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Historical Origins of Uneven Service Supply in Sub-Saharan Africa. The Role of Non-State Providers

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ABSTRACT Variations in non-state service provision are a relatively understudied dimension of wellbeing inequality in sub-Saharan Africa. This study from Madagascar documents long-term associations between nineteenth-century missionary education and the availability of private schools today. The article exploits an original data set with unusually detailed information on missionary education and contemporary local private school supply. The results indicate high levels of persistence in non-state schooling at the geographic level. The long tradition of faith-based education appears to contribute to religious differences that overlap only imperfectly with more widely studied ethnic divides.

1. Introduction

The literature on public goods provision in sub-Saharan Africa is often state-centric. Most studies focus on government-led delivery of basic services, based on the assumption that politically motivated allocation of public goods and investments is the main driver of regional and group-level inequalities in the continent (Green, 2011; Moser, 2008; Posner, 2005). Other research has linked insufficient and inequitable service supply to the high incidence of ethnic and linguistic fractionalisation in African societies and resulting weaknesses in public service delivery mechanisms (Alesina, Baqir, & Easterly, 1999; Easterly & Levine, 1997; Gibson & Hoffmann, 2013; Habyarimana, Humphreys, Posner, & Weinstein, 2007; Miguel, 2004; Miguel & Gugerty, 2003; Posner, 2005; Schuendeln, 2013).

This article argues that an additional source of inequality in public goods availability arises from the long tradition of private service provision in the continent. In many parts of sub-Saharan Africa basic services like education were exclusively delivered by Christian missionaries up until the early twentieth century (Gallego & Woodberry, 2010; Horowitz, 1985; Nunn, 2009; Woodberry, 2012). Also, today religious and other non-governmental organisations supply high shares of education and other basic services in large parts of the continent (Barrera-Osorio, Patrinos, & Wodon, 2009; Cammett & MacLean, 2011; Kitaev, 1999). These providers typically offer services of much higher quality than their public sector counterparts (Kitaev, 1999; MacLean, 2011a; Rose, 2010). Persistence in the local availability of non-state services is thus likely to contribute to long-run differences in social and economic opportunities within African societies.

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The article evaluates the extent of inequality in non-state education with the help of exceptionally rich first-hand data from Madagascar. Historical information on the geographic location of Christian mission stations is available for the early twentieth century. We link these data to a nation-wide census of public and private school supply at the municipal level in 2001 (N ≈ 1,200). Together, these two data sources offer unusually detailed evidence on the availability of schooling and literacy across ethnic groups and sub-national regions since the early colonial period. Additional analysis of a national household survey with detailed information on school outcomes for earlier birth cohorts provides further insights into the extent of educational persistence at the individual and group level.

The study finds strong evidence that the long tradition of non-state schooling contributed to inequalities in education outcomes. As hypothesised, areas in Madagascar that had stronger exposure to missionary education in the past continue to receive more non-state schools today. These variations in private education account almost entirely for inequalities in the total local supply of formal schooling. The results are robust to the inclusion of geographic and historical controls, regional fixed effects, and instrumental variables.

The study produces two more results that underline the importance of considering non-state schooling as an independent determinant of educational differences in the continent. First, historically uneven provision of non-state education only overlaps weakly with other more widely studied drivers of spatial inequality, such as biased provision of basic services to urban or economically more advanced areas (Bates, 1981; Lewin, 2007; MacLean, 2011; Sahn & Stifel, 2003).

Second, there are strong signs that non-state education contributed to inequalities at the group level. As in many other sub-Saharan nations, the history of formal education provision in Madagascar is strongly intertwined with ethnic differences (Baldwin, 2011; Horowitz, 1985). This is because missionary education in Madagascar historically coincided with the rise to prominence of the now dominant central highland population of ethnic Merina. However, the long tradition of faith-based schooling also helped create inter-religious inequalities in school attainments that are much larger than those observed between the major ethnic groups. These religious differences in education only overlap imperfectly with other economic and political outcomes, underscoring the need to consider non-state schooling as a relatively independent driver of group differentiation.

The article proceeds as follows. The next section discusses existing evidence on non-state education in sub-Saharan Africa and outlines the theoretical and methodological arguments of the article. Section 3 describes the country context. Sections 4 and 5 present the data, empirical strategy and results of the geographic analysis of non-state school supply. Section 6 discusses findings at the group level. The concluding section outlines the relevance of the study findings for the wider debate about public goods provision and group inequality in sub-Saharan Africa.

