough approximation. Additionally, the detail in the explanatory factors that I can gather for the colonial era would not be able to capture differences in the location determinants of mission primary stations and mission out-stations and schools, given their proximity to each other.

An additional note is that I focus only on missions. *Relátorios* gave information for other Catholic establishments also, such as seminaries, but I do not include these in the analysis, as their location would have responded to different factors.

B.1.b. Protestant missions

The dataset also includes the location of Protestant missions, proxied by their location in 1936. The location of Protestant missions in Mozambique can be georeferenced using the same method based on placenames as described above, from a number of different sources: the World Missionary Atlas 1925 for 1923 locations (Beach & Fahs, 1925), the colonial statistical yearbook for Mozambique in 1931 for the location in that same year, and Moreira (1936) for the location in 1936.

I choose to focus on the location in 1936 for several reasons. As argued by Jedwab et al. (2022), relying on missionary atlases can lead to issues such as non-classical measurement error. The 1931 yearbook for Mozambique only indicates the main headquarters for the twelve Protestant missionary societies operating in that year, but not the location of smaller outposts. Finally, Moreira (1936) is a specific treatise

on Protestant missionary activity in Mozambique, and so it is the best option to reliably georeference the location of Protestant missions.

The data for 1936 can be taken as representative of the location of Protestant missionary activity from the beginning of the period of study in 1922 until at least 1962. First, the majority of Protestant missions were founded before 1922. Second, enrolment numbers for black children in rudimentary education, one of the main activities of missions in Mozambique, remained fairly stable until 1962 (Table 3.2). Third, the location of Protestant missions in the 1930s, mostly concentrated in the south of the colony, mirrors the image presented in the *Atlas Missionário Portugués* of 1962 (*Missão para o Estudo da Missionologia Africana*, 1962), with only small differences (see Figure A.3.1).

B.1.c. Mission schools

I also map the location of rudimentary schools run by the Catholic missions in 1931, as well as the location of the schools run by the Protestant missions in Mozambique for 1931, to generate Figures 6 and 7. These schools are georeferenced using the placenames method described above, from the colonial statistical yearbook for Mozambique in 1931. I am only able to georeference 48 out of 61 Protestant mission schools, and 49 out of 105 Catholic mission schools. Difficulties in finding the coordinates for localities were greatest when sources referred to small locations, which may not have been recorded in colonial maps and directories, and which may have disappeared.[164] This was the case when geo-referencing data for schools run by Catholic and Protestant missions, which were often located in very small population nuclei.

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[164] African population nuclei were often mobile in order to avoid conscription into forced labor and taxation by the colonial government. The long periods of war in Mozambique may have also displaced many of these smaller population nuclei.

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B.2.a. Levels of calculation

Some of the explanatory variables in this chapter are calculated at the level of *concelhos* and *circunscrições*. However, the administrative division of Mozambique saw many changes during the colonial period. For example, the number of regions went from 80 for the years between 1947-1952, to 88 in the years 1960-1962, with many smaller changes to territorial borders taking place throughout the period. Colonial maps for this period are only available for certain benchmark years, and are often not very accurate. Thus, in order to use variables at this regional level, I create new maps that accurately account for the changes in administrative divisions.

To do so, I first trace changes to the territory comprised by each *concelho* and *circunscrição* by looking at colonial legislation. I go through all entries for *distritos*, *concelhos* and *circunscrições* in the topographical dictionary by Dias Rafael (2001), and I analyse any piece of legislation implementing changes to the borders of *concelhos* and *circunscrições* for the period 1940-1962. Secondly, I digitise a detailed map of the colony in 1945 elaborated by the section of colonial administration in charge of surveying, *Repartição Técnica de Agrimensura,* as well as a number of auxiliary, less detailed maps.[165] Finally, I take the 1945 map as a departure point, and I create new maps for each benchmark year by mapping the territorial changes enacted by legislation. Starting from the 1945 base map, I modify the borders of each region, following the sequence of changes introduced by each piece of legislation, backwards and forwards from the baseline administrative division represented by the base map. I make these modifications by following the description in each of the pieces of legislation, and using the auxiliary maps for benchmark years as a complementary guide.[166]

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[165] The map for 1945 can be found at *Biblioteca Nacional de Portugal,* with reference code cc-756-r.
[166] When describing the changes to the borders of each *concelho* and *circunscrição*, the legislation often refers to changes in the underlying distribution of *postos administrativos*, the administrative category below *concelhos* and *circunscrições*, or even to changes to the distribution of *regulados*, the administrative division below that. However, no maps for *postos administrativos* or *regulados* are available. Therefore, the process of constructing the new maps is somewhat impressionistic in some cases, but it is the best that can be done with the available sources.

The construction of these new, homogenised maps at the regional level represent a further contribution, as they should be useful for anyone interested in studying Mozambique during the colonial period, and mapping variables at the *concelho* and *circunscrição* level.

B.2.b. Variables[167]

Main variables of interest

I calculate the distance of each cell centroid to the closest Protestant mission in 1936 using the georeferenced data on Protestant missions described above.

I proxy for the prevalence of Islam among the population by calculating the percentage of Muslim people at the level of *concelhos* and *circunscrições,* over the total black population, from the 1950 colonial census. Each cell is attributed the value of the *concelho* or *circunscrição* it overlapped the most with. For this, I use the maps described in 3.a.

Finally, I calculate the distance of each cell centroid to the closest international border.

Political economy

The political characteristics of local communities, such as early exposure to colonial agents through explorer routes, may have influenced the ease of operating by Christian missions. I calculate the distance of each cell centroid to the closest pre-colonial explorer route, from Nunn & Wantchekon (2011). However, results should be approached with caution, as Jedwab et al. (2019) indicate that this source may miss many of the routes. Other widely used proxies, such as pre-colonial political centralisation, are unavailable for Mozambique with enough consistency.[168]

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[167] Table A.3.1. presents summary statistics.
[168] Studies of Africa that use variables for pre-colonial characteristics, such as pre-colonial political centralisation, mostly use data at the ethnic group level from the Ethnographic Atlas produced by Murdock (1967), matched to the ethnic group borders shown in the map produced by Murdock

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The extent of the trade in enslaved people, with its negative effect on trust (Nunn & Wantchekon, 2011), may have made it more difficult for missions to establish themselves. At the same time, the abolition of slavery was often the objective of missionary societies, and so may have attracted missionary work, although this would not have played such a great role in our period of study. Data on the number of enslaved people traded for each ethnic group comes from Nunn & Wantchekon (2011): I follow their methodology in normalising the number of people exported by the area of their ethnic homeland.[169]

Missionary work would have been influenced by the policies of the colonial state and the ecclesiastical authorities, which may have differed by *distrito* and *prelado*, respectively. Regional differences in investment and economic activity were also influenced by the political configuration of the colony. As Newitt (2017, p. 22) pithily describes, "(t)he location of the capital in the extreme south of the country, and the proximity of South Africa, concentrated resources and the modern sector of the economy in that region, while much of the rest of the country continued relatively unaffected by these social and economic changes." Modes of production also varied widely within Mozambique (see for example Alexopoulou and Juif, 2017; and Chapter 4 for a more detailed analysis). I use fixed effects for each of the *distritos* into which Mozambique was divided, to account for the potential influence of colonial and ecclesiastical policies at the regional level.

Variations in state capacity would have also been relevant for missionary activities, which benefitted from the infrastructural and protective services of the colonial state. Young (1994), for example, describes how Christian missions, though their interests were not always identical to those of the colonial state, in some cases

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(1959), digitised by Nunn (2008). To match the data to the map, they use the procedure developed by Fenske (2013). However, there is not a perfect match between the ethnic groups shown in the map (Murdock, 1959), and the ethnic groups included in the atlas (Murdock, 1967). Therefore, variables for some of the ethnic groups are missing from the replication datasets provided by these types of studies. The issue is particularly salient for Mozambique, with many of the ethnic groups shown for Mozambique in the Murdock (1959) map not included in replication datasets: 11 out of 23 groups, covering roughly 43% of the area of the country, are missing.

[169] The specific measure used is ln[(1 + total number of enslaved people)/areakm], where the total number of enslaved people exported refers to the trans-Atlantic and the Indican Ocean trades, and areakm refers to the area of each ethnic homeland in Murdock (1959).

promoted its expansion during the Scramble for Africa with the objective of securing protection. Montgomery (2017) controls for the presence of the colonial state in his analysis of the long-term effects of missions for the same reason. To account for variations in state capacity, I control for distance to *distrito sedes*: given the model of concentric circles in which state power was set up in colonial Mozambique (see Chapter 2), state capacity should decrease with distance to the closest *distrito sede*. I georeference the *distrito sedes* for 1962 from the 1962 *Atlas de Moçambique* (*Serviços de Agrimensura da Província de Moçambique*, 1962).

Disease environment

The prevalence of malaria would have negatively affected the health and life expectancy of missionaries, and thus would have increased personnel costs. I expect the influence of this factor to be comparatively low for the time period under study, which is later than, for example, the one under study by Jedwab et al. (2022), due to the advent of quinine and its likely availability to missionaries. However, malaria may have also influenced missionary activity indirectly, by lowering population density. I use the malaria burden variable from Depetris-Chauvin & Weil (2018).

The *Trypanosomiasis* parasite transmitted by the TseTse fly would have negatively influenced missionary health and the economic prospects of missions due to its effects on livestock husbandry. Additionally, it would have influenced a number of characteristics of local populations that in turn may have affected missionary activities, such as the use of domesticated animals and the plow, pre-colonial political centralization, and population density (Alsan, 2015). I use the TseTse fly suitability index from Alsan (2015).[170]

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[170] Data from Depetris-Chauvin & Weil (2018) on the malaria burden, and from Alsan (2015) on the TseTse suitability index are available publicly at the ethnic group level. The same issue as for pre-colonial political variables, described above, applies: 11 out of 23 groups shown for Mozambique in the Murdock (1959) map, covering around 43% of the area of the country, are missing from the public dataset. I thank Emilio Depetris-Chauvin for providing me with additional data for the malaria burden at the ethnic group level. This includes all groups mapped in Murdock (1959) that were present in Mozambique, except for the Manyika group: for that group, I calculate the simple average of malaria prevalence for the three adjacent ethnic groups in Mozambique. I also thank Marcella Alsan for pointing to alternative resources on TseTse fly suitability: for now, however, I simply take the data she provides at the first administrative level, equivalent to colonial *distritos*.

Population density

As Jedwab et al. (2019) point out, high population density would have reduced the average cost of conversions, because of the lumpy nature of many of the set-up costs of missions, like buildings. This factor may be particularly important for the context of Mozambique, given its wide regional differences in population density. As Newitt (2017) points out for the modern population distribution, "There are marked differences in population distribution. Population is heavily concentrated in the extreme south and in the central area north of the Zambesi. In contrast the Gaza and Tete provinces have notably small populations as do Niassa and Cabo Delgado in the extreme north." Reports from ecclesiastical authorities in Mozambique confirm that this was indeed a factor in mission location. The *prelado* for the diocese of Beira, for example, wrote in 1954 about targeting mission location in Inhaminga, Marromeu, and Dondo, because they were nuclei of high European and African population concentration.[171] I use population density measures from HYDE (Klein Goldewijk et al., 2010). Jedwab et al. (2022) point out the unreliability of thes estimates. However, for the purposes of this chapter, the spatial granularity of their data, with a resolution of 5 min longitude/latitude, may be a better option than estimates at a larger scale. I also calculate population density at the *concelho* and *circunscrição* level by collecting data from colonial censuses for 1930, 1940, 1950, and 1960, and using the maps described in section 3.a. However, this exercise yields outliers for some regions (see examples in Table A.3.1), probably due to small mismeasurements in the digitisation of maps, which can cause large differences in area and thus in population density estimates. Thus, more work is needed to use these estimates as the main variable to proxy for population density.

Agriculture

Subsidies received by each mission would allow for the acquisition of foodstuffs and other necessary items for mission operation. However, this had to be complemented with subsistence production and, in some cases, income from the commercialisation

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[171] *Relatório do Prelado referente ao ano de 1954, Diocese de Beira. Arquivo Històrico Ultramarino*, 1442 1B MU

of cash crops. Thus, differences in soil fertility would have influenced missionary costs. Data on soil fertility comes from the latest version of the GAEZ dataset.[172]

Accessibility

Costs of missionary activities would have been influenced by the accessibility of each locality. Missionaries and materials (eg. for building construction) had to get to and from each mission. Additionally, foodstuffs would be brought in for the sustenance of personnel, and mission farm products would be sold outside of the mission. The accessibility of each location would have been determined by a variety of factors, including its altitude and ruggedness, the distance to colonial roads, and its proximity to navigable rivers, interior waterbodies, colonial railways, and the coast.

Elevation data, which allows me to calculate average altitude and ruggedness, comes from SRTM3 version 2.1. To calculate distance to colonial roads, I digitise a 1934 map for the province of Manica e Sofala, and a 1938 map for the rest of the colony.[173] Major navigable rivers (digitised from Johnston, 1915) and railways are available from Jedwab & Moradi (2016).[174] I use data on interior waterbodies from the Regional Centre For Mapping Of Resources For Development (RCMRD).[175] I construct the coastline for Mozambique from a feature class for the whole country hosted by the United Nations Office for the Coordination of Humanitarian Affairs, Humanitarian Data Exchange website.[176]

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[172] The GAEZ dataset is available at https://gaez.fao.org.
[173] The 1934 map was retrieved from *Biblioteca Nacional de Portugal*, reference C.C. 765 R. This map is not specific for roads, but it does show roads of different categories. The 1938 roads I digitise from the publication *Estradas de Moçambique* (*Repartição Central de Estatística,* 1938). This publication does not include Manica e Sofala.
[174] In regressions, distance to the closest railway refers to the closest railway in existence in the benchmark year being analysed in the regression.
[175] The shape file is available from:
https://rcmrd.africageoportal.com/datasets/africageoportal::africa-water-bodies/about.
I drop man-made waterbodies from the late colonial or post-colonial period, both in Mozambique and in the neighbouring countries.
[176] Available at https://data.humdata.org/.

Geography

I also include general geographical controls that may have affected missionary living conditions and economic activities, such as precipitation. I calculate mean monthly precipitation between 1901-1960 with data from the CRU Time-Series (TS) version 4.03(Jones & Osborn, 2019).

Table A.3.1: Summary statistics per cell

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Dummy Catholic missions 1922	360	0.05	0.22	0	0	0	0	1
Dummy Catholic missions 1928	360	0.07	0.26	0	0	0	0	1
Dummy Catholic missions 1942	360	0.13	0.33	0	0	0	0	1
Dummy Catholic missions 1952	360	0.23	0.42	0	0	0	0	1
Dummy Catholic missions 1962	360	0.30	0.46	0	0	0	1	1
Dist. to closest Protestant mission (1936)(km)	360	195.74	115.79	3.96	109.34	188.78	257.88	625.43
Percentage Muslim population (circunscrição)	360	16.87	31.55	0.00	0.01	0.05	17.55	99.73
Dist. to closest border (km)	360	133.78	112.14	3.40	38.59	107.27	204.86	487.51
HYDE population density 1930 (people/km2)	360	6.13	4.30	0.32	3.72	4.90	8.13	22.21
African census population density 1930 (people/km2)	360	5.14	6.28	0.49	1.31	2.56	5.92	35.67
HYDE population density 1960 (people/km2)	360	9.48	5.84	0.85	5.27	8.07	12.72	36.89
African census population density 1960 (people/km2)	360	8.46	10.47	0.80	2.47	5.53	9.23	83.37
Dist. railways 1922 (km)	360	175.43	120.73	0.14	74.49	161.75	249.05	497.63
Dist. railways 1928 (km)	360	175.43	120.73	0.14	74.49	161.75	249.05	497.63
Dist. railways 1942 (km)	360	142.21	100.40	0.14	58.74	130.97	204.77	437.49
Dist. railways 1952 (km)	360	128.25	95.94	0.14	49.38	105.67	190.74	437.49
Dist. railways 1962 (km)	360	116.93	95.12	0.14	41.33	91.33	170.18	437.49
Dist. closest *sede* 1962 (km)	360	159.83	77.88	7.53	101.87	155.71	212.93	383.69
Dist. to navigable river (km)	360	152.03	114.19	0.45	59.82	128.32	232.44	490.59
Dist. to interior water body (km)	360	132.00	82.73	0.66	61.07	123.50	198.49	334.89
Dist. to primary roads (km)	360	19.66	21.61	0.01	5.50	12.24	25.83	143.17
Dist. to the coast (km)	360	218.45	178.56	4.39	69.07	181.18	336.03	677.31
Dist. to pre-colonial explorer route (km)	360	245.07	171.97	2.96	79.11	240.38	391.85	584.07
Elevation mean (m)	360	357.74	297.30	4.66	99.93	292.68	542.43	1,347.29
Elevation standard deviation (m)	360	74.17	60.99	2.52	34.52	55.16	94.24	368.42
Soil fertility	360	8.04	1.47	4	7	8	9	10
Rain mean (mm per month)	360	84.26	20.06	38.18	70.71	83.75	97.25	136.49
TseTse suitability index	360	1.04	0.22	0.73	0.74	1.16	1.22	1.31
Malaria prevalence	360	0.02	0.02	0.004	0.01	0.02	0.03	0.06
Ln trade enslaved people	360	0.40	0.56	0	0	0.02	0.9	2

Figure A.3.1: Protestant missions in Moreira (1936) and Protestant missions in
the *Atlas Missionário Portugués* (1962)
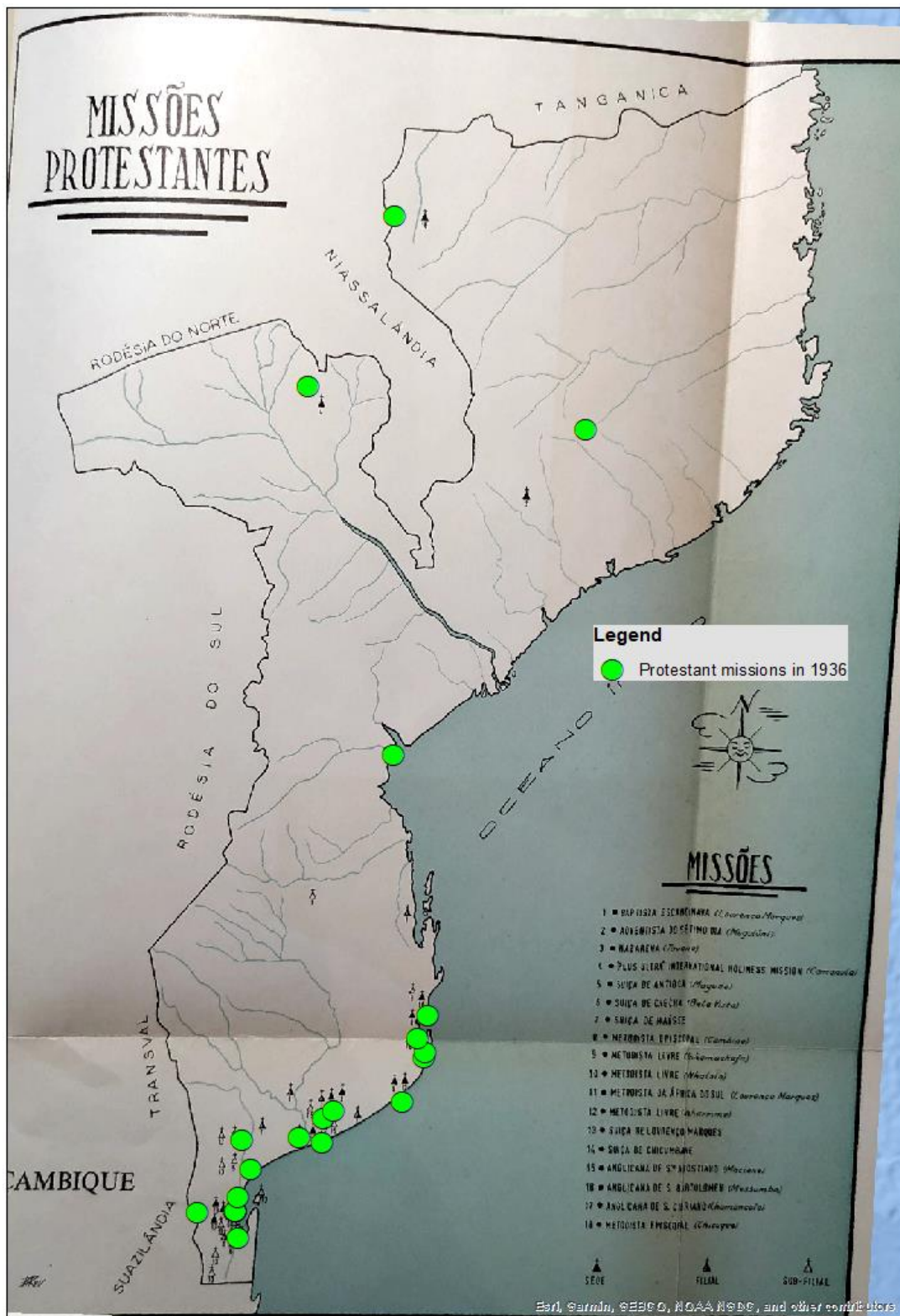
Source: Missions in 1936 georeferenced using data from Moreira (1936).

Underlying map, with missions in 1962, georeferenced from *Atlas Missionário
Portugués* (*Missão para o Estudo da Missionologia Africana*, 1962)

C: Spatial correlograms

Figure A.3.2: Spatial correlograms of residuals from regressions in Table 3.4
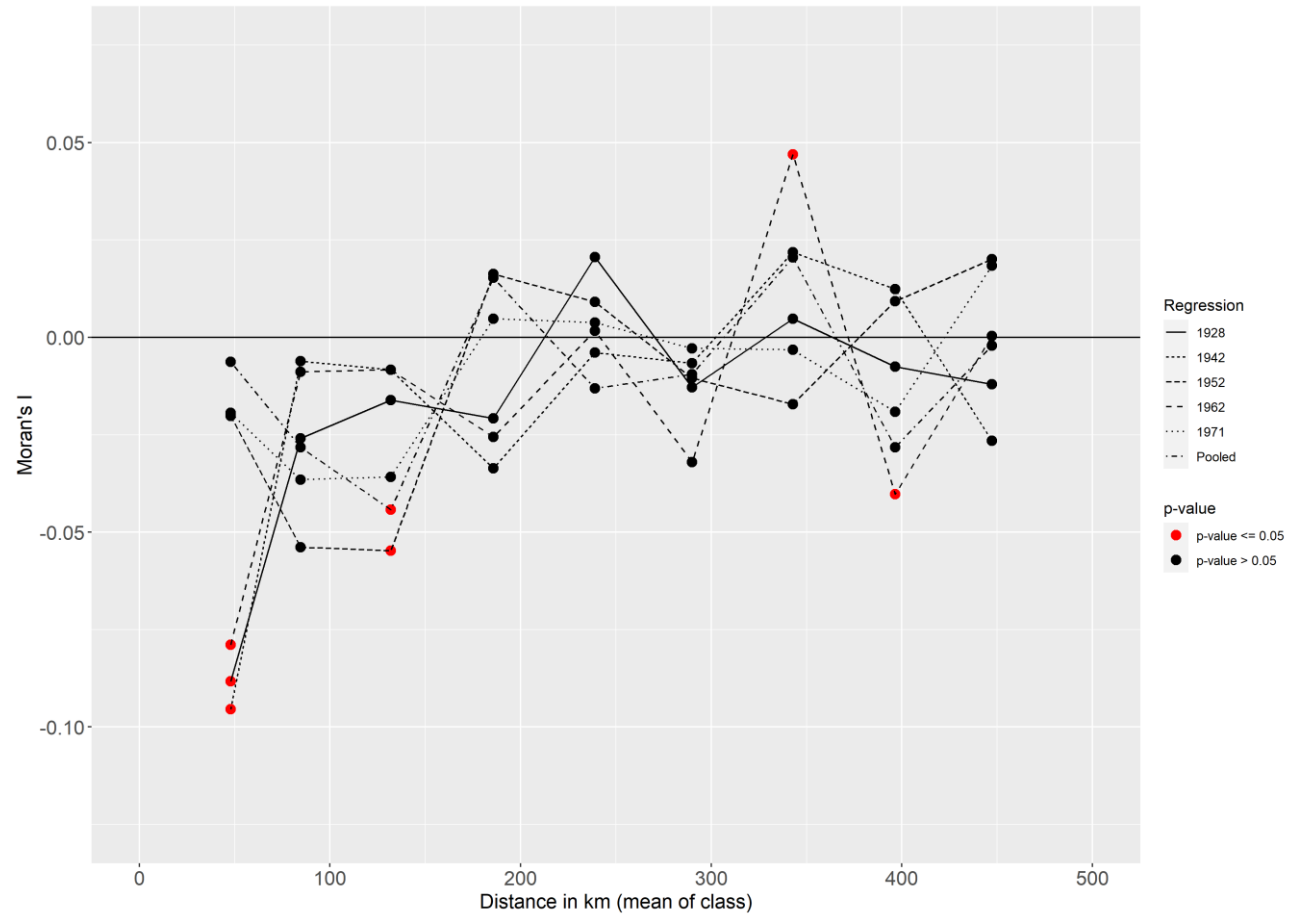
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 3.4, at 52.5 km distance bands (cells are 50 x 50 km), to determine the threshold for the application of Conley (1999) standard errors. For the majority of regressions, Moran's I becomes insignificant before the 100km threshold. Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Figure A.3.3: Spatial correlograms of residuals from regressions in Table 3.5
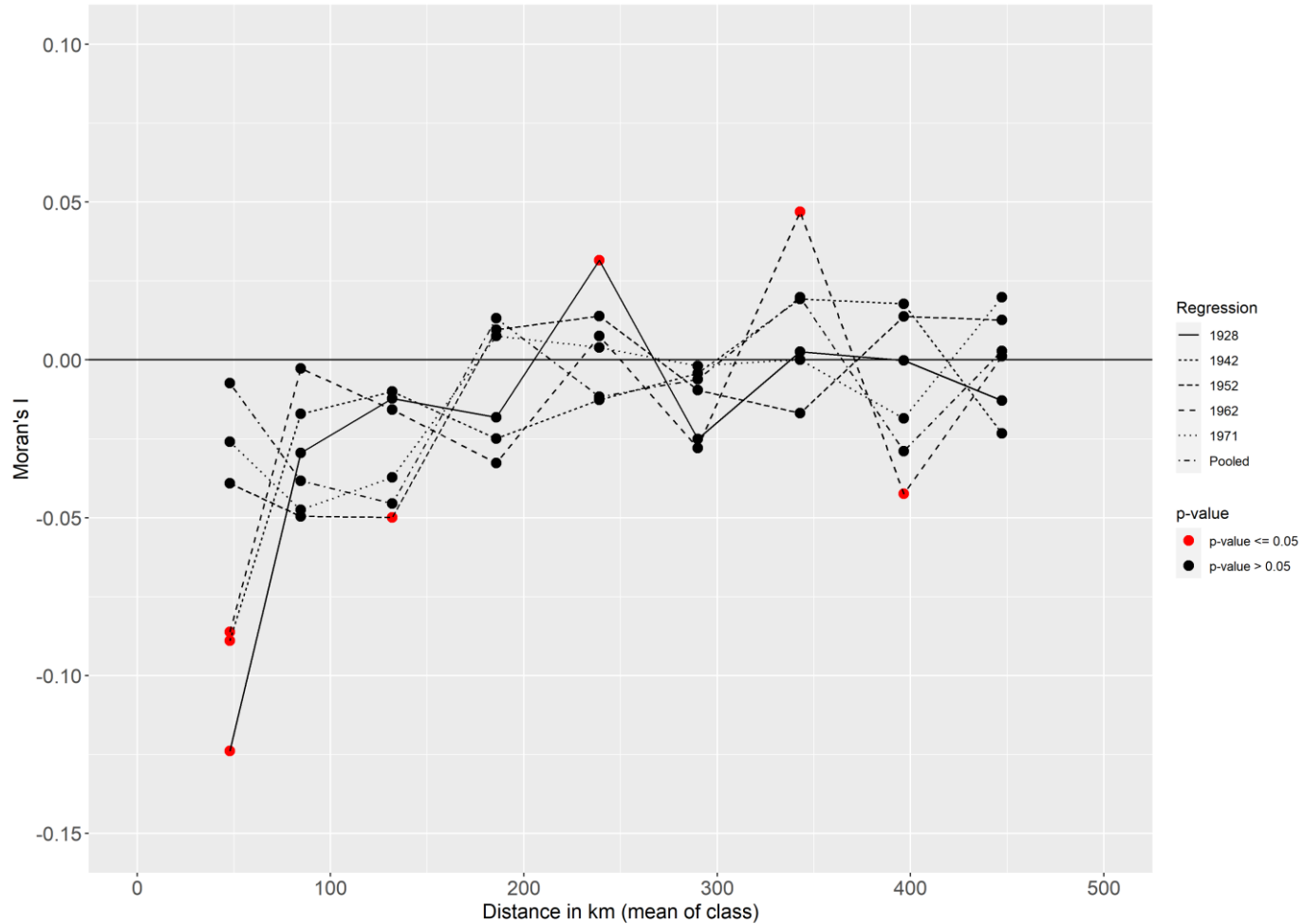
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 3.5, at 52.5 km distance bands (cells are 50 x 50 km), to determine the threshold for the application of Conley (1999) standard errors. For the majority of regressions, Moran's I becomes insignificant before the 100km threshold. Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Figure A.3.4: Spatial correlograms of residuals from regressions in Table 3.6
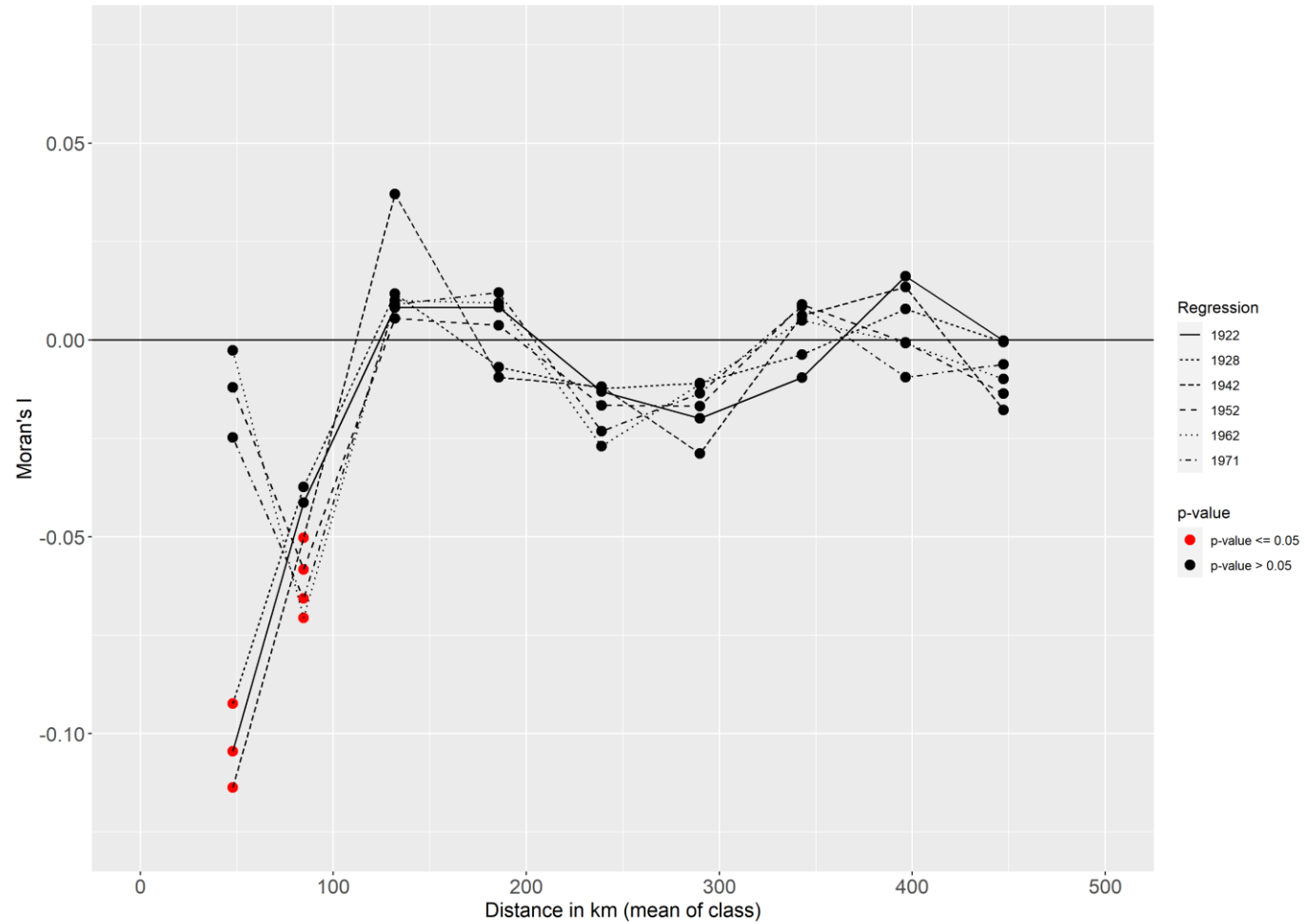
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 3.6, at 52.5 km distance bands (cells are 50 x 50 km), to determine the threshold for the application of Conley (1999) standard errors. For the majority of regressions, Moran's I becomes insignificant before the 100km threshold. Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Figure A.3.5: Spatial correlograms of residuals from regressions in Table 3.7
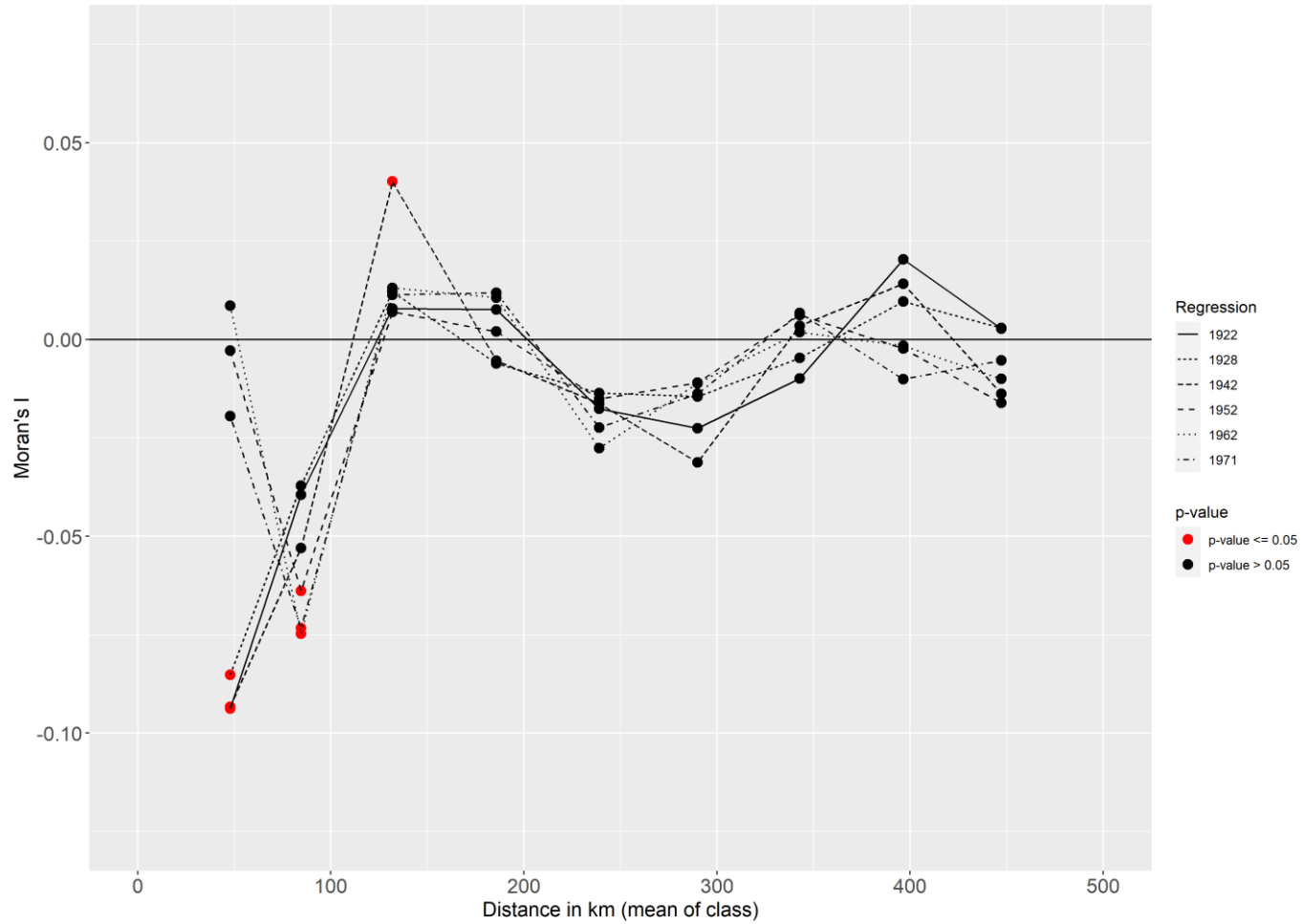
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 3.7, at 52.5 km distance bands (cells are 50 x 50 km), to determine the threshold for the application of Conley (1999) standard errors. For the majority of regressions, Moran's I becomes insignificant before the 100km threshold. Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Chapter 4. Unpacking the African mission: the evolution of educational gender gaps in colonial Mozambique

4.1. Introduction

It has been a decade since Frankema (2012) called for a greater emphasis on demand-side factors and the role of African agency in studies analysing the expansion of schooling in colonial Africa. However, this call has been largely ignored.[177] The growing literature on the long-term effects of Christian missions on education has focused, by construction, on the influence of missionary supply. Similarly, an older literature on the evolution of enrolment rates has devoted most of its attention to the differences between the British and French models of colonial education, and their purportedly diverging legacies on educational outcomes. Moreover, in spite of the focus placed on the supply side, there are important dimensions that have been omitted. In particular, the role of female missionaries and teachers, as well as the differences both within and across missionary societies in Africa, have been largely overlooked. Thus, a large part of the picture is still missing.

There is an additional shortcoming in the economic history of education in Africa: the intersection between regional and gender differences in colonial educational outcomes has received little attention, with the important recent exception of Baten et al. (2021). This is in spite of the importance of both dimensions. On the one hand,

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[177] One indication of this is the call by De Haas & Frankema (2018, p. 991), years later: "to further our understanding of processes of transformation during the era of colonial rule in Africa, it is crucial for (empirical) studies to acknowledge and incorporate the initiative of Africans and the impact of their agency on development outcomes." Meier zu Selhausen (2019) has also highlighted the importance of African agency and local demand for formal education to the process of expansion of mass education in Africa. One important recent exception is the work by Aboagye (2021), who incorporates demand into his analysis and shows that "the concrete outcome of said policies (colonial policies and missionary activities) on educational development in colonial Africa cannot be fully understood without an analysis of the interaction with African responses" (p. 21).

studies have shown that the unequal regional distribution of limited colonial investments in education have had long-term effects on current educational outcomes at the regional level (Huillery, 2009), and that differences in colonial-era education may have led to contemporary regional political inequality (Ricart-Huguet, 2021).[178] On the other hand, Africa still presents important educational disparities across genders. Despite gender convergence over the last decades, Psaki et al. (2018, p. 136) work with a sample of mostly African countries and find that "many countries still face obstacles to reducing gender disparities in enrollment and progression in school, as well as to improving absolute levels of enrollment and attainment."

In this chapter, I contribute to filling these gaps in the literature by exploring the factors behind the local evolution of educational gender gaps in colonial Mozambique, focusing on missionary schooling. Specifically, I ask the following questions:

> Research Question: What explains the local evolution of educational gender gaps in missionary schooling in colonial Mozambique?
> Sub-Research Question 1: How did demand side factors, and most importantly the local political economy and mode of production, influence educational gender gaps?
>
> Sub-Research Question 2: On the supply side, did the participation of female orders and/or teachers influence gender gaps?
>
> Sub-Research Question 3: On the supply side, did the differential characteristics of each Catholic congregation influence educational gender gaps?[179]

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[178] Huillery (2009) shows that districts in French-speaking West Africa that received more educational investment in the period 1910-1928 had better educational performance in 1995.

[179] Missions in Mozambique were run by religious men and women pertaining to different types of autonomous organisations within the Catholic Church, including, among others, "religious orders" and "congregations". To make the reading easier, I use the term "congregation" to refer to any of these institutions. See the work by Morier-Genoud (2019, pp. 8-15), who follows a similar solution, for a brief overview of the literature on these autonomous organisations, some of their features, and the difficulties presented by their categorisation. Importantly, for convenience in the analysis, I treat the

To do so, I use the new georeferenced dataset of Christian missions in Mozambique I have built for the period between 1922 and 1971 (see Chapter 3). I focus on two years, 1952 and 1962, for which I collect additional data on enrolment, by gender, for the most representative group under the racial discrimination regime of the *indigenato*: the African children enrolled in *ensino primario rudimentar*. I also collect information on the congregations and personnel operating each mission, both male and female, and I add georeferenced variables that may have influenced educational demand and gender parity in educational outcomes.

Why is Mozambique a good setting to ask these questions? What can we learn by looking specifically at this case? The key reason is that the detail in the dataset on Christian missions, together with the institutional configuration of Mozambique, allows me to address the shortcomings described above.

Firstly, the dataset allows me to explore the nuances in the supply side, tracing differences in educational gender gaps between congregations, and analysing the specific role of female missionaries and teachers in the supply of schooling to girls. Late colonial Mozambique is ideal for this exploration because many different congregations operated within its territory, following very different goals, and showing different degrees of participation of female congregations in the running of missions and schools (as described in section four). Thus, Mozambique gives us a unique window into the potential influence of the characteristics and composition of religious organisations on the local evolution of educational gender gaps.

On the other hand, the dataset aIso allows me to highlight the importance of African agency and local demand side factors, such as the local political economy and mode of production, for the evolution of educational gender gaps. I do this by running analyses in which I control for supply-side mission and congregation characteristics. The large regional variation in the establishment of religious orders and congregations in late colonial Mozambique is also useful for this purpose: some of

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secular clergy as an additional "congregation", even though they responded directly to each bishop and thus were not part of the autonomous organisations discussed here.

them located in multiple, very different regions, and educational results varied accordingly.

Following from this last point, Alexopoulou & Juif (2017) describe large regional variations in political economy and mode of production in colonial Mozambique, from peasant farming and forced cotton cultivation in the north, to the predominance of concession companies and forced labour in the central regions, and the role of the southern regions as a labour reserve for the mining economies of neighbouring colonies. These large regional differences make Mozambique a particularly interesting case to analyse the influence of demand factors on education.

Finally, the importance of studying the historical evolution of educational gender disparities in Mozambique at a disaggregated level is highlighted by the fact that, like many other African countries, it still presents large differences in educational outcomes between men and women, and these differences vary by region.[180] In Mozambique, the most recent IPUMSI census data for 2007 showed significant regional variation in overall literacy rates at the district level, from 17% in N'Gauma to 72% in Namaacha.[181] Gender gaps in literacy rates also showed great regional variation, ranging from 5 percentage points in Namaacha (75% male, 70% female) to 40 percentage points in Inhassunge (62% male, 22% female).[182]

The remainder of the chapter is structured as follows. Section two gives an overview of the African economic history literature on education, with a particular focus on

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[180] There has been gender convergence among younger generations in certain educational outcomes, with expected years of schooling in 2019 being 9.5 for women and 10.5 for men (United Nations Development Programme, 2020). However, Mozambique remains a very gender unequal country both in general terms and in educational outcomes. The Human Development Report for 2020 (United Nations Development Programme, 2020) classified countries in groups according to their deviation from gender parity in Human Development Index values. With a Gender Development Index of 0.912, Mozambique was classified in the fourth lowest possible group out of five. Regarding education in particular, mean years of schooling in 2019 were 2.7 for women and 4.5 for men.

[181] IPUMSI data accessible at https://international.ipums.org/international/ I have excluded small urban regions which may be considered outliers (Maputo, the capital city of the country, had an 86% literacy rate).

[182] Again, this excludes data for small urban regions. Figure 4.1 shows gender parity indexes for literacy at the district level (current day administrative division) for all cohorts combined, which I calculate as the ratio of female to male literacy, using the most recent IPUMSI census data for 2007.

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how these studies have approached the study of Christian missions, and gender. Section three provides a brief overview of missionary education in colonial Mozambique. Section four describes the construction of the georeferenced dataset, and describes the patterns in gender parity for primary school enrolment in the two years of focus, 1952 and 1962. Section five analyses these patterns econometrically, and highlights the most important explanatory factors. Section six concludes.

Figure 4.1: Gender parity indexes for literacy rates (all cohorts) in Mozambique, 2007
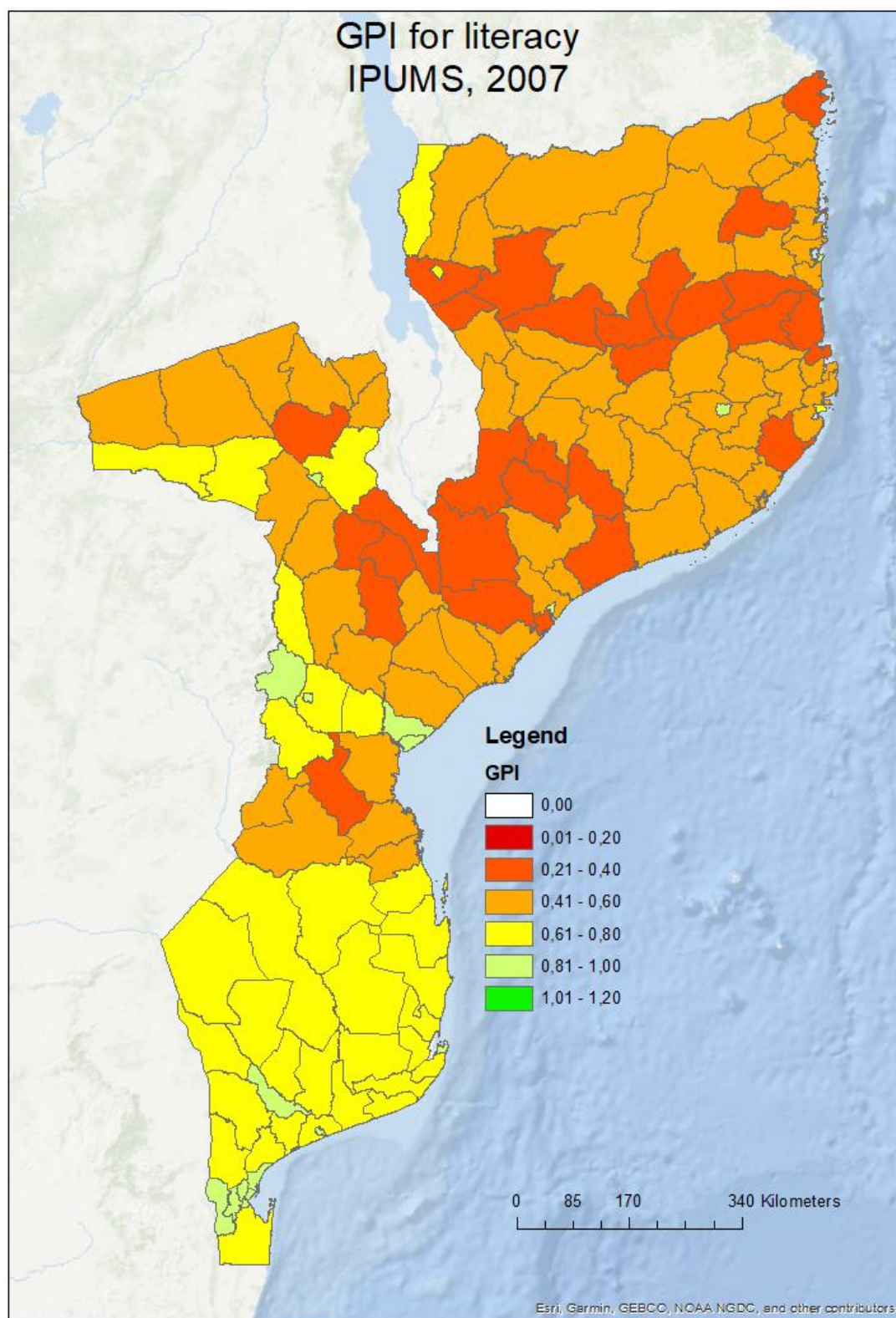
Source: calculated with IPUMSI data for Mozambique, 2007 census

Note: Literacy rates calculated at the level of the district (current day administrative division)

4.2. Christian missions, education, and gender

There is a vast literature on the historical trajectories of education in Africa. Meier zu Selhausen (2019) provides a thorough survey which focuses particularly on studies that analyse the role of Christian missionaries in the development of mass education in the continent.[183] He discusses five broad subjects: the expansion of Christian missions and how it was affected by metropolitan policies; supply and demand factors in the evolution of enrolment rates in colonial Africa; missions and gender gaps in educational outcomes; the "africanisation" of Christian missions; and the long-term effects of missions on educational levels and economic development. The present chapter touches on all five subjects, but its empirical analysis is located primarily at the intersection of three of them: the territorial expansion of Christian missions, the evolution of enrolment rates and other educational outcomes, and the concomitant trajectories of educational gender gaps.