2. Links between Private School Supply and Educational Inequalities

There is growing cross-disciplinary interest in non-state education provision in sub-Saharan Africa. Studies of contemporary education systems typically focus on the quality and equitability of non-state schooling. In economics there is a rapidly growing literature that documents that non-state schools often provide better education than comparable public sector schools (see, for example, Arestoff & Bommier, 1999; Glewwe & Jacoby, 1995; Glick & Sahn, 2006; Wodon & Ying, 2009; for conflicting evidence, see Backiny-Yetna & Wodon, 2009). In political science, analysts have focused more on equity- and political consequences of non-state education. Case studies from several low-income countries suggest that in particular for-profit schools often charge higher fees and that these schools tend to be concentrated in more affluent cities and towns (Kitaev, 1999; Lewin, 2007; MacLean, 2011a; see also Barrera-Osorio et al., 2009; Pal, 2010; Pal & Kingdon, 2010). This has raised concerns that growing reliance on non-state providers in the context of ongoing public sector reform
programmes exacerbates inequalities between the poor and non-poor (Lewin, 2007; MacLean, 2011a). Other studies suggest that private education may undermine the social contract between African states and their citizens (Cammett & MacLean, 2011; MacLean, 2011b).

Historical studies closer to the analytical focus of this article increasingly concentrate on missionary education in an attempt to move away from purely state-centric explanations of political and economic development. These studies suggest that variations in the prevalence of Christian missionaries in the colonial period account for a large share of differences in educational and political outcomes more commonly attributed to alternative systems of colonial rule (Grier, 1997; Woodberry, 2012; see also Lankina & Getachew, 2012). Explanatory models adopted by these studies typically highlight the role and quality of missionary education, as well as influences of missionaries on political and societal institutions.

To date, few studies have looked directly at the extent of persistence in non-state education supply. The majority of studies interpret differences in private education availability as the result of contemporary processes, such as competition between religious providers (James, 1993), economic considerations (MacLean, 2011a), or attempts to target areas with lower quality public schools (Pal & Kingdon, 2010). Recent historical studies of missionary and colonial-era school investments do not distinguish between consequences for the public and private education sectors (Gallego & Woodberry, 2010; Huillery, 2009, Nunn, 2009, 2014; Woodberry, 2004), or they lack detailed quantitative support (Kitaev, 1999; Rose, 2010). However, there are strong indications that persistence in non-state school provision can be substantial. Cross-country data compiled for this study suggest that contemporary private school shares tend to be higher in nations that received more missionary education in the past (Figure 1). Many of these schools are operated by faith-based organisations, with the Catholic Church alone reporting almost 32,000 primary schools with over 11.5 million students in the continent.2

It is very likely that these cross-country patterns are reproduced at the subnational level. One would expect that church-based providers have an incentive to operate schools in the same areas as missionaries, because of endogenous formation of local preferences for education or because it is cheaper to maintain existing infrastructures than to build new schools from scratch (Huillery, 2009). Moreover, private education coverage was probably less affected by large-scale investments in public school networks in the post-colonial period (Benavot & Riddle, 1988; Brown, 2000; MacLean, 2011a, 2011b). Both processes make it very likely that non-state schooling is one of the mechanisms behind

**Figure 1.** Private enrolments today and mission schools in 1935.

*Notes: The graph plots current private primary enrolments (in percentage of gross primary enrolments) against the number of missionary schools per 1,000 km² in 1935 (Parker, 1938). Private enrolments today represent the 1999–2008 average (UNESCO, 2003). The correlation between the two variables is 0.53. The sample is restricted by the limited simultaneous availability of current and historical data.*
the high level of persistence in educational outcomes often observed in African societies (Bolt & Bezemer, 2009; Bossuroy & Cogneau, 2008).

Historical variations in non-state school supply are also of interest in the context of the analysis of ethnic and other group-level inequalities in sub-Saharan Africa. There is wide agreement that uneven availability of basic public goods like education is a major determinant of socio-economic differences between ethnic groups (Baldwin & Huber, 2010; Posner & Kramon, 2011; Stewart, 2008). However, the literature is divided as to whether these inequalities are explained by influences from the supply side, such as ethnic patronage or collective action problems related to ethnic fractionalisation (see above), or through ethnicity-specific preferences for modern public services (Easterly & Levine, 1997; Lieberman & McClendon, 2012).

These concerns about conflicting causal interpretations are less pressing in the historical context of missionary schooling. Most observers agree that missionary education largely constituted an ‘ethnically random process’, in that missionaries did not explicitly target specific ethnic groups (Horowitz, 1985, p. 153; see also Baldwin, 2011). School location choices were often driven by rivalry with other missionary groups or the logistical and health-related challenges of maintaining schools in more remote or tropical areas. There are only few groups whose religious beliefs or systems of social organisation limited exposure to Christian missionaries (such as Muslim or nomadic societies). This historical background makes it easier to argue that inequalities in educational outcomes across ethnic groups originated in the uneven supply of missionary schools. While stronger local preferences for formal education may have developed in subsequent periods, these behavioural adaptations would not explain missionaries’ initial decisions to build a school in an area or not.