Enrolment rates have been the focus of many analyses of educational development around the world.[184] These include cross-country analyses of historical global trends in primary enrolment (Benavot & Riddle, 1988; Easterlin, 1981; Meyer et al., 1977, 1992) as well as regionally specific studies of Latin America (Frankema, 2009), Africa (Frankema, 2012), Europe and the United States (Soysal & Strang, 1989), or the BRIC countries (Chaudhary et al., 2012). When it comes to Africa, much of the literature analysing the historical evolution of primary schooling during the colonial and post-colonial period focuses on differences in enrolment rates between territories under British and French domination, generally finding greater primary school enrolment rates among (former) British colonies as compared to the French (Benavot & Riddle, 1988; Brown, 2000; Garnier & Schafer, 2006).[185] These

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[183] His focus on missions is particularly relevant to the present chapter, but given that "missions schools provided the bulk of education for most of the colonial era (c. 1880 – 1960)", his survey also covers a great deal of the literature on the economic history of education in Africa in general.

[184] For an idea of how prominently this measure is featured in the economic history of education, see for example the general overview of the literature carried out by Mitch (2012), or the volume edited by Mitch & Cappelli (2019) on the rise of mass education around the world.

[185] Other strands of literature related to education in Africa have also focused on the British-French colonial dichotomy. See, for example, works analysing the long-term effects of colonial education systems on modern economic outcomes (Bolt & Bezemer, 2009; Grier, 1999), or on the development of numeracy (Cappelli & Baten, 2021).

differences are often attributed to opposing models and education policies by the two European powers. In particular, as Juif (2019) points out, the literature has paid great attention to their contrasting attitudes towards missions. However, as Cogneau & Moradi (2014) and Frankema (2012) argue, this supply-focused approach risks running into a variety of selection problems, particularly because conditions in British colonies generated greater demand for education overall. Thus, Frankema (2012) argues for de-emphasising metropolitan policy differences and supply-side factors, highlighting instead demand-side factors in the expansion of schooling in Africa, and particularly the role of African agency in this process.[186] Given that countries in Africa, like Mozambique, are usually large and show great local variation in the factors influencing demand for education, it is important to go beyond the national level and look at regional differences. However, the focus on the effects of metropolitan identity means that very few studies of schooling expansion in colonial Africa have paid attention to regional dynamics at the sub-national level.[187] Juif (2019) provides one of the few examples in her analysis of school enrolment in the Belgian colony of Congo since 1920, in which she explores the role of the mining industry and its demand for skilled labour in the growth of enrolments in primary schools. She provides primary school enrolment rates for boys in 1930, 1935 and 1946 at the level of the province, and documents regional inequalities.[188]

Similarly, the literature on the long-term evolution of educational gender gaps across the world, including data for African countries, has not incorporated a regional dimension (Barro & Lee, 2013; Eloundou-Enyegue et al., 2009; Evans et al., 2021; Grant & Behrman, 2010; Jones & Ramchand, 2016; Lee & Lee, 2016; Psaki et al., 2018). Most of these studies have taken a cross-country approach and thus, by

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[186] Similarly, Cogneau & Moradi (2014, p. 696) contend that "There are large idiosyncratic differences between territories that have nothing to do with educational models or institutions "created by" and specific to one colonizer. For instance, one does observe that within West Africa education tends to decrease as one moves further away from the more urbanized coastal areas. Thus, geography or Islam extension might be much more important than differences in colonial policies."

[187] This is not the case for the literature on other regions of the world, which includes country studies showing regional variation in enrolments (see, for example Backhaus, 2019; Cappelli, 2016; Chaudhary, 2012; Chaudhary et al., 2012; Fuentes-Vásquez, 2019; Musacchio et al., 2014).

[188] Although the coverage and construction of these "figures can most certainly tell us something about differences between provinces but not actual enrolment rates" (Juif, 2019). Also, sources do not allow Juif (2019) to analyse the provincial distribution of female enrolment rates during the colonial period, but she describes patterns of women enrolment and illiteracy rates in 1984 at the provincial level.

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construction, "sacrifice information on important between-country and within-country variations in order to describe comparable patterns across countries. National estimates also mask information about areas within countries where girls (or boys) may be most vulnerable" (Psaki et al., 2018, p. 138). Other types of studies, such as that by Alesina et al. (2021), document large regional variations in intergenerational educational mobility within African countries, but their analysis of gender gaps does not focus on within-country variation. Bridging these two gaps in the literature, an important recent study by Baten et al. (2021) has incorporated a regional dimension to the historical study of educational gender gaps. They analyse the long-term evolution of gender gaps in Africa at three levels: the region as a whole, individual countries, and districts within individual countries. For this last level, they analyse the correlates of gender gaps in average years of schooling completed per cohort, starting in 1920, for the districts of 19 African countries, looking at both supply and demand factors.

The geographical component is, by construction, important to another strand of literature: that on the long-term effects of exposure to Christian missionary activities, which often relies on georeferenced data for the historical location of Christian missions around the world. During the last decade, there has been an explosion of this type of studies, and they have been particularly interested in education: the web appendix to Jedwab et al. (2022) provides a list of 50 selected studies between 2010 and 2020, and 29 link historical missionary presence to some type of educational outcome today.[189] Out of these, some have looked at the effects of exposure to missions on gender differences in educational outcomes. Lankina & Getachew (2012) find that missionary activity in colonial India, proxied through the share of Christian converts, is associated with greater female literacy in the colonial and postcolonial periods, a link that is stronger than that with male literacy. Also for India, Calvi et al. (2020) find that historical exposure to Protestant missions is associated with better educational outcomes today, and that this relationship is stronger for female outcomes. Importantly, they find that a larger share of female missionaries (both at the district and mission level) is linked to increased current

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[189] The list they provide also includes studies relying on the share or number of European missionaries, or of Christian converts.

literacy, and that this relationship is stronger for women's literacy, while they cannot find an effect for male literacy. This is an important development, because quantitative analyses of the long-term effects of missions on education had so far neglected the role of female missionaries.

In similar scholarship for Africa, an emerging idea is that there are differences between the influence of Protestant missionaries and that of Catholics on long-term gender educational disparities.[190] In his multi-country study, Nunn (2014) finds no association between historical exposure to Protestant missions and educational outcomes for men, but finds a positive effect on female education. On the other hand, he finds that exposure to Catholic missions only results in higher educational outcomes for men. Nunn (2014, p. 509) attributes this to the "greater importance placed on the education of women by Protestants relative to Catholics". Montgomery (2017) analyses the effects of exposure to missions in German East Africa on gender disparities in current Tanzania. He finds that while exposure to both Protestant and Catholic missions results in higher educational outcomes today, the effects for Protestant missions are equally divided across genders, but the effects for Catholic missions are larger for men than for women, thus contributing to educational gender differences.

Some of these studies (Calvi et al., 2020; Nunn, 2014) make reference to the study by Becker and Woessmann (2008), who argue that differences between the effects of Protestantism and Catholicism on educational gender gaps date back to the time of Luther and the Reformation. Similarly, Meier zu Selhausen (2019) provides estimates for male to female enrolment ratios in African countries around 1963, and finds that gaps in primary schooling were lower in former British colonies. As an explanation, he refers to the greater presence of Protestant missions in British Africa, which faced greater restrictions in other colonies, and to their belief in the principle of *sola scriptura*. This principle would have increased "incentives for both

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[190] This relates to broader arguments on the greater effects of Protestant missions on education compared to Catholic missions (Gallego & Woodberry, 2010; Woodberry, 2004). One of the issues of this literature, that Frankema (2012) points out when discussing Gallego & Woodberry (2010), is that it is too focused on the supply side and does not appropriately consider demand-side factors, citing as an example the fact that "the role of Islam in the indigenous demand for Western/Christian education is completely neglected."

male and female basic education for baptism", while "Catholic missions placed a lower priority on the production of vernacular scriptures" (Stanley, 2018, p. 59, cited in Meier zu Selhausen, 2019). On the flip side, however, more recent quantitative analyses for Africa have cast doubt on these purported differences in the gendered effects of Protestant and Catholic missions on education. Baumert (2022) finds that both Protestant and Catholic missionary activities in colonial Cameroon are linked to lower educational gender gaps today, and that the effect of Catholic missionary activity is positive only for female outcomes today. Similarly, Baten et al. (2021) find that regions with an early presence of both Protestant and Catholic main stations, measured in 1924, have lower gender gaps, even for cohorts born decades later, after independence. Finally, Jedwab et al. (2021, Web Appendix Table B9), find "that there is no heterogeneous effect across the sexes" when looking at long-term effects of Protestant and Catholic missions on the ratio of the female-to-male literacy rate for adults in the year 2000.[191]

Like the literature on enrolment rates, studies on the long-term effects of missions are mainly focused on the supply side. This is by construction: the goal is to understand the influence of Christian missions, and demand factors are relegated to variables which must be controlled for.[192] Beyond this supply-side focus, Jedwab et al. (2022) highlight the two main problems that studies run into when analysing the long-term effects of Christian missions on current outcomes.[193] The first one is the use of mission atlases, which leads to non-classical measurement error: atlases underreport missions, missing most of those established in the hinterland, capturing primarily earlier missions, and selecting for "better" missions (main stations with schools and European missionary residence). The second one is omitted variable bias stemming from incomplete controls when accounting for the determinants of mission location. Jedwab et al. (2022) build and use an exhaustive

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[191] Relatedly, Jedwab et al. (2022) find in one of their auxiliary exercises that there is no differential effect of Protestant missions over Catholic ones in long-term economic development, once you account for their full set of controls: indeed, point estimates for Catholic missions are higher than for Protestant ones. See Panel A of their Web Appx. Table A16.
[192] The recent work by Becker (2021b) makes a contribution by emphasising how local demand for education influenced the long-term effects of Christian missions in Africa.
[193] See Frankema (2021) for a survey and critique of the general literature on persistence, with a particular focus on Africa.

census of Christian missions in colonial Ghana between 1751 and 1932 to show how both of these problems lead to "an overly optimistic account of the importance of missions for contemporary development". In alignment with these results, Jedwab et al. (2021) use the same dataset and multiple identification strategies that rely on the exogenous variation in missionary expansion, and find no positive long-term effect of Christian missions on local development during both colonial and post-colonial times (though some of their results do point towards a positive effect of missions on human capital accumulation). A further example comes from the work of Fourie and Swanepoel (2015), who show that the connection between mission station location in the Cape Colony in South Africa, and higher educational outcomes today, can be explained by early selection in mission location instead of education persistence.

Another problem that these types of analyses can run into is that of compression of history, common to the broader literature on the long-term legacies of history (Austin, 2008). To avoid this, some studies have looked at the evolution of their outcomes of interest in the period between the selected meaure of missionary influence and current times (eg. Calvi et al., 2020; Cogneau & Moradi, 2014; Dupraz, 2019; Jedwab et al., 2021; Lankina and Getachew, 2012; Wantchekon et al., 2015). However, very few have traced the changing presence of Christian missionaries and their activities, during the intervening decades of the colonial period (Cogneau & Moradi, 2014; Jedwab et al., 2021).[194] The best example of development in this direction is the important work by Jedwab et al. (2022), who open up a new quantitative literature on the determinants of Christian mission location.[195] Using their annual panel dataset on mission location in colonial Ghana between 1751-1932, they find that missionaries went to "healthier, more accessible, and richer areas". They confirm this, both for Ghana and for the rest of Africa, by using identification strategies to test the importance of malaria prevalence, railroads, and cash crop production. Time and dynamics are featured throughout their analysis.

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[194] Cogneau & Moradi (2014) do not trace the location of missions, but instead use the location of government and mission schools in 1902, 1925, and 1938.
[195] A further example of this type of analysis is Becker (2021a), who uses the Beach & Fahs (1925) atlas, thus sacrificing reliability in favour of temporal and geographical scope, to show the effects of colonisation on the rate of missionary expansion.

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Firstly, the importance of each factor for mission expansion changed in different periods, depending on the historical context. Secondly, they explore the dynamics of mission expansion and find that "the best locations received missions first, and that marginally less good locations were increasingly added to the existing stock of mission locations." Finally, time variation is used as one of the tools they use in their identification strategies.

One of the ways in which this new literature can be extended is to amplify longitudinal datasets on the location of Christian missions with data on education and gender gaps. Few studies have looked at the evolution of educational outcomes, and gender gaps thereof, at the mission level during colonial times. Recent work by Baumert & Bolt (2022) makes an important contribution in this direction. Building a panel dataset of missionary (and government) schooling stations in colonial Cameroon between 1850 and 1958, they analyse the determinants of school location and enrolment levels, and highlight the key aspect of African demand and agency. However, their analysis does not extend to differences in enrolment between boys and girls. Fourie et al. (2014) analyse 4,678 individuals in the 1849 census of mission stations at the Cape Colony, and find that women performed consistently higher than men on literacy scores, suggesting a positive effect of Protestant mission stations on educational gender gaps. However, they do not focus on the determinants of gender differences in literacy outcomes, or their evolution over time.

One strand of literature has examined the influence of Protestant missions in the evolution of gender inequalities during colonial times, including educational gender gaps, by focusing on colonial Uganda. Meier zu Selhausen (2014) and Meier zu Selhausen & Weisdorf (2016) use individual micro data collected from marriage registers kept by Anglican missionaries, primarily in urban Kampala.[196] While Meier zu Selhausen (2014) does not look specifically at gender gaps in education, focusing instead on the effects of mission education (proxied by literacy) on the socio-economic status of women, he gives a rough picture of how the brides in his sample

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[196] Meier zu Selhausen (2014) also collects data for two rural parishes in Western Uganda.

had higher literacy rates than the total female population, suggesting a positive influence from Protestant schools. Meier zu Selhausen & Weisdorf (2016) argue that the colonial era in Kampala saw a "gender Kuznets curve", part of which was driven by gendered changes in literacy: the arrival of European missionaries led to a "literacy revolution" first underwent by men, thus increasing gender gaps, and women caught up later on, closing the gap by the end of the colonial period. De Haas & Frankema (2018) address the work by Meier zu Selhausen & Weisdorf (2016), tempering their optimism regarding the link between colonial rule and gender differences in education (as well as in occupational opportunities). Among other things, De Haas & Frankema (2018) show, through the use of microdata from the Ugandan 1991 census, that the marriage register data used by Meier zu Selhausen & Weisdorf (2016) suffers from selection bias, and that gender gaps did not close during the colonial period. Importantly for our analysis here, they also highlight the key role played by African demand for the expansion of Christian education and religion, arguing for its prevalence over accounts focusing on European supply. One of the ways in which they substantiate this claim is a regression framework, using census data, that shows large educational gaps between men and women, which varied depending on the intersection of time, ethnicity, and religious affiliation. Taken together, these papers on colonial Uganda are a fascinating example of the promises and potential pitfalls of new data for the study of African Economic History, particularly for educational gender disparities, and the need to account for local African initiative. They also highlight the advantages of using micro data at the individual level, which allows for detailed quantitative analysis, and of focusing on a single country, which allows for a richer contextualisation. However, whether using localised data from parishes, or census data for the whole territory, the geographic component does not play a major role in their story.

Finally, despite the focus on the supply side, the literature on the economic history of educational gender gaps in Africa has overlooked an important dimension: the differences across missionary societies and religious orders and congregations. A growing literature has moved beyond the Catholic-Protestant dichotomy to study how the effects of Christian missions on education vary depending on the religious organisation running them, or across types of Protestantism, both in Latin America

(Barro & McCleary, 2019; Gómez-i-Aznar, 2022; Valencia Caicedo 2019; Waldinger, 2017) and in Africa (Baumert & Bolt, 2022; Fourie et al., 2014; Montgomery, 2017).[197] However, there has been little focus among these studies on the differential effects of societies and congregations on educational gender disparities. The only discussion is by Montgomery (2017), who finds a negative long-term effect of the presence of the Holy Ghost Fathers and the White Fathers in German East Africa on current female literacy outcomes in Tanzania. He discards explanations based on the characteristics of these congregations and argues that, consequently, the negative effect must be explained by the fact that these congregations faced less obstructions than others and, being "able to perform their work effectively, left a legacy of gender inequality in Tanzania" (Montgomery, 2017, p. 254).[198] Thus, no study has focused on differences in educational gender gaps across congregations during colonial times.

This chapter makes several contributions to the literature described above. The first is empirical. In Chapter 3 I construct a new georeferenced dataset of Christian missions in Mozambique between 1922-1971. For this chapter, I extend this longitudinal dataset for the years of 1952 and 1962, adding nuanced information on educational gender gaps in rudimentary education for each individual mission. To the best of my knowledge, this is the first study to provide data on gender gaps in school enrolment at the micro level of individual missions, covering the whole of an African colony for multiple years.[199] Building these kinds of data for the colonial

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[197] Jedwab et al. (2021) examine differences in the long-term effects of Methodist and Presbyterian missionary activity on economic development, while Jedwab et al. (2022) look at differences between Mainline Protestants and other groups in the importance that economic factors had to their location decisions, and how this was mediated by their funding structure.

[198] Gómez-i-Aznar (2022, p. 19) cautiously suggests a positive effect of Jesuit missions on education for women through his analysis of 18th numeracy data, but does not compare this effect on gender parity with other missions.

[199] As described above, the literature on colonial Uganda (Meier zu Selhausen, 2014; Meier zu Selhausen and Weisdorf, 2016) uses mission data which is focused in a few specific locations. Similarly, the incredibly detailed longitudinal dataset compiled for colonial Benin (Wantchekon, 2012; Wantchekon et al., 2015) includes individual data on students, non-students, and their descendants across generations collected through archival work and field surveys, but focuses on four regional schools in the early 20th century. Also, their analysis does not focus on gender differences. Montgomery (2017) uses "the proportion of Christian students at the closest missionary station", but merely as a control, and does not give details on where the data comes from, or gender differences. Baumert (2022) collects data on enrolment in mission schools for 1911, but does not disaggregate by gender. The most detailed longitudinal dataset at the mission level to date is that constructed by Jedwab et al. (2021, 2022), which does not provide educational enrolment and gender

period is important to understand the long-term trajectories of education and gender gaps. Additionally, the detail of the data allows me to address some of the points missing in each of the strands of literature described above. By using micro data at the level of the mission and controlling for supply side factors, such as mission characteristics and their level of investment, I am able to highlight the role of demand factors. Baten et al. (2021) have incorporated a missing regional dimension to the literature, working on a broad multi-country scale: I contribute by focusing on a single case-study and using micro data at the level of the mission, which allows me to delve deeper into the specific political economy of colonial Mozambique, and to provide further nuance. Finally, I explore differences in educational gender gaps across different religious congregations during colonial times, I highlight the role played by female missionaries and teachers, and I provide further nuance to the debate on the different effects of Catholic and Protestant missionary activities on educational gender gaps.

4.3. Missionary education in Mozambique

Although the circumstances under which Catholic missions operated in Mozambique changed somewhat with the succession of metropolitan regimes, there was relative continuity in policy throughout the 19th and 20th centuries (Dores, 2019): Catholic missions were seen as essential components of the Portuguese "civilising mission", and this lasted until the late colonial period under the *indigenato.*[200] The dynamics of education and the broader role of Catholic missions in Mozambique must be understood within this context.

However, we should not see Catholic missions in Mozambique as a monolithic entity, or solely as subservient agents of the colonial state: there was considerable heterogeneity within Catholic missions. Morier-Genoud (2019) describes the different attitudes and objectives followed by the multiple congregations that

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gaps at the mission level. For colonial outcomes, Jedwab et al. (2021) use "the number of individuals with education in or over standard 4" from a 1931 census, while the analysis by Jedwab et al. (2022) does not require looking at outcomes during colonial times.

[200] See Chapter 3.

worked in the diocese of Beira and, by extension, in Mozambique. For example, he contrasts the approach of most Portuguese missionaries, who "wished for a religious *and* cultural conversion" based on a Portuguese Catholicism, and foreign missionaries who "tried to build a locally centered Mozambican church". Among the latter, Morier-Genoud (2019) cites the case of some of the Spanish "Burgos fathers", who went as far as promoting a theology of liberation, and "wanted small base communities and not a hierarchical administration of Vatican-centered institutions".

The primary objective of all Christian missionaries was to convert Africans, and formal education was one of their key conversion strategies (Meier zu Selhausen, 2019, pp. 26, 30; Montgomery, 2017, p. 232). In Mozambique, similarly to other African colonies and indeed other countries around the world, the schooling system for the African population was designed to indoctrinate and mould a cheap labour force for the market (see Chapter 3). Thus, the tension described by Depaepe (1995) between the emancipatory potential of education (Freire, 1972) and its use for the reinforcement of social inequalities was in full view. With this in mind, differences in the values and political alignment of each Catholic organisation may have translated into differences in the contents of education. However, this did not necessarily translate into differences in the level of educational enrolment. As described in Chapter 3, conversion and education went hand in hand in the rudimentary schools run by Catholic missions in Mozambique, and Morier-Genoud (2019, p. 68) finds that in the diocese of Beira, "conversion rates had little, if anything, to do with politics but were rather the result of the pastoral appraoch and aims adopted by each congregation". Morier-Genoud (2019, especially Chapter 3) describes how the Jesuits and the White Fathers focused on the education and training of a new African elite, while Franciscans converted people en masse, focusing on peasants and farmers instead. This was reflected in the approach to the catechumenate, which was strict and lasted four years in the case of the White Fathers, and was shorter and less demanding in the case of Franciscan missions (Morier-Genoud, 2019). Additionally, congregations throughout colonial Mozambique differed in the degree of cooperation with female Catholic

organisations (described in the next section, and shown in Table 4.1), and may have differed in their attitudes towards female education.

Catholic missions in Mozambique operated schools through a layered structure, which had the mission *sede* at the centre, and rudimentary schools located in individual villages surrounding it. These schools would be staffed by a singular African teacher, and supervised by travelling missionaries (see Chapter 3). The distribution of educational resources followed a similar concentric pattern. In 1962, the *Prelado* for the diocese of Beira described how hinterland schools would provide the first courses of rudimentary education, while schools in mission branches, still in distant locations but occupying strategic positions, would make available the last courses of rudimentary education and the first course of elementary education. Finally, schools in each mission *sede* would provide the last course of elementary education for the children in the area.[201] It could take some time between the moment a mission was established and rudimentary schooling was up and running.[202]

In colonial Africa, the education received by boys and girls in missionary schools was very different. Girls accessed education in lower numbers, and when they did they followed specific curricula that were designed to produce Christian housewives, through a greater emphasis on domestic skills and differentiated gender roles (Meier zu Selhausen, 2019; Montgomery, 2017; Nunn, 2014). Missionary schools in Mozambique were not an exception. One of the consistent features of legislation regulating rudimentary schooling in Mozambique was the separation of boys and girls, whenever the number of students allowed for it.[203] This separation was put in practice in Catholic mission schools: in his 1956 report, the

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[201] *Relatório do Prelado referente ao ano de 1962, Diocese de Beira*, Arquivo Histórico Ultramarino, 1442 1B MU: "*Nas sedes de todas as Missões há ensino primário, de 3ª e 4ª classes, cujos resultados têm sido muito bons. Como no ano passado referi estamos organizando o ensino, demodo que, nas escolas do interior, se faça o curso de adaptação; nas sucursais, também do interior, mas em lugares estratégicos, se realize o 3º ao de adaptação e o 3º do curso elementar primário. Na sede das Missões será administrado o ensino da 4ª classe a todos os alunos da área da Missão.*"

[202] *Relatório do Prelado referente ao ano de 1952, Diocese de Beira*, Arquivo Histórico Ultramarino, 1442 1B MU: "*Em todas as Missões administra-se o ensino rudimentar em maior ou menor extensão conforme a data, antiga ou recente, da fundação das Missões.*"

[203] See, for example, article 24 of *Portaria* 2,456, of March 27 1935, and article 5 of *Portaria* 15,971, of March 31st 1962.

prelado for Nampula described how the majority of rudimentary schools had classes for boys in the morning, and classes for girls in the afternoon.[204] This, he argued, reduced the number of buildings needed (thus, assuming that education was to be separated by gender) and, interestingly, increased student attendance by reducing the resistence offered by parents. Educational programs were also consistently different across gender. Article 21 of the 1926 *Estatuto orgânico das missões católicas portuguesas de África e Timor* listed the functions of Catholic missions, and included female education as item f), describing its goal as making "native" women into careful housewives and good mothers (my translation).[205] The educational program for rudimentary schools included in *Portaria 1,115* of 1930 had a differentiated section for girls, and even as late in the colonial period as 1961, the program passed by *Portaria 14,837* of that year still included specific 'female education' focused on sewing, embroidery, and cooking.[206] Sheldon (1998) provides an overview of the education of girls in colonial Mozambique, and highlights not only continued differences in the curriculum followed by boys and girls, but also the greater obstacles that girls faced to atend school. Additionally, although Sheldon (1998, p. 625) highlights "the experience of a small number of Mozambican girls who desired to attend the mission schools and who later found success as workers and professionals", her analysis shows that, for girls, the acquisition of skills specifically included in female education often did not lead to employment in the colonial economy. For example, sewing and housekeeping skills were emphasised in female education, but the majority of garment workers and domestic servants were boys and men (Sheldon, 1998, pp. 622-623).

These gendered differences in the type of education received may have reduced the incentives of parents to send their daughters to school. De Haas & Frankema (2018, pp. 988-990) describe how in colonial Uganda, gendered differences in educational

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[204] *Relatório do Prelado de 1956 e 1957*, *Diocese de Nampula*, *Arquivo Histórico Ultramarino*, 1442 1B MU, p. VII.

[205] Item f) of Article 21, *Estatuto orgânico das missões católicas portuguesas de África e Timor* of 1926: "*O ensino doméstico, procurando fazer da mulher indígena cuidadosa dona de casa e boa mãi de família*".

[206] Separation by gender and differentiated programs were also the norm in *ensino elementar e complementar* for the white population. See for example article 9 of Portaria 4,435, of July 5th 1941, or the home-keeping class specifically destined for girls in the program passed by Portaria 918, of July 6th 1929.

content resulted in a reduced willingness to pay for school fees for girls, because "(t)he Baganda were fully aware of the low economic returns to women's education." More generally, the low quality of rudimentary education (see Chapter 3) may have reduced parents' demand for the education of boys and girls. In spite of this, we can observe large differences in the levels of educational gender parity across missions in colonial Mozambique. The next section describes these patterns, and section five analyses the supply and demand factors behind them.

4.4. Dataset and patterns in gender parity

To analyse the drivers of educational gender parity in colonial Mozambique, I expand on the geo-referenced dataset of Catholic mission primary stations described in Chapter 3. I collect enrolment data for boys and girls in *ensino rudimentar* schools for 96 Catholic missions in 1952, and 175 in 1962. With these enrolment data, I calculate a Gender Parity Index (GPI) for education at the mission level: this is the ratio of female to male enrolment, base 100. I focus on enrolment for both black and *misto* children, as classified under the *indigenato.* I also collect information on the number of rudimentary schools, the number of *sacerdotes* (priests) and *irmãos* ("brothers"), the number of female missionaries ("sisters"), the number of male and female wage workers (which are a good proxy for teachers), and the male Catholic congregation running each mission.[207]

Each point in the dataset represents the *sede* of a mission, and so does not include the location of outstations. However, the data recorded for each mission includes all of the schools and children enrolled within the area of influence of the mission. Table 4.1 provides summary statistics by Catholic organisation for each of our years of focus. To place these patterns in space, Figures 4.2 and 4.3 map the location of Catholic missions separately for the two years, classifying them according to the male Catholic organisation running them, while Figures 4.4 and 4.5 plot the GPI for each mission.

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[207] For more details on the sources and construction of the dataset, see section A of the Appendix.

Several patterns of interest emerge. If we look at the top four Catholic organisations in terms of missions run (the Franciscans, the secular clergy, the Consolata Missionaries, and the so-called *Cucujaes*) we can observe that they were present in different macro regions within the colony. For each of these four organisations, the GPI for rudimentary schooling in the missions located within the southern macro region is always higher than the GPI for missions in the central and northern regions, for both 1952 and 1962 (Table 4.1).[208] Contrary to the supply-focused narratives in much of the literature, the existence of these systematic differences highlights the importance of the local setting for educational outcomes in colonial contexts, and the need to pay greater attention to African agency and demand factors. For example, one of the factors potentially linked to higher gender parity in education, the prevalence of circular migration, was a notable feature of the southern macro region in Mozambique.

The importance of the local context is also highlighted by the cases in which missions run by the same organisation show different GPI levels across smaller distances. The Capuchin Franciscans in 1962, for example, only ran missions in the central region of Quelimane (Figure 4.3). If we look at the missions established along the southern border of the *distrito*, which coincided with the Zambezi river, we can observe that their GPI is much higher than the missions run by the same Capuchin Franciscans further north in the *distrito* (Figure 4.5). Interestingly, the GPI for a neighbouring Franciscan mission in 1962, also located along the river, was very similar to that of the Capuchin Franciscans, and higher than other missions the Franciscans ran further south in the *distrito* of Manica e Sofala. To take a last case, let us analyse the missions of the central *distrito* of Tete that were run by the Jesuits, a Catholic organisation that has been characterised in the literature as a notable provider of education. If we compare the missions located around the capital of the *distrito* in Tete, close to the southern border with the *distrito* of Manica e Sofala, we find that both the level of enrolment (not shown in the figures) and the GPI for both 1952 and 1962 are lower than for the missions located in the northeastern corner

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[208] This trend also holds at greater disaggregation. If we look at the presence of Franciscans in different *distritos*, for example, we can see that both in 1952 and 1962, for the most part, the GPI of the missions located in Gaza is higher than that of the missions in Inhambane further north, which in turn are higher than those in Beira, even further north (Figures 4.2-4.5).

of the *distrito,* close to the border with current day Malawi. The fact that enrolment was closer to gender parity and even favoured girls in the latter may have been related to the proximity to WNLA recruiting stations in colonial Nyasaland, and the resulting greater prevalence of circular migration. Once again, this highlights the importance of the local context and African demand.

On the other hand, the need for moving beyond the focus on supply factors does not preclude the existence of differences between religious organisations, as discussed above. One of the best examples in the case of colonial Mozambique is the organisation known as the White Fathers. For both 1952 and 1962, in all three areas in which they ran missions (the eastern part of Tete, the Zambezi valley, and Manica e Sofala) the GPI for rudimentary education in the White Father missions was systematically lower than the GPI for the closest missions run by other Catholic organisations.[209] The first reason that may come to mind is that one of the goals of the White Fathers was to evangelise Muslim people, who may have harboured different attitudes towards the education of girls. However, in colonial Mozambique the White Fathers were not established in regions with a comparatively high prevalence of Muslim people, when measured at the *circunscrição* level.[210] Another potential reason is that the White Fathers had the lowest rate of collaboration with female Catholic organisations (Table 4.1).[211] Indeed, one of the interesting patterns that emerges for colonial Mozambique is that there were large differences between Catholic organisations in the degree of collaboration with sisters, ranging from 27% for the White Fathers to 65% for the Monfortinos.[212] These variations in the degree of collaboration seem to be one of the main drivers for the presence of female missionaries, as Figures 4.6 and 4.7 show no clear spatial pattern in their distribution.

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[209] In spite of one outlier mission which was close to parity in 1962, the White Fathers had the lowest overall GPI in my dataset.

[210] Of course, this does not exclude the possibility that the White Fathers sought to evangelise Muslim people living within these broader areas. Indeed, there were Muslim communities established, for example, along the Zambezi river, but the dataset does not capture this level of detail.

[211] I exclude from the analysis of collaboration with female missionary organisations any male organisation running three missions or less, counting both 1952 and 1962: the Picpus and the S.C. de Deus organisations had a lower rate of collaboration, but they ran very few missions.

[212] As argued before, the vast quantitative literature on historical Christian missions has overlooked many of the nuances in the supply side: the role of female missionaries is one of them.

One dimension of educational supply by Christian missions that the literature has paid much attention to is the difference in educational outcomes between Protestant and Catholic missions, particularly regarding differences across genders. However, Table 4.2 shows that, similarly to what has been described above for Catholic missions, the GPI for Protestant missions in Mozambique was higher in the southern macro region, where they were concentrated, than in the central and northern macro regions.[213] This, once again, suggests the importance of the local context, and the need to look beyond large categorical divisions focused on the supply side. Comparing the levels in GPI for Protestant and Catholic mission schools is not a meaningful exercise in this case, because as described in Chapter 3, Protestant missions in Mozambique faced many obstacles, and this affected the scale of their operations which could, in turn, influence GPI levels. Additionally, since the data for Protestant missions are only available at the level of the *circunscrição¸* it is not directly comparable to Catholic mission data, as in some *circunscrições* GPI levels could be brought down by specific Protestant missions, especially considering the low levels of total enrolment in those missions.[214]

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[213] I am omitting from consideration the observation for Niassa in 1952, which may have been an outlier driven by small overall enrolment.

[214] If anything, Catholic missions had higher levels of gender parity in rudimentary education. If we focus on the southern macro region, we see that the GPI for rudimentary education in Protestant missions ranges from 25 in the *distrito* of Lourenço Marques for 1962, to 76 in the *distrito* of Inhambane in that same year. Taking all three *distritos* of the southern macro region together, the GPI for Protestant missions would have been 65 in 1952 and 64 in 1962. Comparatively, the GPI for Catholic missions in the same region would have been 83 in 1952 and 84 in 1962.

Catholic Organisation	Total missions	Total missions with sisters	Percentage of missions with sisters	Year	Macro Region	Missions	Missions with sisters	Sacerdotes	Irmaos	Sisters	Male assalariados	Female assalariados	Rudimentary schooling					
													Schools	Total enrolled	Male enrolled	Female enrolled	GPI	Enrolled per school
Franciscans	50	19	38	1952	Centre	7	5	15	8	23	132	4	124	10,735	8,142	2,593	32	87
					South	13	4	24	11	27	247	4	224	46,732	26,824	19,908	74	209
				1962	Centre	11	5	19	8	50	226	12	206	25,313	15,122	10,191	67	123
					South	19	5	32	15	57	427	22	333	49,092	26,661	22,431	84	147
Secular Clergy	41	18	44	1952	Centre	1	1	1	-	6	14	2	13	924	744	180	24	71
					North	4	2	7	-	7	142	-	24	4,145	2,931	1,214	41	173
					South	10	6	16	-	41	134	1	120	21,215	10,356	10,859	105	177
				1962	Centre	3	2	7	5	12	112	3	50	5,420	3,649	1,771	49	108
					North	13	4	21	-	21	394	12	292	41,617	28,261	13,356	47	143
					South	10	3	16	-	14	134	16	105	17,320	8,807	8,513	97	165
Consolata Missionaries	28	15	54	1952	North	6	5	15	10	36	144	4	16	879	659	220	33	55
					South	5	2	8	3	8	57	-	53	8,591	6,221	2,370	38	162
				1962	North	10	6	18	12	52	433	16	207	12,785	9,409	3,376	36	62
					South	7	2	12	5	7	154	5	100	11,581	7,262	4,319	59	116
Cucujaes	25	10	40	1952	North	7	4	13	11	15	195	5	63	9,695	7,181	2,514	35	154
					South	1	-	2	1	-	17	-	24	3,443	1,474	1,969	134	143
				1962	North	13	6	27	8	27	735	25	410	64,184	40,927	23,257	57	157
					South	4	-	7	3	-	83	5	62	3,865	1,726	2,139	124	62
Capuchin Franciscans	20	9	45	1952	Centre	8	2	15	7	8	147	2	43	8,063	6,124	1,939	32	188
				1962	Centre	12	7	29	10	36	528	1	265	29,783	22,114	7,669	35	112
Vicentians	17	5	29	1952	South	5	2	11	3	9	70	-	67	7,806	2,679	5,127	191	117
				1962	South	12	3	17	5	15	264	3	94	9,267	4,443	4,824	109	99
Monfortinos	17	11	65	1952	North	4	4	8	-	20	144	1	6	392	258	134	52	65
				1962	North	13	7	32	3	27	-	-	148	15,875	9,825	6,050	62	107
Comboni Missionaries	16	5	31	1952	North	6	1	12	6	3	78	5	26	4,039	3,291	748	23	155
				1962	North	10	4	20	10	18	664	6	177	25,052	16,140	8,912	55	142
White Fathers	15	4	27	1952	Centre	7	1	15	6	13	84	1	57	5,607	5,292	315	6	98
				1962	Centre	8	3	27	8	15	153	9	110	11,417	9,709	1,708	18	104
Coraçao de Jesus	14	9	64	1952	Centre	6	3	13	1	13	138	1	69	13,667	9,313	4,354	47	198
				1962	Centre	8	6	20	3	36	364	13	144	24,819	16,348	8,471	52	172
Jesuits	10	6	60	1952	Centre	4	2	8	15	12	116	5	23	2,393	1,270	1,123	88	104
				1962	Centre	6	4	20	19	23	178	8	68	7,121	3,576	3,545	99	105
Burgos	5	2	40	1962	Centre	5	2	12	3	13	63	2	48	3,695	2,376	1,319	56	77
S. S. Sacramento	5	2	40	1952	South	2	2	7	1	23	6	6	4	997	856	141	16	249
				1962	South	3	-	12	2	-	66	13	23	3,954	2,138	1,816	85	172
Picpus	3	-	-	1962	Centre	3	-	6	1	-	22	5	16	1,602	1,280	322	25	100
S. Joao de Deus	2	2	100	1962	North	2	2	2	6	8	27	-	3	407	263	144	55	136
Exclusively female	1	1	100	1962	South	1	1	-	-	9	-	-	1	1,876	1,304	572	44	1,876
S. C. de Deus	1	-	-	1962	Centre	1	-	1	4	-	4	1	1	78	42	36	86	78
Salesianos S. Joao Bosco	1	1	100	1962	South	1	1	3	2	6	15	12	3	2,342	1,487	855	57	781
Total	**271**	**119**	**44**			**271**	**119**	**550**	**215**	**710**	**6,911**	**230**	**3,822**	**517,788**	**326,484**	**191,304**	**59**	**135**

Source: Based on data from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1952, 1960, and 1962)

Note: for 18 missions in the *prelado* of Porto Amelia in 1962, data on *assalariados* (wage workers) is missing. This results in lower number for some Catholic organisations operating in the north macro-region in 1962. The number of children enrolled includes children classified as black and as *mistos* under the *indigenato*.

Table 4.2: Statistics for rudimentary schooling provided by Protestant missions in Mozambique, 1952 and 1962

Distritos and concelhos/circunscrições	1952				Macro Region	Distritos and concelhos/circunscrições	1962			
	Matriculados	Male matriculados	Female matriculados	GPI			Matriculados	Male matriculados	Female matriculados	GPI
Distrito de Lourenço Marques	**1,238**	**747**	**491**	**66**	South	**Distrito de Lourenço Marques**	**971**	**778**	**193**	**25**
Lourenço Marques	1,238	747	491	66		Lourenço Marques	971	778	193	25
Distrito de Gaza	**1,939**	**1,124**	**815**	**73**		**Distrito de Gaza**	**1,974**	**1,147**	**827**	**72**
Gaza	635	350	285	81		Joao Belo	1,014	604	410	68
Bilene	121	89	32	36		Bilene	46	33	13	39
Magude	291	174	117	67		Muchopes	739	404	335	83
Manhiça	298	169	129	76		Magude	175	106	69	65
Muchopes	539	313	226	72						
Sabie	55	29	26	90						
Distrito de Inhambane	**2,165**	**1,371**	**794**	**58**		**Distrito de Inhambane**	**2,852**	**1,617**	**1,235**	**76**
Inhambane	102	78	24	31		Inhambane	146	91	55	60
Homoine	870	439	431	98		Homoine	1,325	535	790	148
Inharrime	364	221	143	65		Inharrime	475	314	161	51
Morrumbene	446	402	44	11		Morrumbene	667	557	110	20
Zavala	383	231	152	66		Zavala	239	120	119	99
Distrito da Zambezia	**1,078**	**863**	**215**	**25**	Centre	**Distrito da Zambezia**	**165**	**151**	**14**	**9**
Alto Molocue	870	682	188	28		Lugela	165	151	14	9
Lugela	208	181	27	15						
Distrito do Niassa	**164**	**80**	**84**	**105**	North	**Distrito do Niassa**	**818**	**552**	**266**	**48**
Maniamba	164	80	84	105		Maniamba	818	552	266	48
Total	**6,584**	**4,185**	**2,399**	**57**		**Total**	**6,780**	**4,245**	**2,535**	**60**

Source: Based on data from *Anuários Estatísticos da Colónia de Moçambique* (yearbooks, 1952 and 1962)

Note: The number of children enrolled includes children classified as black and as *mistos* under the *indigenato*.

Figure 4.2: Catholic missions in Mozambique, 1952, classified by male Catholic congregation
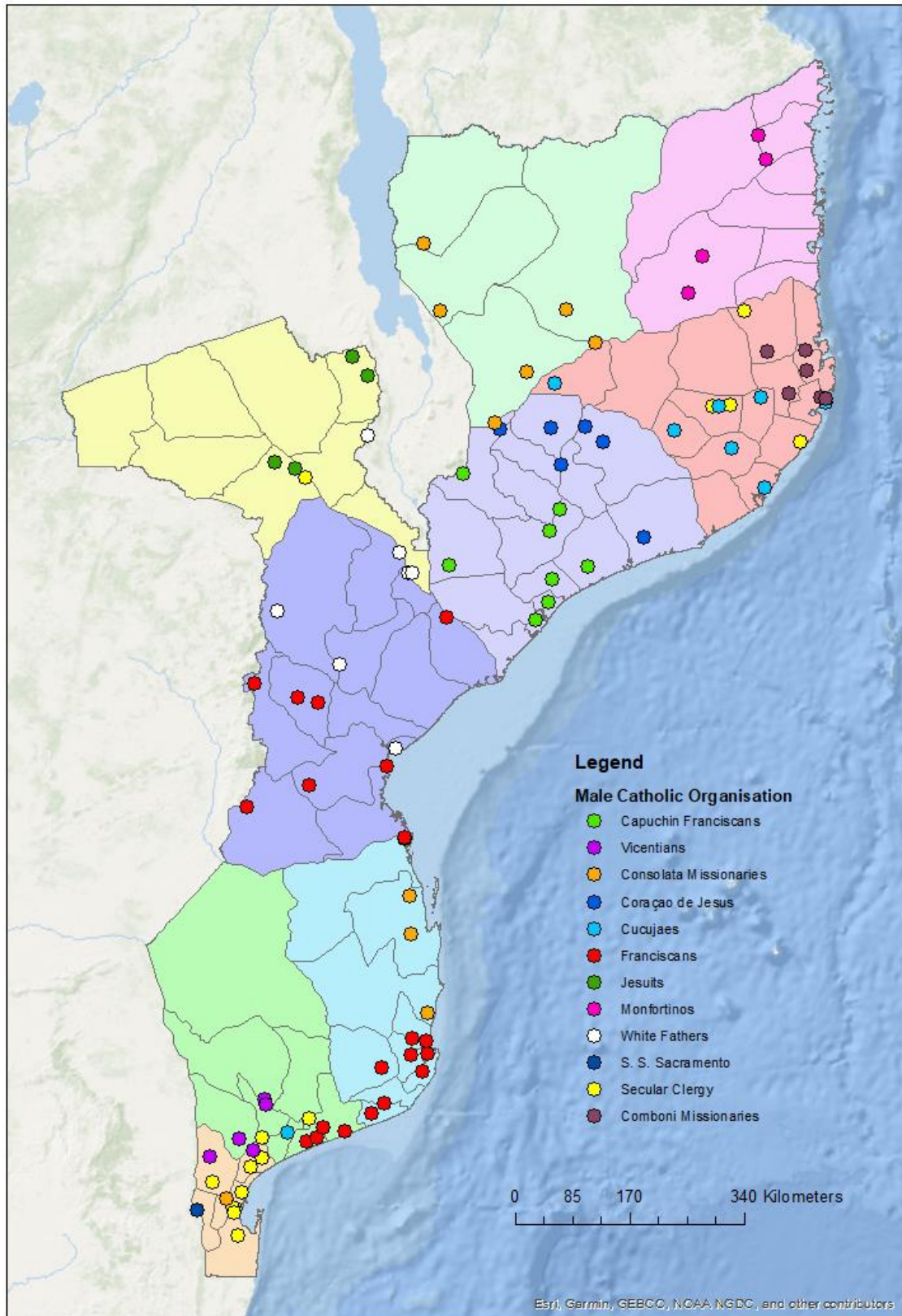
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1952)

Figure 4.3: Catholic missions in Mozambique, 1962, classified by male Catholic congregation
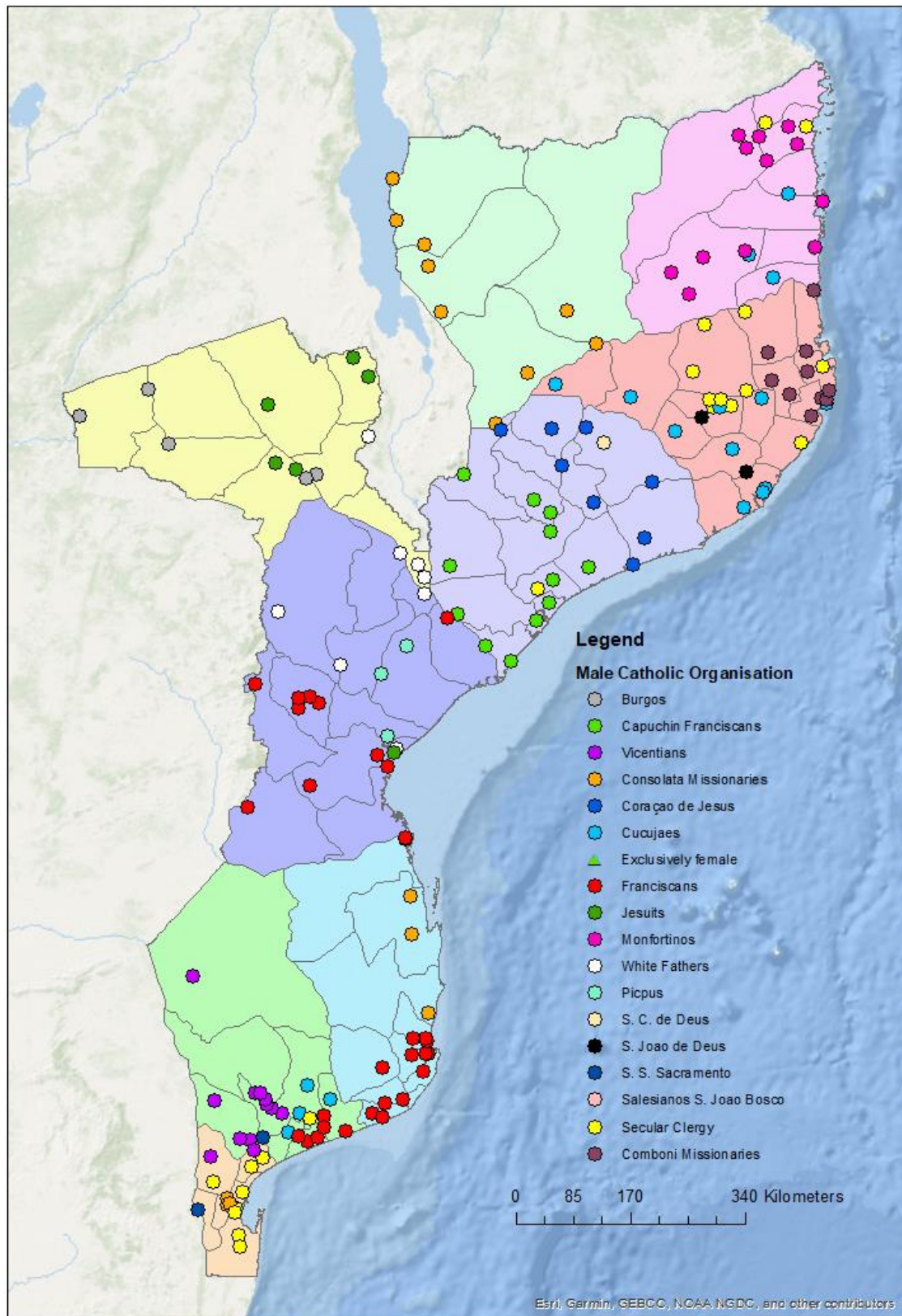
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1960, 1962)