At the same time, the relative autonomy in the location choices of church providers makes it more likely that non-state education created new group differences that overlapped incompletely with existing ethnic affiliations. In particular, we will argue below that the long tradition of faith-based schooling in the continent led to much larger differences in educational attainments between Christians and non-Christians than between ethnic groups. This argument is consistent with large religious differences in education often observed in sub-Saharan Africa and other developing regions (see, for instance, Lankina & Getachew, 2012; Rose, 2007). It is also relevant in the context of debates about the relative importance of ethnic and religious fractionalisation in African societies (see below).

3. Country Context

Madagascar offers a good example to study the effects of missionary work on spatial and group-level outcomes. Historically there are strong economic and social divides between the central highland Merina population and other ethnic groups in the island (Ellis, 2009; Marcus & Ratsimbaharison, 2005; Stifel, Forster, & Barrett, 2008). The Merina emerged from relative obscurity in the late eighteenth century and gradually established control over most of the island until the arrival of French colonial forces in 1896 (Deschamps, 1960, p. 157). Today, the Merina still enjoy higher living standards than other groups and they tend to be better represented in national political institutions. Previous studies link these differences to superior educational attainments and higher levels of economic development in the Merina’s traditional heartlands around the nation’s capital Antananarivo (Allen, 1995, p. 122; Stifel et al., 2008).

Historical accounts suggest that the rise to prominence of the Merina was closely linked to missionary education. The first missionaries to establish a lasting presence on the island were Anglican priests, invited by the recently converted Merina ruler, King Radama I, to baptise and educate the ruling elite in today’s capital Antananarivo (Brown, 1978; Raison-Jourde, 1991). Anglican and Protestant missionaries then rapidly expanded their network of schools around the Merina capital, Antananarivo. From the last three decades of the nineteenth century onwards, the French Catholic
Church also increasingly competed with Protestant missionaries over the number of children baptised and enrolled in school. By the time the Merina empire was defeated by French colonial forces, Protestant groups listed around 1,120 schools in operation and the Catholic school system reported over 23,000 students (Koerner, 1999, p. 92).\textsuperscript{3} As in other countries where Catholics competed with Protestants for influence, Catholic schools also routinely included classrooms for girls (Gallego & Woodberry, 2010; Koerner, 1999, pp. 69, 75).

Notwithstanding the close initial collaboration between missionaries and Merina rulers, there are clear signs that missionary presence represented an exogenous shock for many local communities. Conflicts about the perceived interference of European churches among the Merina are well documented, especially during the long reign of Queen Ranavalona (1828–1861). This culminated in the assassination of the recently converted Merina King Radama II (1861–1863) in a public protest against the growing influence of foreigners (Allen, 1995; Raison-Jourde, 1991). Outside of the traditional Merina heartlands, missionary school networks expanded to ethnic groups that did not initially collaborate with Christian missionaries. Maps of the distribution of churches in 1904 illustrate that missionary presence was particularly strong in the southern highlands and the arid south of the island (Figures 2a and 2b), regions whose inhabitants are known for their traditional resistance to outside influences (Allen, 1995; Heseltine, 1971).

There are also signs that the expansion of missionary outposts overlaps only imperfectly with other patterns of economic geography that could explain differences in private school availability. While most missionary networks originated in the country’s historical and contemporary centre, Antananarivo, missionary areas in the southern highlands and coastal areas are historically less developed and continue to report among the highest poverty levels in the island. The historian Hubert Deschamps notes that the highland regions to the south of the capital were ‘half empty’, prior to the time of missionary expansion (some of the ethnic groups that inhabited these regions are depicted in even less favourably terms as ‘half savage’ (Deschamps, 1960, p. 123). Contemporary research on current economic outcomes also suggests that these areas often remained poorer in subsequent time periods. For example, Wietzke (2013) finds no association between past missionary schooling and historical and current income levels across districts. This is also supported by official poverty assessments for Madagascar, which report higher levels of deprivation in the southern highlands and the coastal regions in the south-west (Mistiaen et al., 2001, Razafindravonona, Stifel, & Paternostro, 2001).