Figure 4.4: Gender Parity Index for rudimentary schooling in Catholic missions, 1952
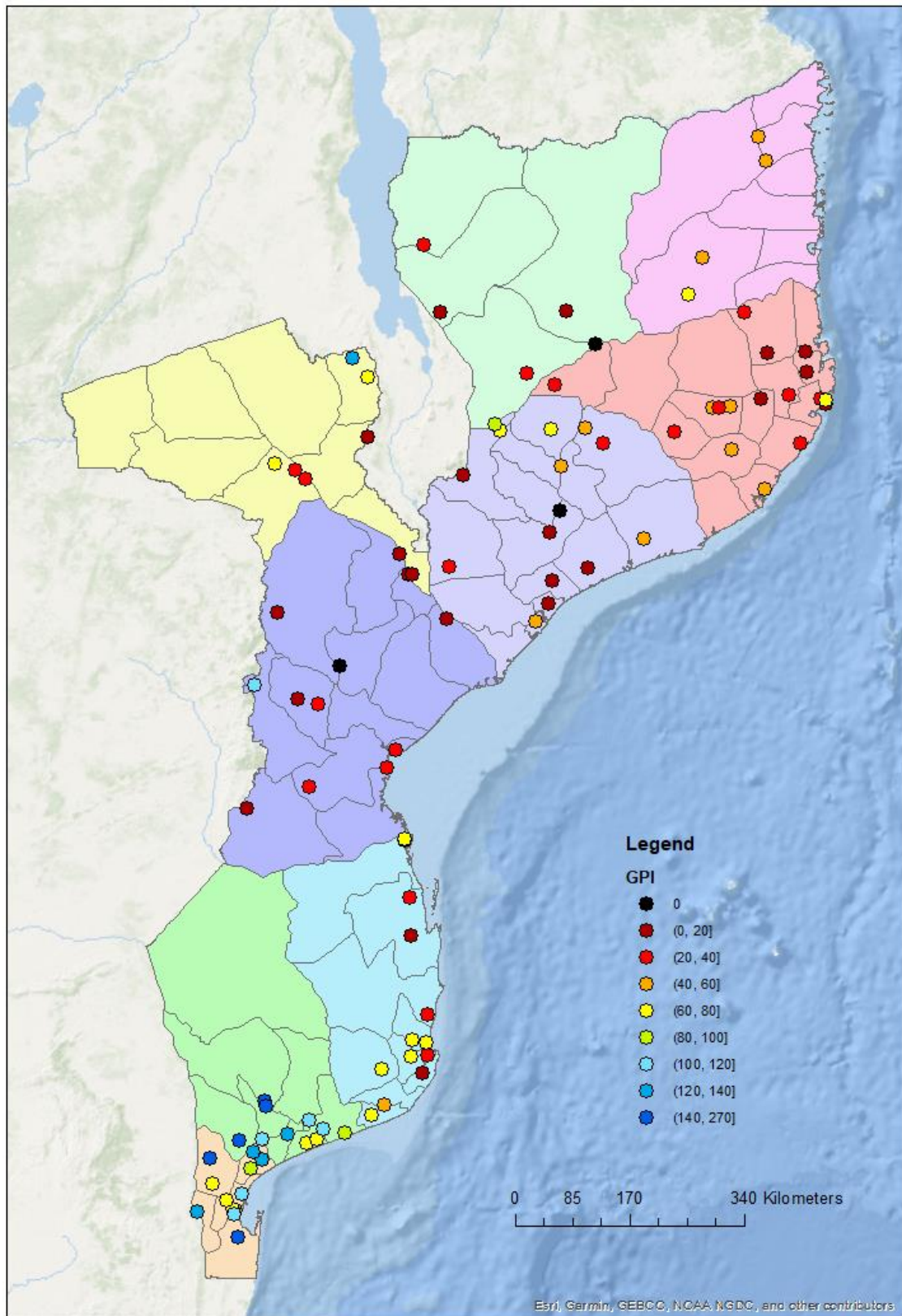
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1952)

Figure 4.5: Gender Parity Index for rudimentary schooling in Catholic missions, 1962
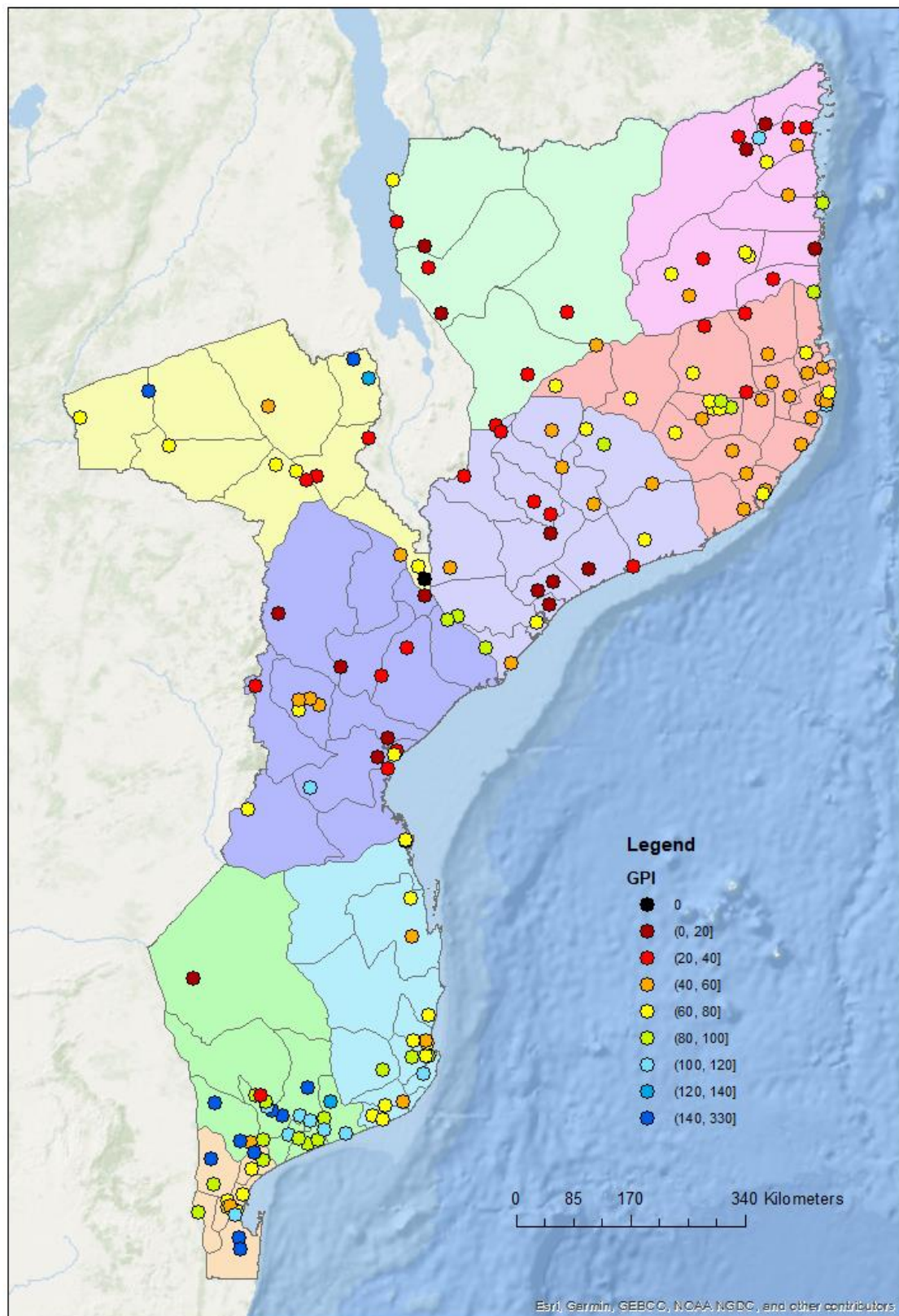
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1960, 1962)

Figure 4.6: Catholic missions in Mozambique, 1952, classified by presence of female missionaries
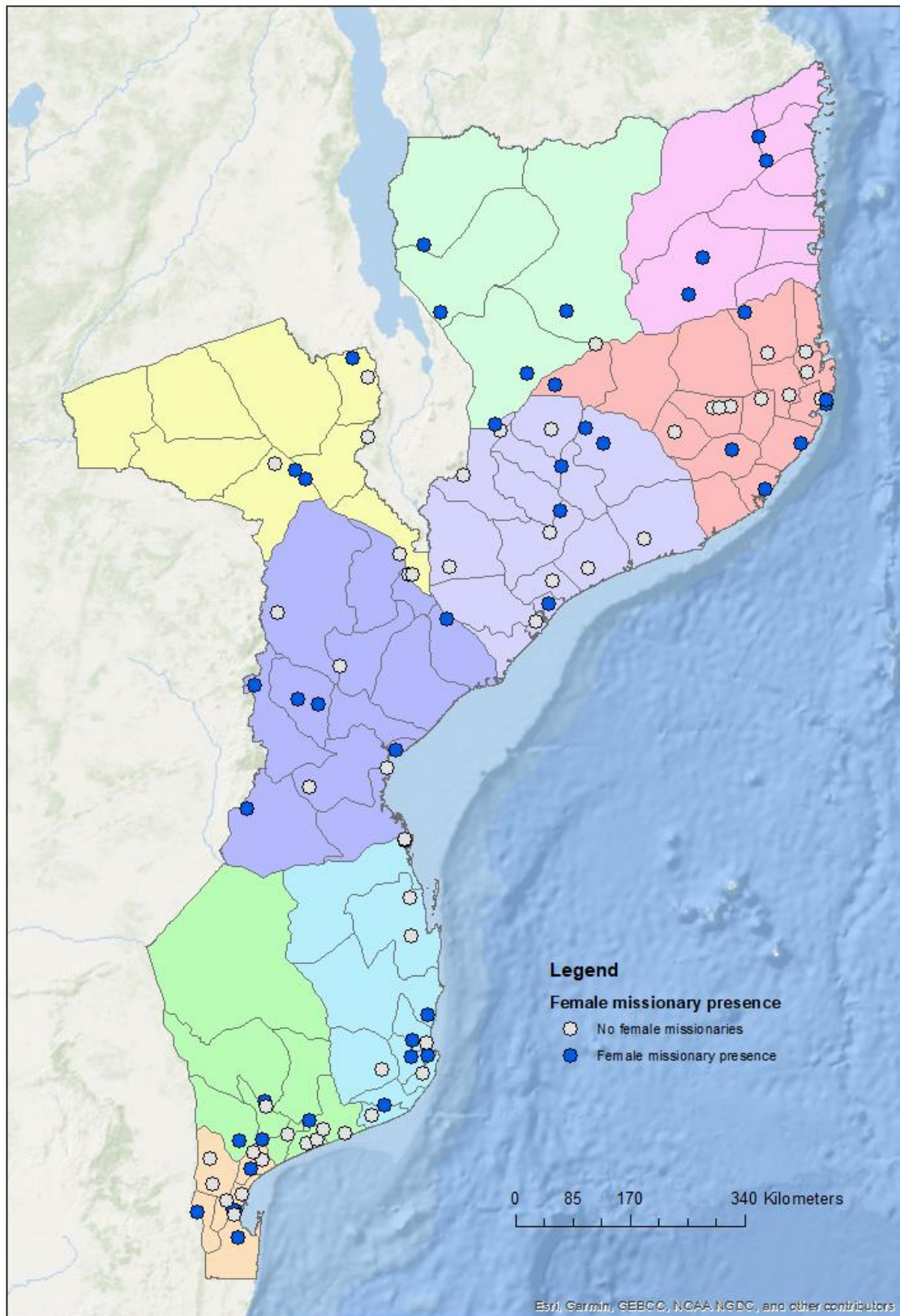
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1952)

Figure 4.7: Catholic missions in Mozambique, 1962, classified by presence of female missionaries
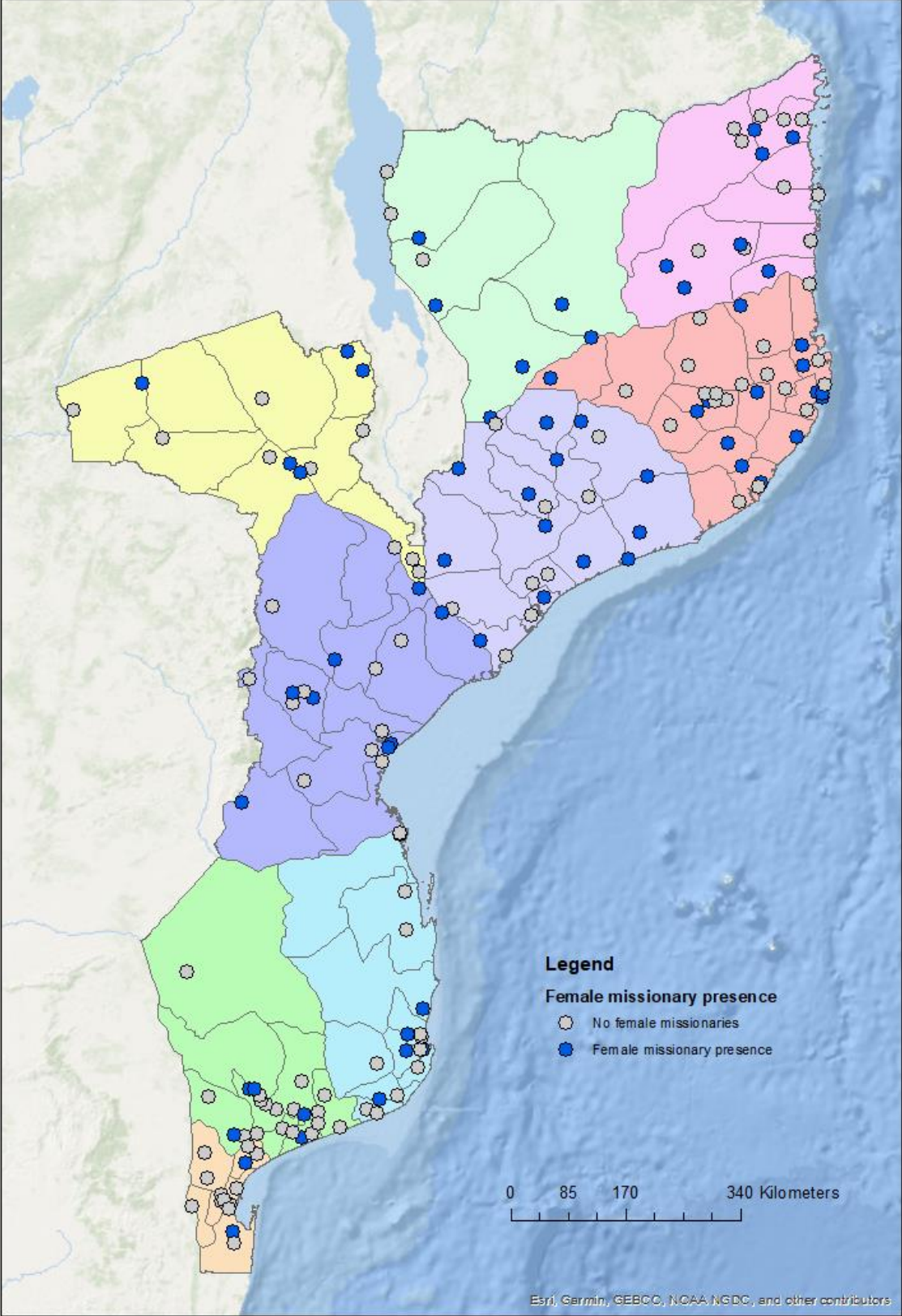
Source: Based on data from from unpublished ecclesiastical reports archived in *Arquivo Històrico Ultramarino*, 1442 1B MU (1960, 1962)

A final insight that we can glean from the data is that aggregate trends can mask variation over time and space. In colonial Mozambique, enrolment grew from 93,615 boys and 55,708 girls in 1952 to 232,869 boys and 135,596 girls in 1962. This yields an overall GPI of 59 in 1952, and 58 in 1962. Thus, if we looked at purely aggregate trends, our take away may be that enrolment expanded, while gender gaps remained stable. However, if we look at Table 4.1 and Figures 4.4 and 4.5, we can see that there were many changes at the regional and local level between 1952 and 1962. This highlights the importance of analysing educational outcomes during colonial times, over time and at a disaggregated level, if we want to better understand the historical provision of education by Christian missions and the evolution of schooling systems.

In this section, I have highlighted the importance of the local context and demand, as well as supply side variations, for the evolution of educational gender gaps. I now turn to econometric analysis to disentangle the multiple potential factors behind educational gender gaps, and to capture their respective importance more precisely.

4.5. Quantitative analysis

To explain variations in educational gender gaps, we need to analyse both supply and demand factors. On the supply side, the georeferenced dataset includes information, for each individual mission, on the number of missionary personnel (male and female), the presence of female missionaries ("sisters") or not, and the congregation running it. On the demand side, the dataset includes variables for different characteristics of the area in which each mission operated: the political economy and labour regime, the overall level of educational enrolment, its integration with the colonial economy, its accessibility, the prevalence of Islam among the population, and general factors like population density. Section A of the Appendix provides a detailed description of the rationale for the inclusion of each variable within these categories, as well as the sources used.

In the dataset, demand factors are mostly time-invariant, and change depending on the location of each mission. Supply factors, on the other hand, vary over time (see Table 4.1 for some of the most relevant factors, like personnel, or female missionary presence). Thus, I carry out two sets of regressions explaining GPI. The first set consists of OLS regressions applied separately to the cross-sections of 1952 and 1962. The second set consists of panel regressions with a fixed-effects model, to leverage the time-variation in supply factors between 1952 and 1962. In spite of my best efforts to estimate the importance of different factors with precision, it is important to remember that "framing the native African reception of missionary ideas and practices in quantitative terms is bound to miss much of the historical complexity of the inter-cultural encounters that are key to understanding the (changing) demand for formal education among Africans" (Frankema, 2012, p. 349).

Tables A.4.1. and A.4.2. in the Appendix report descriptive statistics for the 97 Catholic missions in 1952, and the 175 Catholic missions in 1962, that I use in the econometric analysis. Figures 4.6 and 4.7 show that the distribution of female missionaries is not concentrated in space and, significantly, is not comparatively prevalent in the southern macro regions that show higher GPI. Though the regression designs account for this, the lack of spatial concentration is further assurance that any results on the effects of female missionaries are not driven by omitted variables. Conversely, as Figures 4.4 and 4.5 and the previous section have shown, educational outcomes were spatially correlated. Therefore, all regressions include standard errors accounting for spatial correlation within 100km (Conley, 1999).[215]

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[215] To determine the threshold for the application of Conley standard errors, I plot spatial correlograms of the residuals for the cross-section regressions shown in Tables 4.3 and 4.4 (only those focusing on GPI as the dependent variable). The correlograms are presented in section C of the Appendix, Figures A.4.3 and A.4.4, and show Moran's I for distance bands of 20km. Though it reappears in high distance bands, spatial correlation for base regressions on the 1952 data becomes insignificant before the 100km distance band. For base regressions on the 1962 data, Moran's I is mostly not significant. Like Jedwab et al. (2022), I pick a threshold of 100km, which should provide conservative estimates of standard errors.

4.5.1. Cross-sections for 1952 and 1962

In the first set of regressions, I estimate a linear regression model for two separate cross-sections of data in 1952 and 1962:

$$y_m = \beta_0 + \beta_1 Supply_m + B_2 Demand_m + X_m + \alpha_d + \varepsilon_m$$

where y_m is the GPI of rudimentary education in mission m, or male/female enrolment in mission m; $\beta_1 Supply_m$ and $B_2 Demand_m$ are vectors of our supply and demand variables of interest, respectively; X_m is a vector of additional control variables; α_d are *distrito*-level fixed effects, to capture any relevant characteristics of Mozambique's great regional heterogeneity not covered by the battery of controls; and ε_m is the unobserved error term.

On the demand side, I focus on the importance of the local political economy and mode of production.[216] Colonial Mozambique can be divided into three macro-regions (Alexopoulou & Juif, 2017): a peasant-based economy in the north, where the introduction of forced cotton cultivation by the state was greatest; a central region dominated by concession companies and forced labour; and a labour reserve in the southern regions, with institutionalised migration serving the mining economies of South Africa and Southern Rhodesia. To capture the extent of the forced cotton and rice cultivation schemes, I look at production figures for these crops by Africans. Plantation labour is proxied through production figures for the six main commodity exports in colonial Mozambique (listed in Alexopoulou, 2020), and I measure the intensity of the circular migration labour regime through the percentage of the total black population represented by men engaged in this activity.[217] I also highlight the potential effects of a gender Kuznets curve, through enrolment rates in rudimentary schooling for black boys at the *circunscrição* level, and its square.

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[216] See section A of the Appendix for an explanation of how each demand and supply factor may have affected gender parity in rudimentary education, as well as for the sources and process used to construct each variable.

[217] Each of these variables is calculated at the *concelho* and *circunscrição* level, and attributed to each mission based on its location within *concelhos* and *circunscrições*.

On the supply side, I focus on whether the participation of female Catholic organisations in the running of a mission influenced gender gaps. This I capture through a binary variable indicating whether a mission had sisters working in it. Additionally, I analyse whether there were significant differences in educational gender gaps across different Catholic congregations. To control for the size of a mission, I include the number of male religious personnel (*sacerdotes* and *irmãos*). The tables display only the main variables of interest, but regressions include the rest of control variables described in section A of the Appendix, which proxy for conditions at the local level. These variables include measures of integration with the colonial economy, the accessibility of each mission location, the prevalence of Islam among the population, and general factors like population density.

Table 4.3 presents results of OLS regressions on the 1952 cross-section of missions, and Table 4.4 presents results for 1962. The first column shows the base regression. On the supply side, I find no evidence of female missionary presence influencing gender parity in rudimentary education at the mission level. Adding a dummy variable for the presence of female wage workers, which proxies for female teachers, or continuous variables for the number of sisters or the number of female wage workeres, yields no significant coefficients (not shown in the tables). On the demand side, I find no evidence of a gender Kuznets curve in either year. Results for plantation labour are generally not significant. However, for the 1962 cross-section, missions in tea-producing regions presented lower GPI.[218] Similarly, the regime of forced cotton cultivation seemed to have negative effects on GPI, but only for the 1962 cross-section. These differences may have to do with the lower number of observations for the 1952 cross-section.[219] One result that is robust across specifications, for both 1952 and 1962, is the negative effect of circular migration on GPI, with coefficients ranging consistently between 6 and 7: this means that for

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[218] I take natural logarithms of production in kg for each crop, and so the interpretation of the magnitude of coefficients is not straightforward.
[219] Moreover, data for cash crops is for the year of 1951 in both cross-sections. Though regions in Mozambique would not have changed dramatically their cash crop mix in a span of ten years, adding further data closer to 1962 may change results.

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every additional percentage point of circular migration, GPI increased by 5 to 6 points.

Given the consistent positive effects of circular migration on GPI, it is interesting to analyse the potential channels behind them. I analyse the differential effects of migration on the enrolment of boys, and on the enrolment of girls, in columns 2 and 3 of both tables. Using absolute enrolment for boys and girls separately as a dependent variable is problematic, because enrolment would have depended on the school age population, and this is not something I can observe at the level of the mission and its surroundings. Controlling for population density should alleviate part of the problem. Additionally, I control for the number of rudimentary schools run by each mission: this variable correlates at 0.84 with the variable for total enrolment in each mission, and so can be interpreted as a rough proxy for the general level of enrolment. The results show that, once we control for these variables, increases in circular migration are linked to reductions in the number of boys enrolled in each mission, but have no effect on the enrolment of girls. Though not perfect, this exercise serves to approximate the mechanism behind the effects of circular migration on educational gender parity, and lends support to the hypothesis that gendered circular migration increased gender parity by reducing the pool of boys who could attend school, and not through a positive impact on girl enrolment.

Columns 4-7 of Tables 4.3 and 4.4 show regressions on the level of GPI, adding a dummy variable for each of four different Catholic congregations. Three of them have been found in the literature to have differential effects on education: the Jesuits, the Franciscans, and the White Fathers.[220] I include the secular clergy as a fourth dummy to check the effect of missions run by priests directly answerable to the *prelados*. Regression results for the 1952 cross-section show that missions run by the Jesuits presented higher GPI than the rest, while missions run by the White Fathers had a lower GPI in the 1962 cross-section, as expected from the descriptive analysis in section four. These results are suggestive of the importance of congregational characteristics and models of education for the evolution of

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[220] See the Appendix for a description.

educational gender gaps. However, given that results are not consistent across both 1952 and 1962, more work is needed: adding further cross-sections to the dataset will allow me to explore these congregational effects more thoroughly.[221]

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[221] One potential mechanism for differential effects of congregations on GPI could be differences in the level of enrolment, influencing educational gender parity indirectly through a hypothetical gender Kuznets curve. However, as described in section three, both the Jesuits and the White Fathers focused on educating and training small elites, whereas the effect of the Jesuits on mission GPI is positive, and the effect is negative for the White Fathers. Additionally, the Franciscans, which focused on converting (and likely, by extension, educating) African people en masse, show no significant effects on mission GPI.