The dominance of missionaries in the education system was only broken in the colonial and post-colonial period, when authorities began to make systematic investments in the public school network. In particular in the first years after independence Madagascar engaged in a very ambitious school construction programme.\textsuperscript{4} However, private and faith-based providers continued to make important contributions to education throughout the colonial and post-colonial periods. By the time of independence, religious organisations still accounted for almost a third of primary school supply and for almost all secondary schools in the country (Hugon, 1980, p. 153ff; Koerner, 1999). By the early 1990s, private schools accounted for over 20 per cent of enrolments, a figure that is comparable to that observed in other francophone countries in Africa (see Figure 1).\textsuperscript{5} According to official estimates, faith-based providers contribute close to 50 per cent of private schools in Madagascar today, out of which two-thirds are accounted for by organisations affiliated with the Catholic Church and the remainder by Lutheran, Anglican and other smaller Christian confessions (World Bank, 2002, 11f).

As in other sub-Saharan nations these schools typically offer education of superior quality than their public sector counterparts. Recent evaluations suggest that private schools produce better learning outcomes and lower drop-out and repetition rates, controlling for a range of school and student characteristics (Arestoff & Bommier, 1999; Glick & Sahn, 2006; World Bank, 2002, p. 83). Also in previous decades, private schools were often the only facilities that permitted graduation into secondary and higher education (Hugon, 1980; Koerner, 1999).\textsuperscript{6}
Figure 2a. Merina most important or second most important group. 
Note: In quartiles, darker colours indicate more communities with Merina majority.

Figure 2b. Churches per 1,000 inhabitants in 1904. 
Note: In quartiles, darker colours indicate more churches.
4. Empirical Strategy and Data

Studies of private school targeting are often constrained by a lack of reliable data. Non-state providers often fail, or are not required, to supply information on their school allocations to public authorities. As a consequence, most existing evaluations of the determinants of private school supply are restricted to surveys or localised case studies with limited national coverage (see, for instance, Lewin, 2007; MacLean, 2011a).

In this study we draw on an exceptionally rich nation-wide data set of current and past primary school accessibility (see the Online Appendix for descriptive statistics and a more detailed discussion of data sources). Information on present-day private and public schooling is available from a national census of basic service supply and other socio-economic outcomes. Data were collected locally from district and municipal school authorities, and thus circumvent often-voiced concerns about the reliability of central government data on private school availability.

Information on past education is available from a detailed country-wide inventory of missionary stations and churches, undertaken at the beginning of the colonial period by the French colonial administration. We use the number of churches per 1,000 inhabitants at the district level in 1904 as our primary indicator (N=110). Prior estimates did not differ systematically when we account separately for the historical presence of Catholic and Protestant missionaries. Additional information on historical religious school availability exists for 1932, and will be used in the descriptive analysis for tracking the link between past Christian presence and private school availability over time.

The estimation begins with a regression of the effect of missionary schooling on total school supply, followed by separate estimates of the effect of missionary schooling on public and private school availability. The estimation model takes the following form:

\[
S_m = \alpha + \beta CH_d + \gamma Mer_m + \psi X_{md} + \epsilon_{md}
\]  

(1)

where the number of total, public, and private primary school classrooms per 1,000 inhabitants per municipality \(m\) is the respective dependent variable \(S_m\) and past missionary school availability \(CH\) in district \(d\) is the main explanatory variable. Since we are also interested in the interaction between historical school supply and Merina rule, we estimate a second set of regressions with an added dummy Merina \(Mer_m\) (=1 if Merina are the most important or second most important ethnic group in a municipality). A significant positive coefficient of the Merina dummy indicates that non-state schooling today continues to disproportionately benefit Merina communities.

All specifications account for geographic attributes of a district, including terrain ruggedness, average temperature and precipitation, distance to capital and a dummy for districts that were inhabited in the eighteenth century \(X_{md}\). Other specifications gradually add controls for past and contemporary economic conditions, including the presence of colonial infrastructures, wages in 193, population sizes in 2001, an index of current infrastructure availability, 1993 poverty headcounts, and the presence of manufacturing firms (see the Online Appendix for data sources). All continuous independent variables are transformed into their natural logs. The models for total and public school supply assume a Poisson distribution. Estimates for private school supply are based on a negative binomial distribution, due to the left-skewed nature of the dependent variable. Standard errors account for clustering at the district level, the unit of observation for \(Ch_d\) and other historical controls.

5. Results: Missionary Impact on Education Availability

Maps of the distribution of private schools over time indicate strong, albeit declining temporal correlations in private school supply. In 1932 most public and private schools were still concentrated in the central and southern highlands that received the bulk of missionary education in the past (Figure 2c). By 2001 the share of private schools is highest in the former Merina heartland around the capital, Antananarivo. However, private schools are still relatively numerous in other parts of the central highlands and coastal areas that benefited from missionary education in the past (Figure 2d). The only systematic improvements in private education availability over time occurred in the western and northern coastal areas.
Figure 2c. Number of religious schools per 1,000 inhabitants in 1932.
Note: In quartiles, darker colours indicate more schools.

Figure 2d. Proportion of private classrooms in 2001.
Note: In quartiles, darker colours indicate more schools.
Table 1. Missionary schooling and current education availability

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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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<tr>
<td></td>
<td>Total school supply</td>
<td>Public school supply</td>
<td>Private school supply</td>
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<tr>
<td>Panel 1: No control for Merina population</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Churches in 1904</td>
<td>0.115**</td>
<td>-0.024</td>
<td>0.513***</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.077)</td>
<td>(0.131)</td>
</tr>
<tr>
<td>Controls for geography and history</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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| Panel 2: with control for Merina |             |             |             |
| Churches in 1904       | 0.063       | -0.054      | 0.346***    |
|                        | (0.052)     | (0.079)     | (0.102)     |
| Merina majority        | 0.199***    | 0.108       | 0.906***    |
|                        | (0.073)     | (0.081)     | (0.227)     |
| Controls for geography and history | Yes   | Yes   | Yes   |
| Constant               | 10.924***   | 8.867**     | 17.176***   |
|                        | (3.114)     | (4.191)     | (6.102)     |
| Observations           | 1209        | 1209        | 1209        |

Notes: Models for total and public school supply are estimated with a Poisson regression. Private school supply estimated with a negative binomial regression. All estimates control for terrain ruggedness, temperature, precipitation, distance to capital, and population in the 18th century. Standard errors account for clustering at the district level (in parentheses). ***p < 0.01, **p < 0.05, *p < 0.1.

Panel 1 of Table 1 reports regression results for the association between missionary education and current levels of total, public and private primary school supply – Equation (1). The findings illustrate the strong influence of non-state school provision on overall school availability. Areas that benefited from missionary schooling in the past continue to receive more schools today. This effect is entirely driven by differences in private school provision, while there is no visible effect of past missionary presence on public school availability.

As anticipated, Merina and missionary presence are strongly correlated. The inclusion of the Merina dummy in Panel 2 of Table 1 removes half of the effect of CHd on total school supply. Now, Merina presence is the strongest and only robust predictor of total school supply. However, missionary presence continues to exercise a robust influence on current private school availability. Private school supply also accounts almost entirely for differences in total school availability between Merina-dominated and other areas. There are no differences in public education supply between Merina and non-Merina areas.

Since it is possible that the historical association between missionary presence and current private school supply simply captures higher living standards of Merina-dominated and missionary regions, we add a number of controls for the historical and contemporary level of development of a locality. The baseline model for this exercise is the estimate for non-state school supply in Panel 2 of Table 1. For presentational clarity this estimate is repeated in column 1 of Table 2.

As can be expected, the economic controls pick up some of the historical advantages of Merina populations. The coefficient of the Merina dummy remains statistically significant, but it is reduced by more than a third as we gradually add controls for historical and current development levels in an area (Table 2, columns 2 and 3). In contrast, the effect of past missionary presence is surprisingly robust to the inclusion of economic controls. The coefficient only fluctuates mildly when historical and contemporary economic indicators are added to the model.

We estimate three more specifications to filter out possible locality-specific influences that are not captured by these controls. Column 4 presents a model with fixed effects for 22 administrative regions of the country. These regions were created to administer rural development efforts, and they include municipalities with very similar geographic and economic conditions. The inclusion of region dummies thus limits the estimation to variation in private education availability within areas with relatively
comparable geographical and historical contexts (the fixed effects also remove most of the variation in school availability between the Merina heartland and other regions of the country). Column 5 presents estimates only for regions that are not historically dominated by the Merina.

Finally, we present instrumental variable estimates, using a district’s median elevation and Merina rule in the middle of the nineteenth century to identify the association between missionary presence and current private school availability (column 6). The instruments are valid under the assumption that a locality’s level of private school supply is not directly influenced by elevation and past Merina presence, once controls for contemporary Merina populations and other climatic and economic influences are included.

The robustness tests corroborate trends from the earlier estimates. The effect of Merina dominance is reduced to almost zero when we include regional fixed effects. In contrast, the coefficient of missionary presence remains robust. The effect of past missionary presence increases in size and continues to exert a strong effect on private school availability when the historical Merina heartlands are removed from the sample. Finally, the effect of $CH_d$ remains robust in the instrumental variable estimates.