Table 4.3: Rudimentary education GPI in Catholic missions, 1952. OLS cross-section regressions

Dependent variable	GPI	Male enrolment	Female enrolment	GPI			
Model	Base	Base	Base	Jesuits	Franciscans	White Fathers	Seculares
Sacerdotes	0.351	17.216	−50.523	0.131	0.046	2.164	−1.013
	(9.454)	(84.141)	(57.196)	(9.460)	(9.610)	(9.578)	(8.359)
Irmaos	0.423	−4.630	30.763	−3.119	0.577	−1.204	−1.263
	(3.652)	(41.765)	(28.457)	(4.068)	(3.896)	(4.192)	(3.780)
Sisters dummy	1.341	20.757	−5.809	1.793	1.350	−0.823	4.023
	(13.653)	(115.501)	(69.881)	(13.756)	(13.821)	(13.158)	(12.747)
Circular migration (%)	**7.187***	**−121.520****	−68.595	**7.063***	**7.219***	**7.180***	**7.647***
	(3.476)	(35.228)	(49.043)	(3.312)	(3.527)	(3.449)	(3.382)
Cotton kg 1951 (ln)	0.178	28.091	12.216	0.319	0.225	0.063	0.161
	(1.353)	(21.784)	(14.442)	(1.309)	(1.314)	(1.269)	(1.464)
Cashew kg 1951 (ln)	−1.959	−7.171	−17.333	**−2.296**	−1.969	−2.091	−2.029
	(1.307)	(20.637)	(15.479)	(1.339)	(1.334)	(1.334)	(1.390)
Sugar kg 1951 (ln)	−0.005	−24.287	**−13.141**	0.132	0.136	−0.690	0.093
	(0.901)	(19.676)	(7.525)	(0.834)	(1.042)	(1.541)	(0.972)
Tea kg 1951 (ln)	1.450	6.353	**32.154***	1.672	1.496	1.463	1.531
	(2.666)	(22.737)	(15.551)	(2.682)	(2.634)	(2.761)	(2.743)
Coconut kg 1951 (ln)	0.958	**37.821**	14.840	0.951	1.013	0.853	0.806
	(0.916)	(19.384)	(10.479)	(0.889)	(1.033)	(0.904)	(0.977)
Sisal kg 1951 (ln)	0.138	−12.203	−7.211	0.108	0.103	0.271	0.067
	(1.894)	(16.302)	(7.442)	(1.863)	(1.896)	(1.784)	(1.846)
African cotton kg 1951 (ln)	1.590	−3.768	10.542	1.790	1.552	1.882	1.781
	(1.461)	(18.270)	(12.199)	(1.459)	(1.533)	(1.705)	(1.462)
African rice kg 1951 (ln)	−0.852	−13.949	−5.806	−0.993	−0.836	−0.932	−0.722
	(1.217)	(15.814)	(12.502)	(1.243)	(1.236)	(1.298)	(1.081)
Enrolment rate, black boys, 1952 (% circ level)	0.834			0.880	0.887	0.736	0.772
	(1.299)			(1.272)	(1.270)	(1.267)	(1.293)
Enrolment rate squared, 1952	−0.010			−0.011	−0.011	−0.009	−0.010
	(0.019)			(0.019)	(0.018)	(0.018)	(0.019)
Dummy if mission run by Jesuits/Franciscan/White Fathers/Seculares				**42.872***	−4.203	−19.126	−14.335
				(21.306)	(18.600)	(30.433)	(13.795)
Num. obs.	96	97	97	96	96	96	96
Distrito FE. Num. groups	9	9	9	9	9	9	9
R^2 (full model)	0.728	0.806	0.878	0.735	0.728	0.731	0.732
R^2 (proj model)	0.429	0.708	0.723	0.443	0.429	0.434	0.437
Adj. R^2 (full model)	0.555	0.690	0.804	0.559	0.547	0.551	0.554
Adj. R^2 (proj model)	0.143	0.572	0.593	0.151	0.129	0.136	0.141

$***p < 0.001$; $**p < 0.01$; $*p < 0.05$; $^{cdot}p < 0.1$. I run OLS regressions in which the dependent variable is a continuous variable indicating the GPI in rudimentary education for each Catholic mission. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level. The table shows the main independent variables of interest. Not shown in the table, but included in the regressions are the following variables: mean elevation (ln), elevation standard deviation (ln), soil fertility, TSI, malaria prevalence, number of enslaved people exported normalised by ethnic group area (ln), distance to the coastline (ln), distance to the closest distrito sede (dummy if within 50km), percentage of the population that is Muslim, distance to the closest navigable river (ln), distance to the closest interior waterbody (ln), distance to the closest railway in the year of the regression (ln), distance to the closest pre-colonial explorer route (ln), distance to the closest primary road (ln), and population density

Table 4.4: Rudimentary education GPI in Catholic missions, 1962. OLS cross-section regressions

Dependent variable	GPI	Male enrolment	Female enrolment	GPI			
Model	Base	Base	Base	Jesuits	Franciscans	White Fathers	Seculares
Sacerdotes	−4.405	6.438	24.761	−4.376	−4.384	−3.578	−4.371
	(3.230)	(73.173)	(47.993)	(2.936)	(3.217)	(2.992)	(3.265)
Irmaos	6.450*	−131.654*	3.553	4.909	6.416*	6.006*	6.491*
	(3.014)	(62.720)	(32.098)	(3.117)	(3.014)	(2.877)	(2.958)
Sisters dummy	5.431	−50.554	−53.074	5.545	5.574	4.599	5.425
	(5.415)	(105.889)	(90.099)	(5.578)	(5.396)	(5.252)	(5.446)
Circular migration (%)	7.091˙	−67.819*	−27.456	6.764˙	7.080˙	6.771˙	7.071˙
	(3.727)	(29.074)	(26.848)	(3.694)	(3.750)	(3.796)	(3.696)
Cotton kg 1951 (ln)	−1.321	−7.709	−5.598	−1.290	−1.404˙	−1.558˙	−1.315
	(0.837)	(43.517)	(17.644)	(0.791)	(0.715)	(0.803)	(0.839)
Cashew kg 1951 (ln)	−0.605	−18.213	−8.775	−0.675	−0.574	−0.936	−0.595
	(1.214)	(33.957)	(15.403)	(1.176)	(1.200)	(1.199)	(1.250)
Sugar kg 1951 (ln)	0.670	−6.194	14.061	0.722	0.633	0.322	0.671
	(0.894)	(17.082)	(15.194)	(0.893)	(0.834)	(0.932)	(0.899)
Tea kg 1951 (ln)	−2.364*	17.871	−3.392	−2.245*	−2.435*	−2.511*	−2.348*
	(1.124)	(39.073)	(16.341)	(1.082)	(1.136)	(1.144)	(1.149)
Coconut kg 1951 (ln)	0.347	27.669	12.227	0.437	0.278	0.396	0.351
	(0.586)	(18.724)	(11.912)	(0.562)	(0.556)	(0.549)	(0.585)
Sisal kg 1951 (ln)	0.669	−30.866˙	−10.229	0.682	0.678	0.693	0.667
	(0.758)	(16.271)	(11.005)	(0.752)	(0.755)	(0.723)	(0.763)
African cotton kg 1960 (ln)	−1.385˙	5.556	−12.974	−1.260	−1.403˙	−1.013	−1.379˙
	(0.805)	(11.280)	(8.948)	(0.784)	(0.809)	(0.811)	(0.809)
African rice kg 1960 (ln)	1.034	−23.692	−1.338	0.987	1.034	0.890	1.032
	(1.078)	(18.767)	(9.730)	(1.081)	(1.086)	(1.065)	(1.077)
Enrolment rate, black boys, 1962 (% circ level)	0.770			0.892	0.732	0.662	0.778
	(0.796)			(0.728)	(0.819)	(0.802)	(0.828)
Enrolment rate squared, 1962	−0.007			−0.009	−0.006	−0.005	−0.007
	(0.010)			(0.009)	(0.011)	(0.011)	(0.011)
Dummy if mission run by Jesuits/Franciscan/White Fathers/Seculares				35.340	3.735	−30.127*	0.834
				(30.352)	(13.831)	(14.030)	(8.866)
Num. obs.	174	175	175	174	174	174	174
Distrito FE. Num. groups	9	9	9	9	9	9	9
R^2 (full model)	0.524	0.782	0.721	0.534	0.524	0.533	0.524
R^2 (proj model)	0.340	0.739	0.678	0.354	0.340	0.352	0.340
Adj. R^2 (full model)	0.394	0.725	0.649	0.402	0.390	0.401	0.389
Adj. R^2 (proj model)	0.199	0.686	0.613	0.210	0.193	0.208	0.193

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; $^{cdot}p < 0.1$. I run OLS regressions in which the dependent variable is a continuous variable indicating the GPI in rudimentary education for each Catholic mission. Standard errors account for spatial correlation within 100km (Conley, 1999). Fixed effects are included at the distrito level. The table shows the main independent variables of interest. Not shown in the table, but included in the regressions are the following variables: mean elevation (ln), elevation standard deviation (ln), soil fertility, TSI, malaria prevalence, number of enslaved people exported normalised by ethnic group area (ln), distance to the coastline (ln), distance to the closest distrito sede (dummy if within 50km), percentage of the population that is Muslim, distance to the closest navigable river (ln), distance to the closest interior waterbody (ln), distance to the closest railway in the year of the regression (ln), distance to the closest pre-colonial explorer route (ln), distance to the closest primary road (ln), and population density

4.5.2. Panel regressions

In the second set of regressions, I estimate a fixed effects linear regression model for a panel of Catholic missions present in Mozambique in both 1952 and 1962:

$$y_{m,t} = \beta_0 + \beta_1 Supply_{m,t} + B_2 Demand_{m,t} + \alpha_m + \varepsilon_{m,t}$$

where $y_{m,t}$ is the GPI of rudimentary education, or total, male, or female enrolment in mission m in year t; $\beta_1 Supply_{m,t}$ and $B_2 Demand_{m,t}$ are vectors of time-varying supply and demand variables of interest, respectively; α_m are mission-level fixed effects to implement the de-meaned model; and $\varepsilon_{m,t}$ is the unobserved error term.

There were a total of 113 missions established in Mozambique during both 1952 and 1962. However, after dropping observations with no educational activity, the panel dataset includes 92 observations for each year. As described before, the majority of demand factors are time-invariant and so are dropped by the fixed effects model. However, I include the production of cotton and rice by Africans, for which I have collected data in 1951 and 1960. I also include enrolment rates for black boys at the *circunscrição* level, and its square, to proxy for a potential gender Kuznets curve. On the supply side, few missions changed hands over time: only 11 out of the 113 missions established in Mozambique in both 1952 and 1962 were run by a different Catholic organisation in the two years. Therefore, variables indicating the type of Catholic organisation running a mission are mostly time-invariant, and cannot be analysed in a panel setting.

Table 4.5 shows results for the panel regressions on GPI. On the supply side, an increase in the number of *sacerdotes* (priests) is consistently linked to a higher GPI. The most plausible explanation is that the number of priests is linked to the scale of the mission, and this in turn is linked to the level of gender parity. However, including the number of rudimentary schools in the regressions (not shown in Table 4.5) does not make the positive effects of priests disappear. More work is needed to explore this interesting result.

Turning to the role of female missionaries and teachers, the positive effects of the sister dummy in column 1 is not robust to the inclusion of enrolment rates. Likewise, the number of sisters included as a continuous variable, in columns 6 and 8, does not show significant effects on GPI. Conversely, the role of female teachers, proxied by the number of female wage workers, is shown across multiple specifications. The dummy indicating presence of female workers (column 4) does not show a significant effect, but the dummy for having either sisters or female wage workers (column 5), and the number of female workers as a continuous variable (columns 7 and 8), are linked positively to higher educational gender parity.[222] The difference between the lack of results for sisters, and the positive result for female wage workers (which proxy for teachers), could be linked to the role of sisters within the missions, presumably more geared towards the provision of healthcare and elementary education than to teaching in rudimentary schools in the hinterland of the mission. Sheldon's (1998, pp. 618-619) contention that in the 1950s sisters were "based primarily in the large cities of Lourenço Marques and Beira, with few in the more remote areas" and that "many of these women (sisters) were not teaching but were working in hospitals and medical centers" provides support for this potential mechanism.

The results for both *sacerdotes* and female wage workers contrast with the lack of significant results for said variables in cross-section regressions. One potential interpretation is that in the cross-sectional setting, which analyses the variation in educational gender gaps over space, other variables primarily on the demand side are more important for the level of GPI. Panel regressions, on the other hand, focus on the variation of GPI within each mission over time. In this setting, the mostly time-invariant variables for local conditions and demand side factors play a lesser role, and we can observe the positive effects of increases in the number of *sacerdotes* and female teachers on GPI, which were not apparent in the cross-sectional setting.

On the demand side, production of rice and cotton by Africans shows no significant results. Enrolment rates for boys at the *circunscrição* level show a posisitve effect on

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[222] I run the same specification in column 5 but with a dummy for whether a mission has both sisters and female wage workers, and the coefficient is not significant.

GPI, which is significant in multiple specifications. This is surprising, as we would expect it to have negative effects on gender parity by construction, and any positive effects to be linked to the squared term and thus the gender Kuznets curve, which is in fact not significant across specifications.[223] It is unlikely that this positive result indicates the position of colonial Mozambique in the downwards section of the gender Kuznets curve: in 1960, enrolment rates in rudimentary education for the age bracket of 7 to 12 years old, counting only enrolment in Catholic mission schools, was only 40% for both genders, with 45% for boys, and 32% for girls.[224] Instead, these results suggest education for girls expanded with greater schooling for boys, and could be linked to the positive results for the number of priests, and the hypothesis that this could be due to increases in the scale of activities of the mission. Further work is warranted to explore these results. One potential line of work is to run regressions at the *concelho* and *circunscrição* level to analyse the relationship between male and female enrolment rates, using the enrolment rate data already constructed for the period between 1947 and 1962 (see section B of the Appendix).

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[223] Enrolment for boys at the *circunscrição* level would have been an aggregation of enrolment in the different missions within that *circunscrição.* By construction, this works against finding any positive result of enrolment rates for boys at the *circunscrição* level on educational gender parity at the mission level.

[224] Catholic missions had an almost monopolistc position in the provision of rudimentary education (see Chapter 3). The age bracket of 7 to 12 years old follows the legislation for rudimentary education (Chapter 3), and yields a more lenient estimation than using the 5 to 14 age bracket which is common in the literature for primary education (eg. Benavot & Riddle, 1988; Frankema, 2012). I collect population data for the 5-14 age group from the different volumes of the 1960 colonial census (*III Recenseamento Geral da População na Província de Moçambique*), and enrolment data at the colony level from the 1960 statistical yearbook, *Anuário Estatístico 1960, Província de Moçambique, Imprensa Nacional de Moçambique*.

Table 4.5: Rudimentary education GPI in Catholic missions. Panel regressions 1952-1962

	Dependent variable: GPI							
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Sacerdotes	7.520**	6.076**	6.133**	5.960**	6.193**	6.027**	5.953**	6.159**
	(2.502)	(1.964)	(2.025)	(2.163)	(1.993)	(2.041)	(2.118)	(2.110)
Irmaos	−3.410	−1.663	−1.680	−2.028	−1.017	−1.852	−2.625	−2.496
	(3.230)	(3.045)	(2.914)	(3.100)	(2.573)	(3.144)	(3.403)	(3.254)
Sisters dummy	17.227˙	11.746	11.083					
	(9.888)	(10.637)	(10.580)					
Female personnel dummy			5.045	5.811				
			(8.134)	(7.743)				
Sisters/female wage workers dummy					24.620***			
					(3.973)			
Number of sisters						0.838		1.106
						(1.010)		(0.872)
Number of female wage workers							1.991*	2.360*
							(0.996)	(1.104)
African cotton kg (ln)	0.230	0.144	0.114	0.183	−0.103	0.136	0.234	0.124
	(0.888)	(0.841)	(0.834)	(0.805)	(0.883)	(0.790)	(0.823)	(0.797)
African rice kg (ln)	−1.222	−1.084	−1.013	−0.974	−1.067	−1.060	−1.063	−1.073
	(1.187)	(1.192)	(1.203)	(1.162)	(1.078)	(1.141)	(1.145)	(1.115)
Enrolment rate, black boys (% circ level)		0.632	0.612	0.803˙	0.467	0.686	0.825˙	0.620˙
		(0.490)	(0.449)	(0.429)	(0.388)	(0.424)	(0.435)	(0.370)
Enrolment rate squared		−0.004	−0.004	−0.006	−0.003	−0.004	−0.006	−0.004
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)
Num. obs.	184	182	182	182	182	182	182	182
Mission FE. Num. groups:	92	91	91	91	91	91	91	91
R^2 (full model)	0.828	0.842	0.843	0.841	0.853	0.841	0.842	0.844
R^2 (proj model)	0.111	0.144	0.149	0.137	0.206	0.137	0.144	0.157
Adj. R^2 (full model)	0.639	0.659	0.657	0.656	0.684	0.657	0.660	0.660
Adj. R^2 (proj model)	0.059	0.073	0.067	0.065	0.140	0.066	0.073	0.075

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$; $^{cdot}p < 0.1$. I run OLS regressions on panel data for the years of 1952 and 1962, using a Fixed Effects model which leverages variation within each mission over time. The dependent variable is a continuous variable indicating the GPI in rudimentary education for each Catholic mission. Standard errors account for spatial correlation within 100km (Conley, 1999).

4.6. Conclusions

In this chapter, I analyse the demand and supply factors behind the local evolution of educational gender gaps in missionary schooling in colonial Mozambique. To do so, I create a new georeferenced dataset on educational outcomes at the mission level for 1952 and 1962.

On the demand side, Mozambique presented great heterogeneity in terms of modes of production and political economy, which may have influenced educational outcomes. In the econometric analysis, the factor that stands out is the influence of circular migration, which resulted in increased educational gender parity by reducing the pool of boys that could attend school.

On the supply side, the participation of female teachers resulted in higher enrolment for boys and girls. However, in spite of ecclesiastical rhetoric to the importance of female missionaries for the education of girls, regressions do not show robust results for their effect on gender parity in rudimentary education.

Finally, the analyses in section 4 and 5 show that there were differences in educational outcomes between Catholic organisations like the Jesuits, Franciscans, and White Fathers. However, these same analyses show the importance of the local context and African agency. The most clear example stems from the missionary organisations that operated in multiple regions within colonial Mozambique, separated by hundreds of kilometers and showing stark contrasts in local conditions. In these cases, missions run by the same Catholic congregations had very different outcomes depending on the region.

Ultimately, this chapter contributes a nascent literature which analyses the intersection between regional and gender divides in historical educational outcomes for Africa. The detail in the dataset allows me to highlight two of the dimensions often neglected by the literature: the importance of the local context and African demand for educational outcomes, and the need to look at nuances in supply, particularly within religious organisations operating in colonial contexts.

Appendix

A. Data construction

This appendix describes the sources and process followed for the construction of each variable used in the chapter.

A.1. Enrolment by gender at the mission level, 1952 and 1962

Section B of the appendix to Chapter 3 describes the construction of a new georeferenced dataset of Christian missions in Mozambique between 1922-1971. Here, I extend this longitudinal dataset by adding data on enrolment for boys and girls in Catholic mission rudimentary schools, for the years of 1952 and 1962.[225] The source is the same as the one I use to georeference the location of Catholic missions in Chapter 3: the *Relatórios dos Prelados* hosted in the *Arquivo Histórico Ultramarino*, in Lisbon.

Enrolment statistics would have been originally collected in dedicated books by teachers, in accordance with Articles 28, 54.7, and 59 of *Regulamento do ensino primario rudimentar*, of 17th May 1930. These would have been then collected by each Catholic congregation operating missions in Mozambique. The *superior* for each of these congregations then sent his report to the *prelado* (bishop) heading each diocese, who collected the data in the *Relatórios dos Prelados*.

The sources provide enrolment numbers for boys and girls, for both black and *misto* children, as classified under the *indigenato*. However, in some cases the sources do not report separate enrolment for *misto* children, who were always a residual number in any case. Therefore, in the analysis I focus on aggregated enrolment for both population groups.

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[225] The educational data for missions located in the diocese of Beira in 1962 are taken from the 1960 *relatório*. Thus, instead of having 39 missions for 1962 in the diocese of Beira, I use data on 37 missions.

Each georeferenced point in the dataset represents the combined enrolment of all rudimentary schools in the villages surrounding the primary station of each Catholic mission, as well as enrolment in the primary station. As described in Chapter 3, the *relatórios* allow me to locate primary stations of Catholic missions, but not smaller outstations. Additionally, *relatórios* provide educational outcome data for all mission schools, pooled at the level of the primary station. In any case, the detail in the explanatory factors that can be gathered for the colonial era would not be able to capture differences in the determinants of educational outcomes for individual schools, given their proximity to each other. Therefore, analysing enrolment data pooled at the primary station level does not represent a significant loss of information.

There were 117 Catholic missions in colonial Mozambique in 1952, and 192 missions in 1962. I am able to georeference the location for all of them, following the placenames methodology described in Chapter 2. For the purposes of this chapter, however, I drop missions which had no enrolment in rudimentary schooling, given that the GPI cannot be calculated in the absence of enrolment.[226] I drop one additional observation with no data on the male congregation running the mission. The resulting dataset includes 97 missions in 1952 and 175 missions in 1962.

A.2. Explanatory variables

A.2.a. Levels of calculation

Some of the explanatory variables in this chapter are calculated at the level of *concelhos* and *circunscrições*. The process of creating the maps necessary to do so is explained in section B of the Appendix to Chapter 3.

Other variables are calculated by taking the territory within the radius of influence of each primary missionary station. To do so, I create 25 km buffers in GIS. This distance roughly equates to the 20 km average distance between each outstation and its primary station in Ghana, identified by Jedwab et al (2019), plus an arbitrary

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[226] I also drop two observations which had no rudimentary schools and very low enrolment.

5 km to represent the likely smaller radius of influence of the outstations located farthest from the primary station.

A.2.b. Note on interpretation

The focus of the analysis is on gender gaps. Some of the variables included may influence general enrolment of both boys and girls, and not gender parity directly. However, given the potential importance of the gender Kuznets curve (see below), these variables must also be included.

A.2.c. Supply

Conditional on a mission being located in a certain area (the extensive margin of missionary activity), the particular characteristics and investments of each mission in education and other activities may have played a role in enrolment and gender gaps.

I construct the following variables for each mission in the dataset: the number of rudimentary schools, the number of *sacerdotes* (priests) and *irmãos* ("brothers"), the number of female missionaries ("sisters"), the number of male and female wage workers, and the male Catholic congregation running it. These variables may have affected enrolment and gender gaps for different reasons, described below.

Schools and personnel

In colonial Mozambique, rudimentary schools associated with each mission would be located in each individual village surrounding the mission, usually staffed by an African teacher, who was often also a catechist. Missionaries would then visit the village rudimentary schools travelling on motorbike or car, and would gather all teachers and catechists in the mission primary station once a month (Padre Vicente, personal communication, May 6, 2022). Therefore, conditional on a mission being established in an area, levels of enrolment in missionary education would have been

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constrained by the availability of schools, teachers to staff them, and missionaries to supervise them. Of course, the number of schools, teachers, and missionaries cannot be understood as a purely independent supply-side factor: local demand for education would have co-determined the level of educational supply by each mission.

Female presence

The dataset shows that girls were not exclusively taught by female teachers. However, the presence of female missionaries and teachers may have influenced the educational gender gap in rudimentary education provided by Catholic missions, by increasing the number of girls in attendance. Ecclesiastical reports show that, in Mozambique, female missionaries were considered especially important for the provision of education to girls. In his 1922 report, the *prelado* for the colony discussed the activities of the mission at S. Luiz Gozaga de Malatane-Angoche, and showed his agreement with the priest in charge, who claimed that religious sisters were necessary to educate "native" women.[227] Decades later, the *prelado* for the diocese of Beira wrote in his 1951 report that the majority of missions did not have female missionaries, and that they were very necessary for the education of African girls and women.[228] In his 1947 report, the *prelado* for Nampula described the role played by the *Irmãs Vitorianas Madeirenses*, a female congregation, in education and the provision of health services. Within these activities, he alluded to their role in the education of girls, specifically, in the missions of Mutuali, Malatane, Mirrote, Mogincual, and Mecutamala.[229] His succesor as *prelado* would claim in his 1958 report that more residences for "auxiliary sisters" were needed: the lack of funds to build these residences, he suggested, was the reason that less than half of missions in the diocese had female missionaries working in them. The *prelado* argued that the presence of these missionaries at the missions was essential for the provision of

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[227] *Prelazia de Moçambique e Direcção Geral das Missões Religiosas. Relatório referente ao ano de 1922* (Doc 30), 2344 1B MU, p. 47.
[228] *Relatório do Prelado referente ao ano de 1951*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 1442 1B MU.
[229] *Relatório do Prelado referente ao ano de 1947*, *Diocese de Nampula*, *Arquivo Històrico Ultramarino*, 1442 1B MU, p. 6.

health services, and for the education of girls, and their preparation for baptism and marriage.[230]

This link is also present in the secondary literature. Though not a part of their analysis, Baten et al. (2021) suggest that "female missionaries may have more actively promoted girls' education", while Calvi et al. (2020) find in their analysis of colonial India that the share of female missionaries in historical Protestant missions is linked to improved contemporary outcomes in literacy, and that this is effect is greater for women than for men. Sheldon (1998, pp. 597, 600) describes how, in Mozambique specifically, there was "an enduring preference" for female teachers and nuns for the provision of education to African girls, suggesting the gender-specific curriculum as one of the probable reasons for this preference. At the same time, gender-specific curriculums and the assignment of female teachers to female students was also a feature of education in Protestant missions (Sheldon, 1998, p. 602-603).

The presence of female missionaries and teachers may have operated not only through the supply side and a focus on girls' education, but also through parent preferences. In that regard, Baten et al. (2021) cite the work of Coquery-Vidrovitch (1997) in arguing that gender-segregation in Catholic schools may have made conservative parents more likely to send girls to school. Rudimentary schools in Mozambique segregated children by having a class for boys in the morning and a class for girls in the afternoon (see section three of this chapter). Given that this was a seemingly uniform policy across the territory, it does not provide us with variation to test this mechanism in Mozambique. Also, segregation was independent of teacher gender. However, the presence of a female missionary or teacher in a school may have operated in a similar way as gender segregation, by making parents more likely to send their girls to school, something that we can test for colonial Mozambique. Calvi et al. (2020, p. 23) contend for India that "(a)s parents may not allow their daughters to be taught by a male teacher due to traditional social norms, an increase in gender diversity among teachers may encourage female education."

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[230] *Relatório da Diocese de Nampula, Ano de 1958*, *Arquivo Històrico Ultramarino*, 1442 1B MU, p. 3.

To test the effects of female missionaries and teachers, I use variables for the number of sisters and the number of female wage workers in each misison, and I construct dummy variables indicating whether sisters, female wage workers, or either, were active in each mission. The number of female workers is a good proxy for the number of female teachers in the rudimentary schools run by a mission. In 1952, the statistical yearbook for the colony indicated that there were 33 female teachers in rudimentary schools run Catholic missions. The data I have collected from *relatórios* shows that there were 41 female wage workers in Catholic missions in that year. The same comparison for 1962 yields 141 female teachers and 194 female wage workers.[231] *Relatórios* do not indicate the population group for female workers and teachers (or male) with consistency, but it is likely that these were mostly African women, given the process of "africanisation of the mission" (see Chapter 3).

Characteristics of each Catholic organisation

The idiosyncrasies of each Catholic congregation operating in Mozambique may have affected education and gender gaps directly, through their attitudes towards education and gender, as well as indirectly through their degree of cooperation with female missionaries and teachers. There is a growing literature which studies how the effects of Christian missions on education vary depending on the religious organisation running them (see section two of this chapter). Given that my analisis focuses on educational gender gaps in missions run by Catholic congregations, I highlight here the studies that have focused specifically on differences between Catholic congregations.

For Latin America, Valencia Caicedo (2019) finds that Jesuit missions among the Guaraní had long-lasting effects on human capital, while he does not find one for

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[231] The same comparison shows that a large proportion of male wage workers in Catholic missions were also teachers in rudimentary schools: 1994 male wage workers and 1091 male teachers in 1952, and 5197 male wage workers and 3165 teachers in 1962. The number of male and female wage workers for the diocese of Beira comes from the *relatórios* of 1960, instead of 1962. Data on teachers is provided by the yearbooks: *Anuário Estatístico 1952, Província de Moçambique, Imprensa Nacional de Moçambique,* p. 127; *Anuário Estatístico 1962, Província de Moçambique, Imprensa Nacional de Moçambique,* p. 162.

neighbouring Franciscan missions. He argues that this is the result of a greater emphasis by Jesuits on education and technical training in their conversion efforts, as compared to Franciscans. Conversely, Waldinger (2017) analyses the case of colonial Mexico and finds that the activities of Mendicant orders (represented in colonial Mexico by Franciscans, Augustinians, and Dominicans), commited to poverty and social inequality reduction, are linked to higher educational outcomes nowadays, whereas the Jesuits focused on the colonial elite in urban centres and are not linked to higher outcomes in the present. Finally, Gómez-i-Aznar (2022) shows high numeracy among the Guaraní population in Jesuit missions during the 18th century, and high equality in numeracy in two of the locations in his dataset, leading him to cautiously suggest a positive effect of Jesuit missions on education for women. Interestingly, Gómez-i-Aznar (2022) shows that in Alta California, Franciscan missions following the model set by Jesuits in Baja California also had high numeracy.

For Africa, Montgomery (2017) finds that the long-term effects of Catholic missions on gender gaps in Tanzania were driven by two missionary societies: the Holy Ghost Fathers and the White Fathers. However, he presents and discards explanations based on the characteristics of each society, and finally argues that it was the lack of obstruction these two societies faced during the colonial period, as opposed to the experience of the Benedictines from St. Ottilien, for example, that allowed them to perform their work effectively and leave a legacy of gender inequality.

I contribute to the literature, which has placed little focus on the effects of congregational differences on educational gender gaps, by focusing on the congregations that have been analysed in the literature, and that were present in colonial Mozambique: the Jesuits, the Franciscans, and the White Fathers. I also look at the differential effects of the secular clergy in Mozambique, to check the effect of missions run by priests directly answerable to the *prelados*.

To analyse the potential effects of congregation-specific characteristics, I construct separate dummies indicating, for each mission, whether they were run by the Jesuits, the White Fathers, Franciscans, or the secular clergy. In addition to

organisational values and attitudes towards education, described in section three of the chapter, the overarching goals of each Catholic congregation operating in Mozambique may have influenced the levels of education. The White Fathers, for example, were known for targeting the Muslim population in Africa, who may have been more reticent to send their children to schools run by Christian missions.[232]

A.2.d. Demand

Regional political economy – labour regimes

On the demand side, the main interest of this chapter lies on the influence of the local political economy and mode of production on enrolment and gender gaps. In that regard, colonial Mozambique showed great regional variation, due to a regionally fragmented colonial administration and the failure of the infrastructure network to integrate the territory (Newitt, 2017). These regional contrasts were also manifested in differences in the mode of production and the dominant labour regime. Alexopoulou & Juif (2017) classify the colony into three 'macro-regions' that follow Samir Amin's categorization: the north was a peasant-based economy where the introduction of forced cotton cultivation by the state was greatest, the centre was dominated by concession companies and forced labour, and the south was essentially a labour reserve, with institutionalised migration serving the mining economies of South Africa and Southern Rhodesia.[233]

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[232] Interestingly, Montgomery (2017) describes how in German East Africa Holy Ghost Fathers and the Benedictines from St. Ottilien had as one of their objectives halting the spread of Islam in the coastal areas where they were established, while the White Fathers "relied on targeted education and conversion of local elites, predominantly the sons of village chiefs in surrounding areas" (p. 252). The website for the Missionaries of Africa, the official name for the White Fathers, refers to its Constitutions and Laws and states that "Because of its origins, the Society has always had a particular interest in Muslims": https://missionariesofafrica.org/support-africa/christian-muslim-dialogue/

[233] Newitt (1995, pp. 440-441) offered a similar characterisation to explain why, in the 1930s, "educational provision was overwhelmingly concentrated in the two districts of Inhambane and Lourenço Marques", something that he argued showed the differences in development patterns, which he summarised as follows: "The south was where the capital city was located and industrial development was beginning. There too were almost all the foreign mission stations and the greatest educational opportunities, and its population was deeply influenced by the experience of migrant labour in South Africa. Quelimane and Moçambique were the districts where plantation labour demands were heaviest, where forced cotton growing was to be concentrated, and where Islamic influence was most pronounced. The extreme north and Tete were the most backward economically, the least urbanised and also the least populated and least educated."

Let us take each of these modes of production in turn. Firstly, there are at least three potential channels through which circular migration may have affected enrolment and gender gaps. Migration to the mines of South Africa was primarily a male endeavour. Thus, the relative absence of boys would have meant, by construction, reduced gender gaps in schools.[234] Additionally, the prospect of mining work may have increased the demand for skill acquisition in school. However, this is unlikely to have played a role in this specific context, given the low skill work performed by the majority of Mozambican miners and the low quality of education provided in rudimentary schools. Finally, the sending of remittances back home by circular migrants may have increased the amount of disposable income available to families, thus liberating children to go to school.

Secondly, the recruitment for plantation contract labour, which often relied on coercion, may have resulted in the absence of adult males and a greater need for children participation in subsistence production within the family, thus reducing enrolment indirectly. Additionally, children were often engaged by employers in plantation labour, and this would have affected enrolment directly. Ecclesiastical authorities often complained about this issue. In 1956, the Archbishop of Lourenço Marques complained about the difficulties faced by missions when running rudimentary education, with one of them being the hiring of children for the harvesting of rice or wheat.[235] Similarly, in 1958 the *prelado* for Nampula wrote in his report that one of the reasons for the low number of students achieving a passing grade in the examinations was that, near the cities and near large agricultural plantations, Europeans diverted children from schooling, to use them as cheap labour.[236]

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[234] This argument follows the one proposed by Coquery-Vidrovitch (1997, p. 148) for the high rate of gender equality in South African education, based on pastoralism and migration: "The reasons for this are complex and derive from enduring African customs and beliefs with regard to boys, girls representing the weak link in the chain. The reasoning most often advanced is that predominantly pastoral societies needed very young boys to guard the herds, a male privilege, and this tendency was reinforced by migrant mine work, a sign of entry into the modern economy that required no particular educational level." Baten et al. (2021) do not find a robust correlation between pastoralism and gender gaps, but this may be due to the countervailing factor that they mention of increased female seclusion in pastoral societies.

[235] *Relatório do Prelado referente ao ano de 1956, Arcebispado de Lourenço Marques. Arquivo Històrico Ultramarino*, 1442 1B MU, p. 4.

[236] *Relatório da Diocese de Nampula, Ano de 1958, Arquivo Històrico Ultramarino*, 1442 1B MU, p. 6.

Thirdly, children helped their families in the process of cotton cultivation (Isaacman, 1992), so a greater intensity of the forced cotton cultivation scheme may have reduced enrolment. In turn, the cotton regime would have interacted with a feature of the other labour regimes: the absence of adult males in plantation work and circular migration would have increased the burden on children and women. Indeed, "in central and southern Mozambique the state shifted the burden of cotton production almost entirely to women", and in southern Mozambique "because of the absence of adult males, cotton production was done almost entirely by wives, daughters, daughters-in-law, sisters and nieces" (Isaacman, 1992). In addition to cotton, the production of rice in Mozambique also involved compulsory measures (Havik, 2018, p. 219), and thus may have diverted children from going to school.

To analyse the effects of these three macro-regions and their modes of production, I construct multiple variables. The modes of production described existed in a continuum and, although they can be associated with each of the three macro-regions described in the work by Alexopoulou & Juif (2017), they could be found outside of these regions. For example, though migration to the mines was a notable feature of the political economy in southern Mozambican *distritos*, circular migration also took place in much of Tete, with numerous WNLA recruiting stations located across the border in Nyassaland, and other *circunscrições* in the central and northern macro regions. Similarly, the forced cotton cultivation regime was applied with greatest intensity in the north, but was also present in the rest of the colony. To be able to examine the effects of each labour regime at a finer level, accounting for differences within the macro-regions and for the presence of labour regimes beyond each of their assigned macro-regions, I collect data at the *concelho* and *circunscrição* level, which can then be attributed to each mission depending on their location.

I proxy for the forced cotton and rice cultivation schemes through figures provided in *Recenseamento Agrícola* and *Estatística Agrícola,* on production by Africans. I collect data on 1951 and 1960 for production.

Regarding the plantation contract labour regime which characterised the central regions, statistics on the level of forced labour are hard to find, so I use production of cash crops, collected from the same sources, as a proxy for contract labour in plantations.[237] I collect data on production for the six main commodity exports in colonial Mozambique (as listed in Alexopoulou, 2020, Figure A.8.1. in the Appendix): sugar, sisal, coconuts, cashew, cotton, and tea. For now, I have been able to collect data for 1951 only, and so I use that for the analysis of both 1952 and 1962 education data.

Finally, to proxy for the intensity of the circular migration labour regime, I calculate the percentage of the total black population represented by men engaged in circular migration at the *concelho* and *circunscriçao* level in 1940. An alternative variable could be to measure the distance of each mission to the closest WNLA recruiting station.[238] I focus mainly on the first measure at the *concelho* and *circunscrição* level, because it has the advantage of capturing circular migration in the whole of the colony, and not only in the regions were WNLA operated. Circular migration data comes from the 1940 colonial census.

Gender Kuznets curve

The level of overall educational expansion may have influenced gender gaps in enrolment, drawing an inverse U-shaped trajectory (Baten et al., 2021; De Haas & Frankema, 2018; Evans et al., 2021; Meier zu Selhausen & Weisdorf, 2016). Baten et al. (2021) describe three mechanisms for these trajectories, linked primarily to the expansion of male education instead of the passage of time. The first of these mechanisms is that boys accumulate more years of education in early stages of educational expansion, reaching a point of diminishing demand for further male education while opportunities for girls, starting later, continue to expand. The

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[237] These sources allow me to distinguish between cash crops produced by Africans for the market, and cash crops produced by Africans in settler plantations.

[238] The location of WNLA recruiting stations can be georeferecend from the "Map of Southern Africa Showing the recruiting systems of the Native Recruiting Corporation and the Witwatersrand Native Labour Association" published by the Transvaal Chamber of Mines. The map is available online from the University of Cape Town, with reference "islandora-30052": https://digitalcollections.lib.uct.ac.za/collection/islandora-30052

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second is that inequality growth may have slowed down and reversed when considered undesirable from a labour market and marriage market perspective. The third is that educated fathers are more likely to send their daughters to school.

To capture the level of overall educational expansion, I construct enrolment rates for each *concelho* and *circunscrição* in rudimentary schooling for the black population, between 1947-1962*.* The construction process is described further in section B of this Appendix. These enrolment rates allow me to capture a period of expansion in enrolment in colonial Mozambique. As described in Chapter 3, Catholic missions were the main providers of education for the black population of Mozambique during colonial times, particularly after receiving a monopoly on their education in 1941. This, in combination with the comparatively late expansion of Catholic missions in Mozambique, allows me to track the initial steps in the expansion of the school network, and the potential for a gender Kuznets curve.[239] However, in the analysis I rely on enrolment in schools run by Catholic missions, by Protestant missions, and by the state, to capture the full potential effects of a gender Kuznets curve.[240]

Contrary to the data used for mission enrolment, I calculate enrolment rates for black children, without including *misto* children, to capture the large trends that would lead potentially to a gender Kuznets curve. Children classified as *mistos* were a residual number and so excluding them should not change the trends.

The legal age range for rudimentary education in colonial Mozambique was 7-12. However, I use the 5-14 age range to calculate enrolment rates so as to follow convention (Benavot and Riddle, 1988; Frankema, 2012), and because children of older ages may have attended school (Padre Vicente, personal communication, May 6, 2022).

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[239] The number of Catholic missions in Mozambique grew from 28 in 1922 to 255 by 1971. Importantly, in the 1947-1962 period for which I construct enrolment rates, the number of missions more than doubled, from 94 to 194.
[240] *Ensino particular* was residual and is therefore excluded.

Integration in the colonial economy

Cross (1987) contends that, in Mozambique, "(b)ecause the Africans were not in general allowed to occupy skilled positions in the social division of labor, and because their economic role did not require any significant degree of education, there was no direct link between African education and the economy." The bad quality of the education provided under rudimentary schooling posits the question of why parents would send their children to school, especially considering that, according to ecclesiastical reports, theoretically mandatory attendance was not strictly enforced by colonial authorities.[241] The prelado for the diocese of Beira, for example, complained about the lack of enforcement by colonial authorities in his 1962 report.[242]

Jedwab et al. (2019) suggest that the benefits of aligning with the colonial state, social networks, and access to education and training (as well as spiritual needs), may have been potential sources for local demand for Christianity. Similarly, Frankema (2012) describes how, once it became clear that the political status quo would be defined by European control, western education, by providing "access to the skills and knowledge that endorsed the power and prosperity of 'the whites'", became increasingly attractive to Africans. Thus, one possible explanation for demand for rudimentary schooling may have been integration into the colonial economy and social networks, and skill acquisition. Even if it did not provide technical skills directly, rudimentary schooling was a prerequisite for any African child in Mozambique, deemed as *indígena*, to advance to higher quality education (see Chapter 3), where skills could be acquired. Literacy in Portuguese, potentially acquired in rudimentary schooling, would have been beneficial for the abovementioned integration.

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[241] The effects of the quality of education itself on demand for education are hard to operationalise given the data available. One potential way to go would be to regress student attendance on the teacher-student ratio of each mission. However, this is unsatisfactory: schools were mostly run by individual teachers in each village, and thus the ratio would have been determined by demand for education in each village, which is what we want to explain. Relatedly, quality improvements towards the end of the *indigenato* could have led to increases in demand for rudimentary schooling, but our data does not include regional variation in quality measures.

[242] *Relatório do Prelado referente ao ano de 1962*, *Diocese de Beira*. *Arquivo Històrico Ultramarino*, 1442 1B MU.

To account for proximity to the colonial economy and social networks, I calculate the distance to the closest *sede* (headquarters or capital) of each *distrito*, listed in the 1962 *Atlas de Moçambique* (Serviços de Agrimensura da Província de Moçambique, 1962).

Accessibility and openness

The ease of getting to school would have influenced the level of general enrolment. Thus, more rugged places may have had a lower demand for education for both boys and girls.[243] Also linked to the spatial characteristics of each area, Baten et al. (2021) posit that more 'open' areas may have been associated with lower gender gaps due to greater "trade integration with world markets and exposure to new cultural, religious, and social influences". Baten et al. (2021) proxy openness through the presence of railroads, proximity to the coast, and urbanisation, and overall find it to be correlated with lower gender gaps in education.[244]

I proxy for accessibility and openness through data on altitude and ruggedness, as well as distance to roads, railways, major navigable rivers, interior waterbodies, and the coast. Elevation data, which allows me to calculate average altitude and ruggedness, comes from SRTM3 version 2.1. To calculate distance to colonial roads, I digitise a 1934 map for the province of Manica e Sofala, and a 1938 map for the rest of the colony.[245] To calculate distance to major navigable rivers and railways, I use

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[243] Rudimentary schools were generally located within each village, so it is possible that children did not have to travel much for this type of schooling. However, higher quality education was generally provided at the mission primary station, as were other services such as healthcare (Padre Vicente, personal communication, May 6, 2022). Exposure of siblings to later stages of education may have driven demand for rudimentary schooling, while greater involvement with mission activities and conversion to Christianity may have also influenced parent demand for schooling, as discussed above. Both these mechanisms would have been influenced by ease of travel from villages to the mission primary station.

[244] They describe and provide references for four specific mechanisms that may have operated in urban areas: new income opportunities reducing anxiety among men about female competition for jobs; the emergence of "modern" identities; feedback loops in which men receiving education in early stages of urbanisation were more likely to then send their daughters to school; and greater supply of female education and jobs in administration, teaching, and nursing.

[245] The 1934 map was retrieved from *Biblioteca Nacional de Portugal*, reference C.C. 765 R. This map is not specific for roads, but it does show roads of different categories. The 1938 roads I digitise from the publication "The Roads of Mozambique", reference H.G. 25158_8P in *Biblioteca Nacional de Portugal*. This publication does not include Manica e Sofala.

the GIS feature classes available from Jedwab & Moradi (2016), who digitise them from Johnston (1915).[246] I use data on interior waterbodies from the Regional Centre For Mapping Of Resources For Development (RCMRD).[247] I construct the coastline for Mozambique from a feature class for the whole country hosted by the United Nations Office for the Coordination of Humanitarian Affairs, Humanitarian Data Exchange website.[248]

Islam

Resistance to Christian missionary influence may have been greater among Muslim locals (Frankema, 2012). Thus, we may expect the prevalence of Islam to dampen the demand for education in Christian mission schools, for both boys and girls. Talking about Senegal, Coquery-Vidrovitch (1997, p. 151) points out that "Muslim families did not accept the notion of sending their children to Christian schools", while Garnier & Schafer (2006, p. 154) argue that "Muslims tended to be wary of enrolling children in schools whose overt mission was religious conversion to Christianity." Baten et al. (2021) provide a brief overview of the literature, which shows heterogeneous effects across Africa. Though they do not expect it to be associated with gender gap size, their empirical analysis does find a correlation between greater prevalence of Islam and greater gender gaps.

I map the prevalence of Islam at the *concelho/circunscrição* level by collecting data on religion from the 1950 colonial census, and calculating the percentage of Muslim people over the total black population.

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[246] I calculate the distance of each mission to the closest railway in existence in the specific year we are analysing (1952 or 1962).
[247] The shape file is available from:
 https://rcmrd.africageoportal.com/datasets/africageoportal::africa-water-bodies/about. I drop man-made waterbodies from the late colonial or post-colonial period, both in Mozambique and in the neighbouring countries.
[248] Available at https://data.humdata.org/.

A number of additional variables may have influenced enrolment. I control for population density as a proxy for economic prosperity in agricultural societies. Greater available income may have freed up children from labour within the family, and also allowed families to cover the costs necessary for children to attend mission schools. I use population density measures from HYDE (Klein Goldewijk et al., 2010). Jedwab et al. (2022) point out the unreliability of thes estimates. See section B of the Appendix to Chapter 3 for an explanation of why I use this variable.

Similarly, areas with higher soil fertility may have resulted in greater incomes for the families or less need for child labour to achieve subsistence production. At the same time, however, higher soil fertility may have raised the opportunity costs of sending children to school instead of using them for agricultural production within the family. I measure soil fertility through the variable of nutrient availability with low inputs from the latest version of the GAEZ database.[249]

I also include measures of the disease environment. Malaria would have reduced attendance and enrolment if children became ill. The TseTse fly, on the other hand, could influence health directly, but also indirectly reduce the ability to accumulate agricultural surpluses (Alsan, 2015), and thus influence economic prosperity. I use the malaria burden variable from Depetris-Chauvin & Weil (2018), and the TseTse fly suitability index from Alsan (2015).[250]

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[249] Available at https://gaez.fao.org

[250] Studies of Africa that use variables for pre-colonial characteristics, such as pre-colonial political centralisation, mostly use data at the ethnic group level from the Ethnographic Atlas produced by Murdock (1967), matched to the ethnic group borders shown in the map produced by Murdock (1959), digitised by Nunn (2008). To match the data to the map, they use the procedure developed by Fenske (2013). However, there is not a perfect match between the ethnic groups shown in the map (Murdock, 1959), and the ethnic groups included in the atlas (Murdock, 1967). Therefore, variables for some of the ethnic groups are missing from the replication datasets provided by these types of studies. The issue is particularly salient for Mozambique, with many of the ethnic groups shown for Mozambique in the Murdock (1959) map not included in replication datasets: 11 out of 23 groups, covering roughly 43% of the area of the country, are missing. The publicly available replication datasets for Depetris-Chauvin & Weil (2018), and Alsan (2015), provide data at the ethnic group level, and due to the issue described above, data for large areas in Mozambique is missing. Therefore, I thank Emilio Depetris-Chauvin for providing data for the malaria burden at the ethnic group level. This includes all groups mapped in Murdock (1959), except for the Manyika group: for that group, I calculate the simple average of malaria prevalence for the three adjacent ethnic groups in Mozambique. I also thank Marcella Alsan for pointing to alternative resources on TseTse fly

The degree of trade of enslaved people has been related to lower values of trust (Nunn & Wantchekon, 2011). I include it to account for the possibility that this institution also lowered trust in colonial institutions like Christian missions, which would affect the likelihood of families sending their children to mission schools. Data on the number of enslaved people traded for each ethnic group comes from Nunn & Wantchekon (2011): I follow their methodology in normalising the number of people exported by the area of their ethnic homeland.[251]

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suitability: for now, however, I simply take the data she provides at the first administrative level, equivalent to colonial *distritos*.

[251] The specific measure used is ln[(1 + total number of enslaved people)/areakm], where the total number of enslaved people exported refers to the trans-Atlantic and the Indican Ocean trades, and areakm refers to the area of each ethnic homeland in Murdock (1959).