It is also instructive to consider the controls for current economic development, as some of these variables may explain private school availability in their own right. The controls for infrastructure

### Table 2. Determinants of private school availability 2001

<table>
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<tr>
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<td>OLS</td>
<td>OLS</td>
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<tr>
<td>Churches in 1904</td>
<td>0.346***</td>
<td>0.364***</td>
<td>0.363***</td>
<td>0.160***</td>
<td>2.204***</td>
<td>1.108***</td>
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<td></td>
<td>(0.102)</td>
<td>(0.105)</td>
<td>(0.140)</td>
<td>(0.060)</td>
<td>(0.418)</td>
<td>(0.446)</td>
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<td>Majority Merina</td>
<td>0.906***</td>
<td>0.821***</td>
<td>0.569***</td>
<td>–0.018</td>
<td>0.049</td>
<td>0.026</td>
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<tr>
<td></td>
<td>(0.227)</td>
<td>(0.219)</td>
<td>(0.157)</td>
<td>(0.085)</td>
<td>(0.228)</td>
<td>(0.411)</td>
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<tr>
<td>Colonial infrastructure</td>
<td>0.319***</td>
<td>–0.035</td>
<td>–0.039</td>
<td>0.252*</td>
<td>–0.040</td>
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</tr>
<tr>
<td></td>
<td>(0.090)</td>
<td>(0.084)</td>
<td>(0.085)</td>
<td>(0.130)</td>
<td>(0.102)</td>
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<tr>
<td>Historical wages</td>
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<td>–0.156</td>
<td>–1.620**</td>
<td>–0.594</td>
<td>–0.300</td>
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<td></td>
<td>(0.408)</td>
<td>(0.564)</td>
<td>(0.782)</td>
<td>(0.770)</td>
<td>(1.489)</td>
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<td>District capital</td>
<td>0.165</td>
<td>0.255**</td>
<td>0.435**</td>
<td>0.228</td>
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<td></td>
<td>(0.128)</td>
<td>(0.111)</td>
<td>(0.214)</td>
<td>(0.165)</td>
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<tr>
<td>Population size</td>
<td>–0.196**</td>
<td>–0.142**</td>
<td>–0.325***</td>
<td>–0.287**</td>
<td></td>
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<td></td>
<td>(0.077)</td>
<td>(0.066)</td>
<td>(0.118)</td>
<td>(0.120)</td>
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<tr>
<td>Infrastructure index</td>
<td>0.995***</td>
<td>0.885***</td>
<td>1.410***</td>
<td>1.076***</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(0.155)</td>
<td>(0.129)</td>
<td>(0.194)</td>
<td>(0.177)</td>
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<tr>
<td>Poverty headcount 1993</td>
<td>–0.262</td>
<td>–0.010</td>
<td>–1.560***</td>
<td>–0.177</td>
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<td></td>
<td>(0.382)</td>
<td>(0.278)</td>
<td>(0.343)</td>
<td>(0.816)</td>
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<td>Manufacturing firms</td>
<td>0.264***</td>
<td>0.430***</td>
<td>0.228</td>
<td>0.242</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.093)</td>
<td>(0.094)</td>
<td>(0.150)</td>
<td>(0.172)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With region FE</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Controls for geography</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Constant</td>
<td>17.176***</td>
<td>18.131***</td>
<td>18.839***</td>
<td>17.276***</td>
<td>–10.648</td>
<td>18.977</td>
</tr>
<tr>
<td>Observations</td>
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<td>1209</td>
<td>1209</td>
<td>1209</td>
<td>923</td>
<td>1209</td>
</tr>
</tbody>
</table>

**Notes:** The dependent variable is private classrooms per 1,000 inhabitants. Coefficients are estimated with a negative binomial model, due to the left skewed nature of the dependent variable. All estimates control for terrain ruggedness, temperature, precipitation, distance to capital, and population in the eighteenth century. Standard errors account for clustering at the district level (in parentheses). Estimate in column 5 excludes areas under Merina control in 1810. Estimate in column 6 uses Stata 11’s GMM estimator for count data with endogenous regressors and bootstrapped clustered standard errors (150 replications). ***p < 0.01, **p < 0.05, *p < 0.1. **

Source: Author’s estimates based on archival data and the 2001 community census.
availability and manufacturing activities enter the model with a strong and robust positive coefficient and there is a negative (but mostly non-significant) effect of local poverty rates (column 3). This is consistent with international evidence that private schools are often located in wealthier, urbanising areas (see above). However, the negative association with population sizes indicates a higher prevalence of private providers in smaller rural towns.