Table A.4.1: Summary statistics per Catholic mission, 1952

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
GPI	97	55.74	52.05	0.00	17.09	41.79	75.90	265.28
Nº rudimentary schools	97	9.92	8.22	1	4	8	13	39
Priests	97	1.99	0.76	1	2	2	2	6
Brothers	97	0.89	1.08	0	0	1	1	5
Sisters	97	3.04	4.62	0	0	0	5	31
Male wage workers	97	19.27	15.09	1	9	14	27	104
Female wage workers	97	0.42	0.99	0	0	0	0	6
Percentage circular migration, 1940 (circunscrição)	97	3.02	3.60	0.00	0.003	0.97	5.97	13.71
Percentage Muslim population, 1950 (circunscrição)	97	8.85	21.01	0.00	0.02	0.11	3.30	99.38
Cotton production 1951, plantations, kg (ln)	97	1.12	2.94	0.00	0.00	0.00	0.00	11.66
Cashew production 1951, plantations, kg (ln)	97	4.03	5.20	0	0	0	9.8	14
Sugar production 1951, plantations, kg (ln)	97	0.51	2.88	0	0	0	0	17
Tea production 1951, plantations, kg (ln)	97	0.55	2.68	0	0	0	0	15
Coconut production 1951, plantations, kg (ln)	97	4.32	6.41	0	0	0	11.2	18
Sisal production 1951, plantations, kg (ln)	97	1.53	4.37	0	0	0	0	15
Cotton production 1951, Africans, kg (ln)	97	8.77	6.64	0.00	0.00	12.97	14.00	16.09
Rice production 1951, Africans, kg (ln)	97	4.77	6.17	0	0	0	12.1	15
Rudimentary education enrolment rate, black boys, 1952 (circunscrição)	96	18.76	16.28	0.46	7.36	14.27	26.36	74.57
Percentage white population 1950 (circunscrição)	97	2.23	7.69	0.04	0.13	0.24	0.74	41.50
HYDE population density 1950 (people/km2)	97	12.45	6.83	1.04	7.47	10.49	17.40	30.49
Soil fertility	97	7.63	1.99	4	7	8	9	10
Dist. to the coast (km)	97	112.73	132.41	0.03	14.11	61.34	176.11	558.12
Dist. railways 1952 (km)	97	50.51	64.57	0.03	4.16	31.69	63.37	354.96
Dist. to navigable river (km)	97	182.53	135.30	0.80	76.51	167.22	249.98	507.58
Dist. to interior water body (km)	97	94.91	73.32	0.23	39.99	69.15	130.52	336.02
Dist. to pre-colonial explorer route (km)	97	278.80	173.60	6.48	160.83	258.05	411.29	579.58
Dist. to primary roads (km)	97	3.66	5.94	0.00	0.82	1.77	3.99	43.86
Malaria prevalence	97	0.02	0.01	0.004	0.01	0.01	0.03	0.06
TseTse suitability index	97	1.12	0.18	0.73	1.14	1.17	1.24	1.31
Ln trade enslaved people	97	0.36	0.51	0	0	0.02	0.8	2
Dist. closest sede 1962 (km)	97	105.95	76.57	0.0000	32.18	100.54	165.63	265.19
Elevation mean (m)	97	263.92	318.31	3.23	32.20	104.66	381.59	1,307.02
Elevation standard deviation (m)	97	70.56	74.08	3.60	25.40	45.99	82.45	391.99

Table A.4.2: Summary statistics per Catholic mission, 1962

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
GPI	175	66.36	46.17	0.00	35.52	61.77	83.86	323.38
Nº rudimentary schools	175	16.38	13.48	1	8	13	22.5	91
Priests	175	2.06	1.02	0	1	2	2	8
Brothers	175	0.75	1.11	0	0	1	1	7
Sisters	175	2.55	4.10	0	0	0	4	25
Male wage workers	175	28.83	33.33	0	9	20	35	230
Female wage workers	175	1.08	2.19	0	0	0	1	12
Percentage circular migration, 1940 (circunscrição)	175	2.66	3.58	0.00	0.003	0.17	5.72	13.71
Percentage Muslim population, 1950 (circunscrição)	175	11.88	24.07	0	0.02	0.3	7.5	100
Cotton production 1951, plantations, kg (ln)	175	1.08	2.87	0	0	0	0	12
Cashew production 1951, plantations, kg (ln)	175	4.74	5.32	0	0	0	10.1	14
Sugar production 1951, plantations, kg (ln)	175	0.76	3.49	0	0	0	0	17
Tea production 1951, plantations, kg (ln)	175	0.37	2.19	0	0	0	0	15
Coconut production 1951, plantations, kg (ln)	175	4.61	6.46	0	0	0	11.4	18
Sisal production 1951, plantations, kg (ln)	175	1.90	4.81	0	0	0	0	15
Cotton production 1960, Africans, kg (ln)	175	10.72	5.93	0	10.3	13.5	14.7	16
Rice production 1960, Africans, kg (ln)	175	4.77	6.22	0	0	0	12.2	15
Rudimentary education enrolment rate, black boys, 1952 (circunscrição)	174	28.39	17.80	1.92	13.08	27.02	39.45	85.45
Percentage white population 1960 (circunscrição)	175	2.56	7.07	0.05	0.19	0.39	1.18	34.22
HYDE population density 1960 (people/km2)	175	14.01	7.51	2.23	8.76	12.87	18.11	36.89
Soil fertility	175	7.89	1.89	4	7	8	10	10
Dist. to the coast (km)	175	119.44	150.23	0.03	13.51	69.27	153.15	659.98
Dist. railways 1962 (km)	175	65.83	88.27	0.005	2.58	27.82	99.40	372.23
Dist. to navigable river (km)	175	178.65	137.45	0.24	63.25	154.58	256.97	507.58
Dist. to interior water body (km)	175	99.78	77.87	0.23	39.37	76.87	147.92	336.02
Dist. to pre-colonial explorer route (km)	175	292.61	178.00	1.48	168.82	287.93	435.89	603.05
Dist. to primary roads (km)	175	4.62	7.69	0.00	0.86	2.37	4.87	54.99
Malaria prevalence	175	0.02	0.01	0.004	0.01	0.01	0.03	0.06
TseTse suitability index	175	1.12	0.17	0.73	1.14	1.17	1.22	1.31
Ln trade enslaved people	175	0.40	0.53	0	0	0.02	0.9	2
Dist. closest sede 1962 (km)	175	105.34	75.77	0.0000	32.94	100.54	160.92	347.69
Elevation mean (m)	175	255.81	299.64	2.82	33.17	104.61	388.70	1,307.38
Elevation standard deviation (m)	175	67.21	66.62	2.65	24.64	47.35	82.43	393.35

B. Enrolment rates

This section describes the process of building primary school enrolment rates for the black children enrolled in rudimentary schooling in colonial Mozambique between 1947-1962, at the *concelho* and *circunscrição* level.

B.1. Sources

Constructing enrolment rates requires data on enrolment numbers and data on the school age population. For these, I rely on two main sources: *Anuários Estatísticos da Colónia de Moçambique* (statistical yearbooks for the colony of Mozambique) and *Recenseamentos Gerais da População* (population censuses).

For the period between 1947-1962, yearbook data on education is relatively homogeneous. For this period, the Mozambican statistical yearbooks provide detailed information on enrolment numbers for *ensino primario rudimentar.* They do so at the geographically disaggregated level of *concelhos* and *circunscrições*, distinguishing between the different population groups in which society was classified during the *indigenato* and, for each of these groups, listing male and female enrolment. These data are provided for all the main agents running schools: the state, Portuguese Catholic missions, foreign missions, and a host of other institutions classified as *ensino particular*. Before this period, the statistical yearbooks provide enrolment data, but the same level of detail is not available for the different agents running primary schools.[252] After 1962, statistical yearbooks are much less detailed when listing enrolment data.

I collect data on enrolment from the colonial statistical yearbooks for seven benchmark years between 1947 and 1962, at the level of *concelhos* and *circunscrições*.[253] Data on population comes from the late colonial census of 1960,

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[252] For example, enrolment numbers for the main provider of rudimentary schooling, Portuguese Catholic missions, are only provided at the level of the *distrito* in the statistical yearbooks prior to 1940.

[253] The years for which data is collected are 1947, 1950, 1952, 1955, 1957, 1960, and 1962. Data for Catholic mission schools presented in the yearbooks is most likely the result of aggregating the data

which I project backwards and forwards using the population growth rates provided by Frankema & Jerven (2014). This is intended to address issues of underestimation of the African population common to colonial censuses (Manning, 2010), following a similar methodology to that used by Frankema (2012).[254]

Administrative divisions changed frequently throughout the period 1947-1962. However, calculating and mapping enrolment rates precisely relies on being able to trace accurately the changes to the administrative division of the colony: this affects both the mapping of enrolment numbers to their respective *concelho* or *circunscrição*, and the projection of population numbers from the 1960 census data backwards and forwards into changing regions. The process for the construction of accurate maps is described in section B of the Appendix to Chapter 3.

B.2. Gross enrolment rates

As a variable of interest, enrolment rates cannot tell us everything about a system of schooling. The quality of the education received, for example, is one key aspect that this measure tells us nothing about. However, as Benavot & Riddle (1988) point out, enrolment rates are useful when doing comparative research and, of particular importance to our analysis, they can indicate "*the penetration of the state (or colonial power) into older social structures*" and "*the exposure, however rudimentary, of rural (or urban) masses to new ideas and skills.*"

The cross-country literature on educational outcomes uses different types of enrolment rates. These are succinctly described by Benavot & Riddle (1988). Unadjusted enrolment rates are calculated by dividing enrolment at a certain level of education by the population of a constant school-age for that level. The school age selected is the same for all countries independently of the structure of their

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included in reports sent by Mozambican bishops to the Governor General, as required in Article 77 of *Estatuto Missionário*.

[254] I use population data from a colonial census, but the problem of undercounting should be a lesser concern as compared to earlier colonial censuses, considering the increased state capacity of colonial states towards the end of the colonial period. In this regard, Austin (2008) indicates that counts for colonial censuses "are generally thought to be considerably under-stated until roughly the mid-20th century".

educational system, and the 5-14 age group is often used for primary level schooling. This may lead to overestimation or underestimation of enrolment rates, but it helps to establish comparisons for larger samples of countries. Gross enrolment rates, on the other hand, do take into account national variation and, for each country, are calculated by dividing enrolment at each level of education by the relevant school-age population for that level. The problem with this measure is that rates may exceed 100 percent if there is a large number of underage or overage students. This is resolved by using net enrolment rates, which do not include underage or overage students in the calculation.

In this chapter I construct unadjusted enrolment rates for primary rudimentary schooling. There are several reasons for this. Net enrolment rates cannot be calculated because the enrolment data used does not consistently indicate the age of students. Gross enrolment rates can be calculated: the school age for rudimentary education was consistently 7-12 years old throughout the *indigenato*. However, in the case of Mozambique, gross enrolment rates these may yield an unrepresentative picture: in some cases, the legislation allowed children to enrol up to 15 years of age, and children of older ages may have indeed attended school (Padre Vicente, personal communication, May 6, 2022). Therefore, I use unadjusted enrolment rates as a tool to capture large educational trends across regions and over time within colonial Mozambique, to approach the potential existence of a gender Kuznets curve.

Thanks to the level of detail provided by the 1960 census for Mozambique, it is possible for me to construct unadjusted enrolment rates without relying on the estimation procedures usually followed by the literature. This census provides population data for the different population groups classified under the *indigenato*, at the level of *concelhos* and *circunscrições*, distinguishes between male and female population, and provides population numbers for individual ages up to nineteen years of age.[255] This allows me to construct population figures for the school-age of 5-14 directly, avoiding the estimation procedures carried out in the literature when such detailed data is not available. This is important when calculating enrolment

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[255] For age twenty and above, population numbers are clustered in five-year intervals.

rates and gender gaps at the regional level. For example, as stated previously, analyses using unadjusted enrolment rates often use the 5-14 age group for primary level schooling. In the absence of specific data, these analyses estimate that the 5-14 age group represents 22 to 27 percent of the population in less-developed countries (Benavot & Riddle, 1988; Frankema, 2012). Indeed, in Mozambique the age group of 5-14, measured at the level of the colony, represented 25.33% of the total black population in 1960, in line with the estimates used in the works referenced above.[256] However, this percentage varies significantly across the regions in Mozambique. In 1960, the percentage represented by the age group of 5-14 over the total population ranged from 11% in the *concelho* of Beira to 34% in the *circunscrição* of Maravia. These variations are the result of factors such as internal migrations, which were often gendered and biased towards the adult population, thus highlighting the importance of being able to observe infant population figures directly instead of using estimates.

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[256] Frankema (2012) applies a 25 per cent share to all countries in his analysis of colonial Africa.
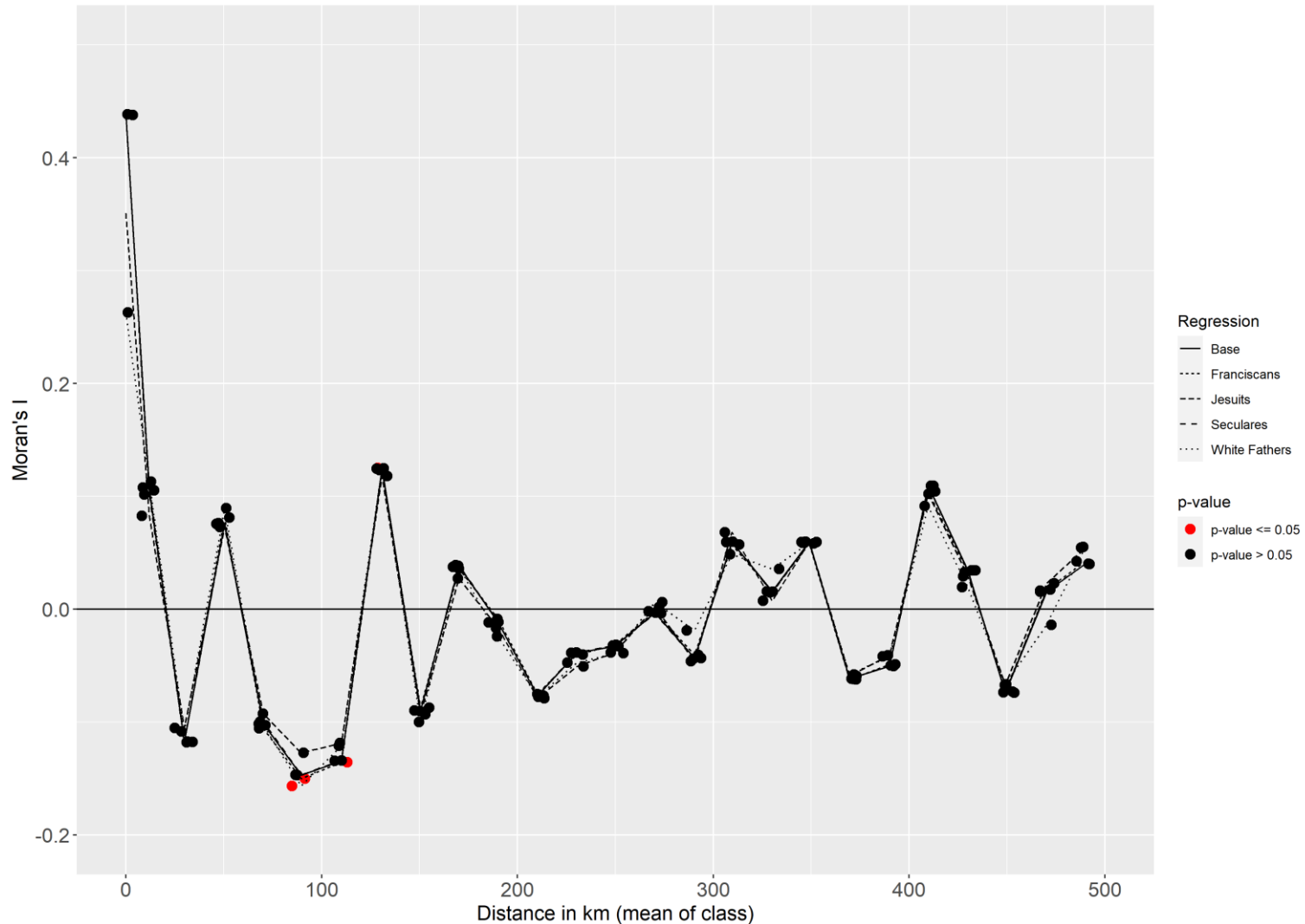
C: Spatial correlograms

Figure A.4.3: Spatial correlograms of residuals from regressions in Table 4.3
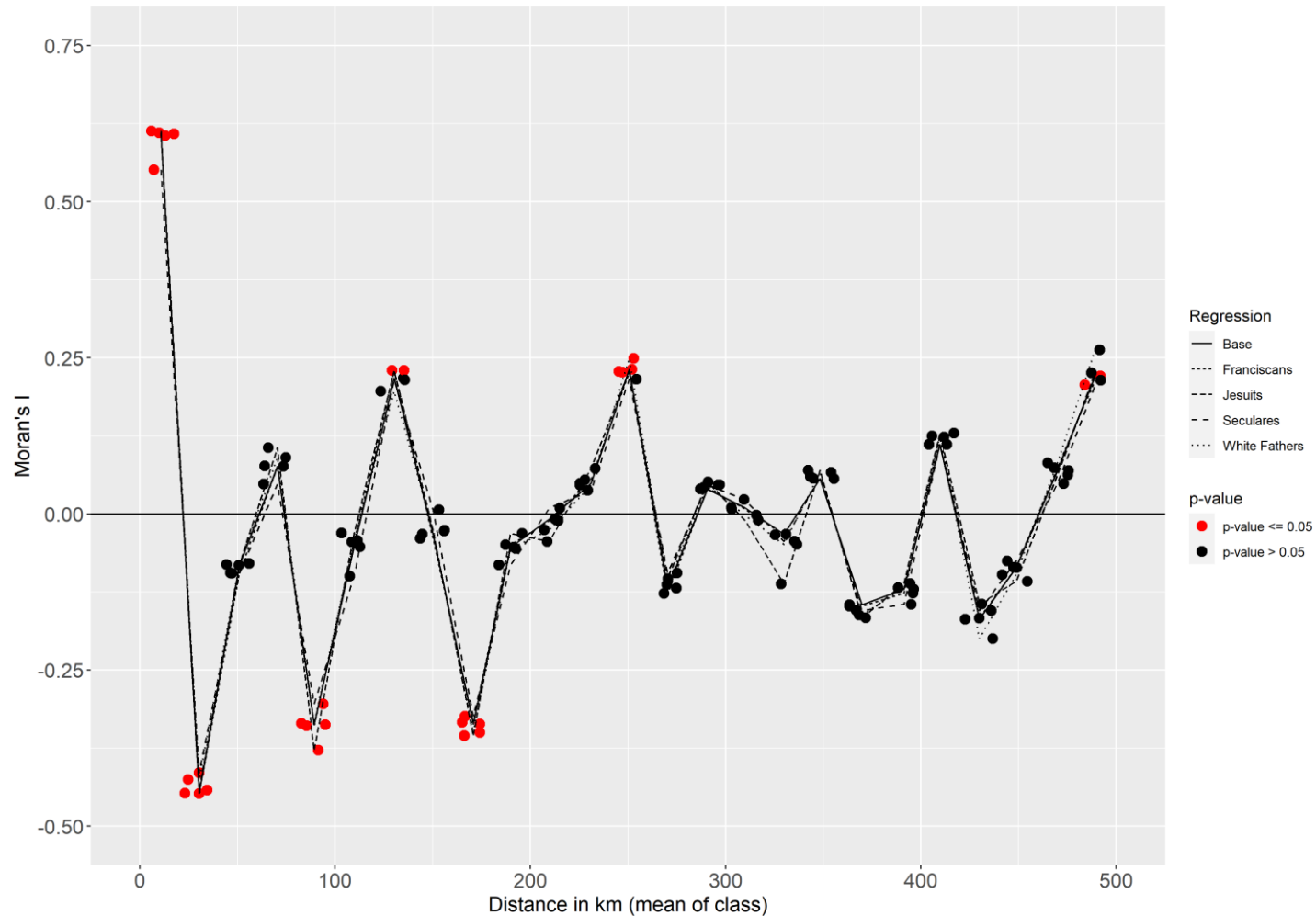
Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 4.3, for which the dependent variable is GPI, at 20 km distance bands, to determine the threshold for the application of Conley (1999) standard errors. Jitter is added to make each individual point in the graph more easily visible. Across regressions, Moran's I becomes insignificant before the 100km threshold (although it becomes significant again at larger thresholds). Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Figure A.4.4: Spatial correlograms of residuals from regressions in Table 4.4

Note: I calculate Moran's I of the residuals from each of the regressions shown in Table 4.4, for which the dependent variable is GPI, at 20 km distance bands, to determine the threshold for the application of Conley (1999) standard errors.
Jitter is added to make each individual point in the graph more easily visible. Across regressions, Moran's I is mostly not significant.
Thus, I set a threshold of 100 km: following Jedwab et al (2022), this should provide conservative estimates of standard errors.

Chapter 5. Conclusions

Consolidating state capacity and ensuring inclusive access to quality education are two of the greatest challenges facing countries around the world today. These challenges are particularly acute for many African states. To address them we must build our understanding of historical state-building processes, and of the long-term trajectories of education systems. This dissertation consists of three independent chapters, focused on colonial Mozambique, which contribute towards this goal.

Chapter 2 studies the spatial allocation of state resources in the first stages of state building. In doing so, it contributes to a growing literature on the sub-national distribution of state activity in Africa during the colonial period. One strand of studies has found results consistent with the model of distribution of power described by Herbst (2014), according to which financial constraints, among other factors, led states to project authority from core areas into the hinterland in concentric circles. A second strand has highlighted the primacy of the hegemony imperative described by Young (1994), focusing on German African colonies and showing results consistent with a model in which, as a matter of survival, the state prioritised territorial control over financial considerations. In this chapter, I build a new georeferenced dataset of the expansion of state *sedes,* the headquarters of each administrative area in the colony of Mozambique, between 1889 and 1930. Through a qualitative analysis of maps, I show that the colonial state in Mozambique settled the territory progressively, advancing from its historical footholds on the coast towards the interior. I then run logistic regressions on the georeferenced dataset for multiple benchmark years, and I find that the colonial state in Mozambique did not prioritise territorial control, while proximity to the coast did increase the likelihood of new *sedes* being established in an area. The evidence for Mozambique, then, is closer to the model of 'concentric circles' than to the hegemony-centered model. I argue that this may have been the result of Portuguese financial and military weakness having a greater influence on policy than geopolitical insecurities. Overall, Chapter 2 suggests the need to take into account the particular geopolitical and

financial characteristics of each state when analysing its spatial allocation of resources.

Chapter 3 analyses the Portuguese colonial model of education in Africa. The literature on the historical trajectories of schooling systems in Africa has not analysed the reasons behind the process of secularisation that took place after the Second World War, when African colonial states took a greater role in education, and the importance of Christian missions decreased. I focus on the choice of the Portuguese *Estado Novo,* which followed the opposite trajectory: Catholic missions were granted an almost monopolistic position over African education in 1941 and were responsible for the expansion of the schooling network thereafter. To analyse the reasons behind this policy, I focus on *ensino primario rudimentar* (primary rudimentary education), a type of very low-quality schooling that was the only educational experience for the vast majority of African children in colonial Mozambique. The analysis relies on the qualitative analysis of a wide range of sources, from colonial legislation and monographs to unpublished ecclesiastical reports, and on the construction of two separate datasets. The first provides measures of government expenditure per child enrolled in state-run rudimentary schools, and in Catholic mission schools, between 1936 and 1941. The second is a georeferenced dataset of the expansion of Catholic missions between 1922 and 1971, which also includes a large set of variables that have been shown to influence missionary location in Africa (Jedwab et al., 2022). I find support for two mutually non-exclusive hypotheses. The first is that Catholic missions were granted a monopoly over African education because subsidising them was a cheaper option for the colonial state to expand African education than directly running the schools. The second is that granting an educational monopoly to Catholic missions was a way of reinforcing their role as a tool against perceived threats to Portuguese colonial hegemony and security, particularly against the purportedly "denationalising" influence of Protestant missions. Thus, a combination of financial, geopolitical, and ideological reasons contributed to the comparatively outsized importance of Catholic missions in the education of Africans in Portuguese Africa.

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Finally, Chapter 4 analyses the determinants of educational gender gaps in a colonial setting. I expand the longitudinal dataset on the location of Catholic missions, introduced in Chapter 3, with enrolment data for boys and girls in *ensino primario rudimentar* schools for 96 missions present in Mozambique in 1952, and 175 in 1962. I construct a Gender Parity Index (GPI) for each mission-year pair, calculated as the ratio of female to male enrolment. Running regressions on the two separate cross-sections and a balanced panel of missions present in both years, I analyse how gender parity in rudimentary education was influenced by three main factors: the local political economy and mode of production, the characteristics of the different congregations running each mission, and the role of female missionaries and teachers. Regarding the first factor, I find that circular migration increased gender parity by reducing the pool of boys that attended school. Concerning the second factor, Jesuits were associated with higher GPI levels in 1952, whereas missions run by the White Fathers showed lower GPI levels in 1962. Finally, panel regressions show that increases in the number of female teachers over time were associated with higher levels of GPI. Thus, Chapter 4 addresses several gaps in the literature, highlighting the importance of considering the local context and the correlative variations in African demand for education, the different characteristics of missionary congregations, and the role of female teachers, to understand the evolution of educational gender gaps in colonial Africa.

Taken as a whole, this dissertation makes several contributions. The African economic history literature has focused mostly on British and French colonies. One may think of multiple reasons for why this may be the case: the greater accessibility of sources in English and French archives, the use of English as *lingua franca* around the world, or the sheer number of territories colonised by the British and the French in Africa. Whatever the reasons, the growing literature that combines qualitative and quantitative methods to analyse the African past has paid less attention to territories colonised by other European powers, like the Portuguese. This dissertation contributes to African economic history by doing precisely that.

It also contributes by introducing multiple original datasets that can be used to ask new, interesting questions beyond those included here. These datasets provide

information on a wide variety of topics, from the expansion of the state and of Christian missions to the cost of education and the levels of educational gender parity. They also include a large number of newly collected explanatory variables. At the same time, the homogenised maps I have constructed to represent variables at the *concelho* and *circunscrição* level, for the period between 1947 and 1962, can be used in the future to represent and analyse information yet to be collected.

Ultimately, this dissertation uses the case study of Mozambique to contribute to our understanding of important questions within the field of economic history: the influence of comparative financial and geo-political weakness, as well as ideology, on the processes of state-building and configuration of education systems; the provision of education under colonial rule and the racially discriminatory, dualistic systems of citizenship that accompanied it; and the interlinked dynamics of Christian missionary expansion and the evolution of gender parity in Africa.

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Padre Vicente, personal communication, May 6th, 2022.

- Interview with Padre Vicente, a Spanish priest who worked as a missionary in Mozambique from September 1967 onwards, initially as part of the Burgos fathers (*Instituto Español de Misiones Extranjeras*).