6. Effects on Group Inequalities

Another way to document the long-term consequences of non-state education provision is to look at group-level outcomes. Considering the long tradition of faith-based schooling in Madagascar, it is very likely that private education not only contributed to ethnic differences but that it also created new educational divides along religious lines. These differences could also explain persistence in private education availability; for example, if predominantly Christian areas demand more non-state schools over time.

Religious differences have not received as much attention as ethnic divides in the academic literature on sub-Saharan Africa. However, there are indications that religion in many ways represents a socially and politically ‘salient’ category. Cross-country studies show that measures of religious fractionalisation and polarisation often explain variations in long run growth, government quality, or conflict at least as well as more widely used indices of ethnic and linguistic fractionalisation (Alesina, Devleeschauwer, Easterly, Kurlat, & Wacziarg, 2002; Esteban & Mayoral, 2011; Montalvo & Reynal-Querol, 2003). There are also signs that religion matters for local politics in Madagascar. In particular, the leading national council of Churches (FJKM) constitutes a potent political force in the island, and political leaders have often sought the council’s endorsement to expand their support base (Levitsky & Way, 2010, p. 280; Marcus & Ratsimbaharison, 2005, FN 7).

An indication about the extent of persistence in religious educational inequalities in Madagascar can be obtained by turning to household survey data. Figures 3 and 4 respectively plot the coefficient of a Merina and a Christian dummy from a probit model of the individual likelihood of successful graduation from primary or secondary school. Data are from the adult sample of the

![Figure 3. Probability of school graduation (Merina/non-Merina).](image)

**Notes:** Coefficients and confidence intervals based on a probit regression of the probability of primary or secondary graduation. Estimates control for gender, age, urban and migration status. Estimates are calculated for rolling birth cohorts, each spanning a period of 10 years.
The coefficients are estimated for multiple birth cohorts, starting around 1950 and ending with people born in the mid-1970s. This period covers individuals who entered the schooling age in the late colonial era, when religious providers still accounted for almost all secondary schools and about a third of primary schools. It then runs through the post-independence period, when public school expansion and subsequent adjustment policies led to important fluctuations in the share of private schooling in total education supply (see above). In the ethnic comparison, Merina are contrasted to all other ethnic groups, following the categorisation typically used in the literature (see, for instance, Stifel et al., 2008). Christians in Madagascar are compared to the next biggest religious group, namely adherents of ‘traditional’ ancestral belief systems.

Estimates also control for personal attributes that could influence individual school outcomes, including gender, age, urban and migration status.

The historical comparisons suggest that historical differences along religious lines are far more important than those along the more widely studied ethnic breakdown. Differences in graduation probabilities between Christians and non-Christians are very stable and more than twice as large as those between Merina and non-Merina. Both coefficients are reduced in size for birth cohorts in the schooling age, when post-independence school investments reduced differences in education availability. However, the estimates remain within the commonly accepted confidence intervals and the effects revert to their initial levels in subsequent time periods when public school expenditures slowed down in the context of structural adjustment policies (Koerner, 1999).

Additional estimates for children in the schooling age at the time the survey was implemented indicate that some of these interreligious differences may be linked to uneven private school access. Table 3 presents marginal effect estimates from a multinomial probit model for the likelihood of non-enrolment and private and public school attendance (Panel 1, see bottom of the table for details about the estimation specification and controls). The results suggest that children from Protestant and especially Catholic households have a much higher likelihood of visiting private schools than children of Merina origin (differences in public school enrolment are not statistically distinguishable for all three groups). These estimates also control for other well-known determinants of private education demand, like household income, parents’ education, family composition and community

Figure 4. Probability of school graduation (Christian/non-Christian).

Notes: Coefficients and confidence intervals based on a probit regression of the probability of primary or secondary graduation. Estimates control for gender, age, urban and migration status. Estimates are calculated for rolling birth cohorts, each spanning a period of 10 years.
characteristics. Moreover, higher private school attendance rates prevail among Christians, even though this group has lower average incomes than the Merina (Panel 2).

We do not claim that these results show that private schooling causes religious differences in education – there are many alternative explanations including stronger literacy preferences among Christians. However, the high level of persistence in school outcomes since the colonial period, and the relative independence of group-level private education access from other economic influences, suggest that interreligious inequalities in education are at least partially related to the historical processes described here. It is very likely that historically determined differences in private school availability and uneven demand for higher quality schooling would interact in reproducing religious and spatial inequalities in education over time.

7. Conclusion

Variations in non-state service provision represent a relatively understudied dimension of wellbeing inequality in sub-Saharan Africa (Cammett & MacLean, 2011; MacLean, 2011a). This article has sought to fill this gap by documenting persistence in the provision of non-state services since the pre-colonial and colonial period. In Madagascar, areas that had more missionary schools in the past continue to have more private schools today. These historical inequalities in private school supply account for most of the differences in current formal education availability, and they are an important determinant of intergroup inequalities in educational outcomes.

The study’s findings have various implications for the wider debate about the politics of public goods provision in sub-Saharan Africa. At a more general level the article adds to the quickly growing literature on the historical origins of African development. As with other recent studies, our results favour an explanation that links current differences in development outcomes to past investments in school infrastructures, not to the quality of local regulatory frameworks or institutions (Huillery, 2009; see also Bolt & Bezemer, 2009; Glaeser, La Porta, Lopez-de-Silanes, & Shleifer, 2004). The focus on private education in this context illustrates a very precise mechanism of educational persistence: We show that long-term effects of missionary presence only hold for private education without visible consequences for alternative modalities of school provision in the public sector. The use of regional fixed effects, instrumental variable estimates, and various other robustness checks further strengthens the case that persistence in private school supply is not driven by other locality-specific influences.
The study produces two more findings that illustrate the importance of considering historical variations in non-state school supply as a relatively independent source of wellbeing inequality in sub-Saharan Africa. First, our results point to surprisingly weak associations between historical private education availability and local economic outcomes. In the case reported here, the estimated relationship between past and present school supply only interacts weakly with controls for historical and contemporary economic conditions. This suggests that the processes that led to persistence in non-state schooling are not systematically associated with the economic development trajectory of a region. This result is consistent with other studies that also show weak correlations between economic and educational outcomes in Madagascar and other sub-Saharan countries (Easterly, 2001; Lloyd & Hewett, 2009; Pritchett, 2001; Wietzke, 2013).

Second, the study results illustrate that non-state school provision can have relatively autonomous effects on group inequalities in sub-Saharan Africa. In the case considered here, interreligious inequalities associated with non-state schooling overlap only imperfectly with more widely studied ethnic divides. This result corroborates recent research that suggests that group-level differences in African societies can vary quite considerably across alternative dimensions of wellbeing (Posner & Kramon, 2011; Stewart, 2008). For the study of intergroup relations, this suggests that future analysis needs to pay more attention to the specific historical and social processes that influence living standards of individual groups. Unitary or one-dimensional models that impose single causal explanations in isolation risk overlooking more complex realities on the ground, and may lead to misguided recommendations on how to address group inequalities in the future.

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Notes
1. Most of these studies control for potential selection of better students into private schools.
3. However, many of these schools were only staffed by lay-teachers and teaching quality was often poor (Koerner, 1999).
4. This involved the construction of a primary school in each of the 11,000 villages of the country (World Bank, 2002). This programme was halted in the context of macroeconomic adjustment policies in the early 1980s (Hugon, 1980; Koerner, 1999).
5. Private school in Madagascar receive small public subsidies and are monitored by public education authorities (World Bank, 2002).
6. Rapid expansion of the public school network after independence meant that state schools often offered education of very poor quality. Many public schools did not qualify students to proceed into secondary education (World Bank, 2002).
7. Local competition between missionaries and the temporary requisition of British churches and schools in the early colonial period resulted in close spatial proximity between Protestant and Catholic schools. This makes it harder to disentangle the separate effects of Catholic and Protestant presence. See the Online Appendix for a more extended discussion.
8. For the sake of parsimony, we refrain from using separate dummies for other ethnic groups. This follows the ethnic breakdown chosen by other studies on Madagascar (see, for example, Stiefel et al., 2008). Separate estimates with a full set of ethnic dummies and Mer as the comparison category produced significant negative coefficients for all other ethnic groups.
9. Recall, however, that data for 1932 omit a large number of informal village schools.
10. We exclude areas under Merina control in 1810. The restricted sample still includes districts where Merina account for the second-largest population group.
11. The survey is locally known as the Enquête auprès des Ménages 2001 and distributed by the Madagascar National Statistics Institute, INSTAT. It is a nationally representative clustered random sample survey with information on ethnic and religious origin, educational status and household income.
12. To maximize sample sizes we calculate effects for 10-year ‘rolling’ birth cohorts. For instance, one age group will cover respondents aged 49–58, followed by individuals aged 50–59, and so on. This procedure reduces year-by-year differences, but it should not affect the general trends in educational attainments.
13. This latter group accounts for an estimated 30–40 per cent of the population in Madagascar. While there are variations across regions, most ancestral belief systems in the island view ancestors as intermediaries between the living and the divine creator (Bloch, 2002). Muslims, Hindus and other religions groups account for less than 10 per cent of the sample and are omitted from the analysis.

Bibliography


Historical origins of uneven service supply in sub-Saharan Africa 15


